Improving Quality of Laparoscopic Liver Resection

Chairperson
Go Wakabayashi, MD, PhD, FACS
(Iwate Medical University School of Medicine)

The 2nd International Consensus Conference on Laparoscopic Liver Resection

Program & Abstracts

4th-6th October 2014

Venue
Morioka Grand Hotel in Iwate, Japan
Welcome Message

Dear Colleagues and Friends,

It is my honor and great privilege to welcome you all to the 2nd International Consensus Conference on Laparoscopic Liver Resection in Morioka, IWATE, October 4-6, 2014.

I believe this meeting will provide us the opportunity to review the tremendous progress that we have made in this field since the 1st international consensus conference in Louisville, 2008 by Professor Joseph Buell. Since then, the field of laparoscopic liver resection has been expanding, and the indications now include minor resection, major resection, anatomical resection, donor hepatectomy, and robotic hepatectomy. This time, we have invited 42 experts from all over the world, and we aim to define the current role of laparoscopic liver resection and to safely develop it for the sake of our patients.

During this conference, we should undertake extensive discussions to clarify the answers to the questions of how the value, safety, and quality of this procedure compare with those of open hepatectomy. We will also discuss how to improve the quality of laparoscopic liver resection. Improving quality should include how to select appropriate patients for the surgeon’s skills.

The central questions to be answered at the conference are as follows:
1) What are the comparative short-term and long-term outcomes of laparoscopic liver resection vs. open liver resection?
2) What are the indications according to the difficulty of laparoscopic liver resection?
3) What are the essentials for improving the quality of laparoscopic liver resection?

I sincerely hope the 2nd International Consensus Conference on Laparoscopic Liver Resection will be successful and meaningful to every participant and hope you will take this opportunity to enjoy Iwate’s beautiful nature and delicious Japanese cuisine.

Warm regards,

Go Wakabayashi, MD, PhD, FACS
Chairperson of the 2nd International Consensus Conference on Laparoscopic Liver Resection
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Consensus Panels

Chairperson
Go Wakabayashi (Iwate Medical University School of Medicine, Japan)

Jury
Steven M. Strasberg (Washington University in St. Louis, USA)
Jeffrey Barkun (McGill University Health Centre & McGill University, Canada)
Pierre-Alain Clavien (University Hospital Zurich, Switzerland)
William Jarnagin (Memorial Sloan-Kettering Cancer Center, USA)
Palepu Jagannath (Lilavati Hospital and Research Centre, India)
Norihiro Kokudo (The University of Tokyo, Japan)
Chung-Mau Lo (The University of Hong Kong, Hong Kong)
Russell Strong (University of Queensland, Australia)
Masakazu Yamamoto (Tokyo Women’s Medical University, Japan)

Expert Panels
Mohammad Abu Hilal (Southampton University Hospital, UK)
Luca Antonio Aldrighetti (San Raffaele Hospital, Italy)
Horacio Asbun (Mayo Clinic, USA)
Giulio Belli (Loreto Nuovo Hospital, Italy)
Joseph Buell (Tulane Transplant Institute and Louisiana State University, USA)
Xiujun Cai (Zhejiang University, China)
Kuo-Hsin Chen (Far-Eastern Memorial Hospital, Taiwan)
Xiao-Ping Chen (Hepatobiliary Center -Paul Brousse Hospital, France)
Gi Hong Choi (Yonsei University College of Medicine, Korea)
Sean Cleary (University of Tronto, Canada)
Ibrahim Dagher (Paris-South University Hospitals, France)
Bjorn Edwin (University of Oslo, Norway)
Brice Gayet (Institut Mutualiste Montsouris, France)
David A. Geller (University of Pittsburgh, USA)
Ho-Seong Han (Seoul National University Bundang Hospital, Korea)
Paulo Herman (University of Sào Paulo Medical School, Brazil)
Hironori Kaneko (Toho University School of Medicine, Japan)
Alan J Koffron (Beaumont Health System, USA)
Choon Hyuck David Kwon (Sungkyunkwan University, Korea)
Marcel Autran Machado (University of Sào Paulo, Brazil)
Nicholas O’ Rourke (Royal Brisbane Hospital, Australia)
Juan Pekolj (Hospital Italiano Buenos Aires Argentina, Argentina)
Patrick Pessaux (Institut Hospitalo-Universitaire, France)
Olivier Scatton (Hôpital Pitié Salpêtrière, France)
Michael R. Schön (Klinikum Karlsruhe, Germany)
Olivier Soubrane (Beaujon Hospital, France)
Atsushi Sugioka (Fujita Health University, Japan)
Minoru Tanabe (Tokyo Medical and Dental University, Japan)
Chung-Ngai Tang (Pamela Youde Nethersole Eastern Hospital, Hong Kong)
Roberto Troisi (Ghent University Hospital Medical School, Belgium)
Allan Tsung (University of Pittsburgh Medical Center, USA)
Ronald M. Van Dam (Maastricht University, The Netherlands/Univeristätsklinikum Aachen, Germany)
Poster Moderators

Toru Beppu (Kumamoto University, Japan)
Chung Yip Chan (Singapore General Hospital, Singapore)
Jigjidsuren Chinburen (National Cancer Center Mongolia, Mongolia)
Claudius Conrad (University of Texas MD Anderson Cancer Center, USA)
Giovanni Dapri (Saint-Pierre University Hospital, Belgium)
Susumu Eguchi (Nagasaki University Graduate School of Biomedical Sciences, Japan)
Jiro Fujimoto (Hyogo College of Medicine Department of Surgery, Japan)
Shigeyuki Kawachi (Tokyo Medical University Hachioji Medical Center, Japan)
Hong-Jin Kim (Yeungnam University Hospital, Korea)
Shoji Kubo (Osaka City University Graduate School of Medicine, Japan)
Krish Menon (King's College Hospital, UK)
Zenich Morise (Fujita Health University School of Medicine, Japan)
Julio Santoyo Santoyo (University Regional Hospital of Malaga Spain, Spain)
Mitsuo Shimada (The University of Tokushima, Japan)
Akinobu Taketomi (Hokkaido University, Japan)
Yoo-Seok Yoon (Seoul National University Bundang Hospital, Korea)
Go Wakabayashi
Iwate Medical University School of Medicine
Japan

Education:

1982  MD  Keio University School of Medicine, Tokyo (270184)
1991  PhD  Keio University School of Medicine, Tokyo (2308)

Hospital Appointments:

1988-1990  Research Fellow, Department of Surgery, Harvard Medical School and Massachusetts General Hospital, Boston
1993-2001  Instructor in Surgery, Keio University School of Medicine, Tokyo
2001-2005  Assistant Professor in Surgery, Keio University School of Medicine, Tokyo
1993-2005  Chief, Transplantation Biology Section, Division of Transplantation, Department of Surgery, Keio University School of Medicine, Tokyo
1997-2005  Visiting Scientist, Department of Molecular Biology, Keio University School of Medicine, Tokyo
2005-      Professor and Chairman, Department of Surgery, Iwate Medical University School of Medicine, Iwate

Profile:

Go Wakabayashi, earned his degrees from Keio University School of Medicine, Tokyo Japan. He was trained at Department of Surgery at Massachusetts General Hospital and Harvard Medical School. After working as an assistant professor at Department of Surgery, Keio University School of Medicine, he was recruited as professor and chairman of Department of surgery at Iwate Medical University School of Medicine in 2005. His expertise includes Hepato-pancreatic Biliary Surgery, liver transplantation, and laparoscopic surgery. He has operated more than 150 cases of living liver transplantation and over 3000 cases of HPB surgery and laparoscopic surgery. He was awarded Gold Medal of Video Olympics at The World Congress of Endoscopic Surgery 1996. He also practices conventional HPB surgery and aggressive surgery as well. He holds numerous important positions in Japanese and international surgical societies.
Steven M Strasberg
Washington University in St Louis
USA

**Education:**

University of Toronto School of Medicine
University of Toronto Program in General Surgery
Research Fellowship: Boston University

**Hospital Appointments:**

Pruett Professor of Surgery, Carl Moyer Teaching Co-ordinator, Section of HPB Surgery, Washington University School of Medicine, Barnes-Jewish Hospital and Siteman cancer Center. St Louis Missouri, USA

**Profile:**

Steven M Strasberg MD is Pruett Professor of Surgery at Washington University in St Louis and Barnes-Jewish Hospital where he has worked since 1992. His area of interest is Hepatobiliary-Pancreatic Surgery. Prior to coming to St Louis he was Professor of Surgery at the University of Toronto where he taught and practiced for more than 15 years. He is a past president of the American Hepato-Pancreato-Biliary Association (AHPBA) and serves on the editorial board of Annals of Surgery, Journal of the American College of Surgeons, the Journal of Gastrointestinal Surgery and HPB. He has published extensively on technical aspects of liver, biliary and pancreatic surgery, surgical innovation, safety in surgery, and on the surgical treatment of malignant tumors of these organs. He has also studied and written on the prevention and treatment of operative biliary injuries. His CV includes over 250 peer reviewed papers and 40 book chapters.

He is married to Yona Strasberg a diabetic nurse specialist. His hobbies are music, visual arts and travel.
Jeffrey Barkun
McGill University Health Centre &
McGill University

Canada

Education:

Dr. Jeffrey Barkun was born and raised in Montreal, Canada, and received his medical degree at McGill University. A Hepatobiliary (HBP) and Liver Transplantation surgeon, he completed his General Surgery at the universities of McGill and Cologne (Germany), and HBP fellowship specialty training at the University of Toronto. He holds a Master’s degree in Clinical Epidemiology from McGill University.

Hospital Appointments:

He is past Head of General Surgery at McGill University and at the McGill University Health Center (MUHC), and currently Chief Medical Information Officer for the technological transition at the MUHC and clinician in charge of the Clinical Information System project.

Profile:

He is involved in administrative and grant review committees for multiple surgical, provincial, national and international associations/agencies, and has authored or co-authored over 125 manuscripts and chapters. He holds/ has held numerous peer-reviewed grants in the areas of biliary lithiasis, pancreatic cancer and liver transplantation. He is on the editorial board of several peer-reviewed journals, including Annals of Surgery.

Since 2009, he has been founding member of the Balliol collaboration which is creating a surgically-focused evidence-based paradigm for the evaluation of new technology, and has consulted with the American FDA to this effect.
Jury

Pierre-Alain Clavien
University Hospital Zurich
Switzerland

Education:

1976  H.S. Diploma, College of Geneva, Switzerland
1982  M.D. Geneva Medical School, Switzerland
1990  FMH Surgery (Swiss Board of Surgery)
1992  Ph.D. Institute of Medical Science & Immunology, University of Toronto, Ontario, Canada

Hospital Appointments:

Professor & Chief, Department of Visceral- and Transplantation Surgery, University Hospital Zurich, Switzerland  
(July 2000–present)
Director, Swiss Hepato-Pancratico-Biliary and Transplantation Center, University Hospital Zurich, Switzerland  
(July 2007–present)
Chairman, Center for Surgery Zurich, Switzerland  
(Jan 2009–present)

Profile:

Pierre A. Clavien is a world-wide renowned surgeon-scientist, currently professor and chairman of the  
Department of Surgery in Zurich, Switzerland. After a Swiss board of surgery, he moved to Toronto, Canada,  
to complete a PhD program in organ preservation and a clinical fellowship in HPB surgery and transplantation.  
He then moved to Duke University, Durham, NC, to lead the transplantation and HPB programs. Since 1994 he  
has run an active basic science laboratory funded through NIH and Swiss National Grants and other private and  
non-private funding. His areas of research include organ preservation, liver regeneration, and cancer, as well as  
outcome research with a well-established system to rank complications by severity. He is currently on the  
Editorial Board or Associate Editor of several high ranked international journals. He received many competitive  
grants and awards, including one of the most prestigious prices for scientific research, the Otto Naegeli Award,  
and the UEGW (European Gastroenterology award) for his research in partial liver graft in Stockholm. He has  
also written several books, with the very popular book of “Medical Care of the Liver Transplant Patient” and  
atlas of upper GI and HPB surgery.
William Jarnagin
Memorial Sloan-Kettering Cancer Center
USA

Education:
1982 Dartmouth College, Bachelor of Arts (Chemistry), Hanover, NH
1984 Brandeis University, Master of Arts (Chemistry), Waltham, MA
1988 Rush Medical College, Doctor of Medicine, Chicago, IL

Postdoctoral Training:
1988-89 Internship, Department of Surgery, University of California, San Francisco
1989-96 Residency, Department of Surgery, University of California, San Francisco
1990-93 Postdoctoral Research Fellow, Liver Center Laboratory, San Francisco General Hospital/University of California, San Francisco
1996-97 Fellow, Department of Surgery, Hepatobiliary Division, Memorial Sloan-Kettering Cancer, Center, New York, NY

Hospital Appointments:
January 2008 – Present Chief, Hepatopancreatobiliary Service, Department of Surgery, Memorial Sloan Kettering Cancer Center
July 2010 – Present End A. Haupt Chair in Surgery, Department of Surgery, Memorial Sloan-Kettering Cancer Center
August 2009 – Present Professor of Surgery, Department of Surgery, Weill Medical College of Cornell University
October 2008 – Present Attending Surgeon, Member, Department of Surgery, Memorial Sloan-Kettering Cancer Center New York, NY
July 2006 – June 2010 Vice-Chairman for Surgical Services, Department of Surgery, Memorial Sloan-Kettering Cancer Center
January 2007 – January 2008 Acting Chief, Hepatobiliary Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center
February 2006 – July 2009 Associate Professor of Surgery, Department of Surgery, Weill Medical College of Cornell University New York, NY
November 2004 – October 2008 Associate Attending Surgeon, Associate Member, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY
July 1997 - November 2004 Assistant Attending Surgeon, Assistant Member, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY
July 2000 – February 2006 Assistant Professor of Surgery, Department of Surgery, Weill Medical College of Cornell University New York, NY
September 1997 - July 2000 Instructor in Surgery, Department of Surgery, Weill Medical College of Cornell University New York, NY

Profile:
Licensed Physician: Year: 1989 Place of Issue: California
1996 Place of Issue: New York

Board Certification: Year: 1989 National Board of Medical Examiners
1997 American Board of Surgery
2006 American Board of Surgery Re-certification
2001 Fellow, American College of Surgeons

Dr. William R. Jarnagin was raised outside of Boston, Massachusetts and earned his undergraduate degree in chemistry from Dartmouth College in 1982, a Master’s degree in chemistry from Brandeis University in 1984 and an MD from Rush Medical College in 1988. He completed his training in general surgery at the University of California, San Francisco in 1996. From 1990-93, he completed a research fellowship at the Liver Center Laboratory at San Francisco General Hospital. From 1996-97, he served as the Hepatobiliary Fellow at Memorial Sloan-Kettering Cancer Center (MSKCC). Since 1997, he has been an attending surgeon at Memorial Sloan-Kettering Cancer Center, where he has served as Chief of the Hepatobiliary Service since 2008 and was a Vice-Chairman of the Department of Surgery from 2006-2010. He holds the Benno C. Schmidt Chair in Surgical Oncology and is Professor of Surgery at Weill Medical College of Cornell University.

Dr. Jarnagin’s research has focused on genomics, novel therapies and biomarkers of treatment response in patients with biliary tract cancer, intraoperative navigation systems, and improvements in intraoperative management during major liver and pancreas resection. He has authored or co-authored over 250 articles in peer-reviewed journals, over 60 chapters or invited reviews and has co-edited three textbooks. He is the HPB Section Editor for Annals of Surgical Oncology and is a member of the editorial boards of Surgery, Journal of the American College of Surgeons and HPB. In addition to the IHPBA and AHPBA, he is a member of several surgical societies, including SUS and ASA. He has been a member of the AHPBA Executive Council since 2004, serving as the Program Chair (2007-08), Treasurer (2009-11), President (2011-2012), and is the current Past President.
Palepu Jagannath
Lilavati Hospital & Research Centre
India

Education:

1982    M.S. (Gen. Surg.) JIPMER (Madras University)
2010    FRCS (England) by Election

Hospital Appointments:

Tata Memorial Hospital, Mumbai (1982 to 2002)

1985    Assistant Surgeon (Consultant)
1996    Surgeon
1998    Addl. Prof. Surgical Oncology
2001    Professor of Surgical Oncology & Chief GI Services

Lilavati Hospital and Research Centre (1997 to date)

1997 to date Consultant Surgeon
2002 to date Chairman, Dept. of Surgical Oncology

S.L. Raheja Hospital - Asian Institute of Oncology (2003 to date)

2003 to date Chief, Dept of Gastrointestinal Oncology

Profile:

He was the earliest in India to specialize in the field of Liver tumors - resection and non-resectional therapies. Dr. Jagannath was instrumental in the growth of HPB surgery in India. He conducted international workshops in the field of HPB surgery in 1996. He initiated Indian Chapter of IHPB as its founder Secretary 2001 and President 2007 - 2009. He organized 8th World Congress of IHPBA in 2008 in India.

He was President of Asian Pacific HPB Association(A-PHPBA) in 2011 - 2013. He is President of International Hepato-Pancreato-Biliary Association (IHPBA).
Jury

Norihiro Kokudo
The University of Tokyo
Japan

Education:

He earned his M.D. in 1981, and then Ph.D. in 1988 at University of Tokyo. From 1989 to 1991 he stayed at Department of Surgery, University of Michigan as a visiting research investigator. After 6 years at Cancer Institute Hospital, Tokyo, as a senior staff of GI surgery, he joined the current institution as an associate professor in 2001. He then rose to the current position in 2007.

Hospital Appointments:

Professor and chairman at Hepato-Biliary-Pancreatic Surgery Division and Artificial Organ and Transplantation Division, Department of Surgery, University of Tokyo Hospital.

Profile:

Dr. Kokudo has been conducting a number of research projects on surgical treatment of HCC, colorectal liver metastases, and living donor liver transplantation. As the chairman of the guideline committee, he compiled 3rd version of Japanese clinical practice guidelines for HCC in 2013. Dr. Kokudo is currently the President of Japan Surgical Society. He is the president elect for Asian-Pacific Hepato-Pancreato-Biliary Association (A-PHPBA), a member-at-large of International Hepato-Pancreato-Biliary Association (IHPBA), and a governing board member for ILCA. He is an associate editor of Liver Cancer, and on the editorial board of Annals of Surgery, World Journal of Surgery, Journal of HPB Science, HPB, Japanese Journal of Clinical Oncology, and Hepatogastroenterology.
Chung-Mau Lo
The University of Hong Kong
Hong Kong

CURRENT POSITION:
Chin Lan-Hong Professor and Chair of Hepatobiliary and Pancreatic Surgery
Head, Department of Surgery, The University of Hong Kong

Chief of Service, Department of Surgery, Queen Mary Hospital
Director, Liver Transplant Center, Queen Mary Hospital

QUALIFICATIONS:
Bachelor of Medicine and Bachelor of Surgery (Hong Kong) 1985
Fellow, Royal College of Surgeons (Edinburgh) 1992
Fellow, Royal Australasian College of Surgeons 1999
Fellow, American College of Surgeons 1993
Fellow, Hong Kong College of Surgeons 1996
Fellow, American College of Surgeons 1997
Master of Surgery (Hong Kong) 1998

ACADEMIC HONORS & AWARDS:
1st Class Award in Research Achievements Ministry of Education China 2013
International Basic Science Mentor Travel Award for the XXIII 2010
International Congress of The Transplantation Society
Rising Star Award (Mentor) of International Liver Transplantation Society 2006 & 2007

HONORARY POSITIONS (selected):
International Liver Transplantation Society – President 2010 – 2011
Program Chair 2010
American Surgical Association: Honorary Fellow 2003 – 2005
Program Chair 2010
Sub-Committee, Region IV (East Asia) 2012 – April 2015
American College of Surgeons: Governor – Hong Kong Chapter 2009 – Present
Sub-Committee, Region IV (East Asia) 2012 – April 2015
Asian Pacific Digestive Week Federation: Treasurer 2008 – Present
Member, Membership Committee 2010 – 2013
Asia Pacific Association for the Study of the Liver: Member, International Advisory Board 2011
Member, International Scientific Committee 2010 – Present

TOTAL PUBLICATIONS:
1 Master of Surgery thesis
373 peer-reviewed articles, 21 review articles and editorials in medical journals (Total citations > 8500)
11 book chapters, 221 abstracts and conference papers

FIVE MOST REPRESENTATIVE PUBLICATIONS:
2. Lam SP, Luk JM, Man K, Ng KTP, Cheung OK, Rose-John S, Lo CM (Corresponding Author). Activation of interleukin-6-induced glycoprotein 130/Signal transducer and activator of transcription 3 pathway in mesenchymal stem cells enhances hepatic differentiation, proliferation and liver regeneration. *Liver Transplantation* 2010;16:1195-1206. (Impact factor: 3.944)

FIVE OTHER PUBLICATIONS:
Russell Strong
University of Queensland
Australia

Education:

1958 Bachelor of Dental Surgery, Sydney University (BDS)
1965 Bachelor of Medicine & Surgery, University of London (MBBS)
Fellow of Royal College of Surgeons of England (FRCS)
1974 Fellow of Royal Australasian College of Surgeons (FRACS)
1984 Fellow American College of Surgeons (FACS)

Hospital Appointments:

1973-2003 Director of Surgery, Princess Alexandra Hospital, Brisbane, Australia
1994-2003 Professor of Surgery, University of Queensland

Profile:

Commenced the Queensland Liver Transplant Service in 1984.

Trained 80+ international surgeons in HPB and Liver Transplantation.

Has some 270 Publications in scientific literature, including 17 book chapters and Editor of one book.

Has given 17 Epnoymous (named) lectures world-wide.

Has been visiting Professor/Guest Lecturer on more than 100 occasions in 24 countries.
Jury

Masakazu Yamamoto

Tokyo Women’s Medical University

Japan

Education:

4/76-3/81 Faculty of Medicine, Tsukuba University
3/89 Degree of Medical Science (PhD), Tokyo Women’s Medical University

Hospital Appointments:

1986-1989 Assistant Medical Staff, Department of Surgery,
Institute of Gastroenterology, Tokyo Women’s Medical University
1994-1997 Lecturer, Department of Surgery,
Institute of Gastroenterology, Tokyo Women’s Medical University
1999-2004 Associate Professor, Department of Surgery,
Institute of Gastroenterology, Tokyo Women’s Medical University
2004-2006 Professor, Department of Surgery,
Institute of Gastroenterology, Tokyo Women’s Medical University
2006- present Professor & Chairman, Department of Surgery,
Institute of Gastroenterology, Tokyo Women’s Medical University
2010-present Chairman, Institute of Gastroenterology, Tokyo Women’s Medical University

Profile:

President of Japan Mongolia Gastrointestinal Cancer meeting (2009-)
30 Additional Governor of International College of Surgeon (2009-2014)
Member at Large of Asian-Pacific Hepato-Pancreato-Biliary Association (2012-2016)
President of the Japan Academy of Surgical Pathology (2007-2008)
President International Symposium on Cholangiocarcinoma Tokyo 2013 (2013)
PCzech-Japan Surgical symposium Tokyo (2013)
Mohammad Abu Hilal
Southampton University Hospital Trust
UK

Education:

1997 Medical degree, University of Brescia Italy
2003 Diploma of specialty in General Surgery and HPB surgery, University of Verona Italy
2005 Completion of a fixed term training appointment in HPB surgery– Wessex rotation– UK
2006 Fellowship in HPB and liver transplant surgery– Leeds – UK

Hospital Appointments:

• Consultant General, Laparoscopic and HPB Surgeon
• Clinical lead of Hepatobiliary Pancreatic Surgery
• Research and Development lead in Surgery

Honorary Appointments:

• Professor in Surgery – University of Verona
• Senior lecturer– University of Southampton
• Council member – EAHPBA
Luca Antonio Aldrighetti
San Raffaele Hospital
Italy

Education:

1989: M.D., University of Milan School of Medicine
1995: Ph.D. in Surgical Technologies, University of Milan School of Medicine
1997: Speciality in General Surgery, University of Milan School of Medicine
2002: Speciality in Thoracic Surgery, Vita-Salute San Raffaele University – School of Medicine

Hospital Appointments:

1989-1992: Resident, General Surgery, San Raffaele Hospital, Milan, Italy
1992-1994: Research Fellow, Pittsburgh Transplantation Institute - University of Pittsburgh, PA, USA
1995-1997: Chief Resident and Consultant, General Surgery, San Raffaele Hospital, Milan, Italy
1997-2004: Staff Surgeon, San Raffaele Hospital, Milan, Italy
2004-2014: Chief, Hepatobiliary Unit, San Raffaele Hospital, Milan, Italy.
2014 (starting August 1st): Head, Hepatobiliary Division, San Raffaele Hospital, Milan, Italy.

Profile:

Surgical and Clinical Practice: hepatobiliary and pancreatic surgery, laparoscopic liver surgery, perioperative critical care, treatment of acute and chronic liver failure, kidney and pancreas transplantation.

Research interests: pathophysiology and modulation of hepatic ischemia/reperfusion injury and liver regeneration, colorectal liver metastases, perihilar tumors, techniques for liver transection, laparoscopic liver surgery, primitive liver tumors. President of the Italian Group of Minimally Invasive Liver Surgery (IGoMILS), Assistant Professor of Surgery, Vita-Salute San Raffaele University – School of Medicine.
Dr. Asbun is a Professor of Surgery, Mayo Clinic College of Medicine and the Chairman of General Surgery at Mayo Clinic Florida. He also serves as Director of Hepato-Biliary and Pancreas Program, at Mayo Clinic Florida.

Dr. Asbun is a Member of the Board of Governors of the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES) and is a member of the Executive Council of the American Hepato-Pancreatic Biliary Association (AHPBA). He is the Editor-in-Chief of the American College of Surgeons Multimedia Atlas of Surgery.

He serves as a member of multiple Committees on multiple major US surgical societies. Among them, he is the Chair of the SAGES Global Affairs Committee Other Committees he has chaired in the past include the Video-Based Education Committee of the American College of Surgeons, the Educational Resource Committee of SAGES and the Development Committee of AHPBA. He is a member of the International Study Group of Pancreas Surgery (ISGPS) and the International Consensus on Laparoscopic Liver Resection.

He received his Medical Degree from the University of Chile in 1983. He subsequently did his initial surgical training at Hospital Santa Creu i Sant Pau in Barcelona Spain prior to moving to the University of California San Diego in 1985 where he did a Surgical Oncology Fellowship and subsequently a Surgical residency training. His post-graduate fellowship was on Hepatobiliary-Pancreas and Gastrointestinal Surgery at Lahey Clinic, Burlington Massachusetts from 1991-1992.

Dr Asbun is an ad-hoc peer reviewer for several Surgical Journals including Annals of Surgery, Surgical Endoscopy, British Journal of Surgery, Journal of the American College of Surgeons, Journal of Gastrointestinal Surgery and others. He has also served as peer-reviewer of submissions to meetings of different Surgical Societies.

He has authored over 160 peer-review manuscripts, book chapters and surgical videos. He has also been author or co-author of over 130 peer-reviewed abstract/poster and presentations at national meetings. He has been invited as Guest Speaker to multiple National Surgical Meetings and to over 90 International Surgical Meetings in Asia, Europe, Africa, Australia, Central and South America. He has served as a Director or Faculty in over 65 national and international Minimal Access Surgery courses and Surgical Meetings. He has received multiple awards as well as Honorary Fellowships in a number of international surgical societies. His publications have been in the areas of minimal access surgery, hepatobiliary, pancreas, and endocrine surgery, as well as basic science research in the field of surgical oncology. Currently his basic science research are in the area of pancreatic cancer.
Giulio Belli

Loreto Nuovo Hospital

Italy

Education:

University of Naples (Italy) M.D. 1975 University of Naples(Italy) General surgery Registered General Surgeon
1980 University of Naples (Italy) Registered Vascular surgeon 1985

Hospital Appointments:

1978-1983 Clinical assistant of surgery (Registrar) Nuovo Pellegrini Hospital Naples-Italy
1983-1984 Liver Unit- Hammersmith Hospital RPMS London UK Head: Prof. L. H. Blumgart.
1985-2000 Assistant Professor Department of General Surgery and Transplant Unit
University of Naples “Federico II” Naples – Italy
1990 Transplant center University of Pittsburgh Head : Prof. T. E. Starzl
2000 Head of General and HPBSurgery Loreto Nuovo Hospital, Naples- Italy

Profile:

Founder member of : the World Association of HepatoBiliaryPancreatic Association WHBPA, Former Member of the Scientific Committee I.H.P.B.A. the Council of EHPBA, the Council Italian Chapter IT-IHPBA, the Council of the Italian Society of surgical endoscopy (SICE), the Italian Society of Surgery (SIC) Member in Charge of the Board of the Union Europeenne des Medicins Specialists (UEMS) working group for HepatoPancreatoBiliary Surgery, Next President of the International HepatoPancreatoBiliary Association-Italian Chapter (IT-IHPBA).

Invited Member of the International Consensus Conference for the management of acute cholecystitis and cholangitis, Tokyo 1-2 April 2006. Invited Member of the 1° International Consensus Conference on Laparoscopic Liver Surgery Louisville, Kentucky USA, Novembre 7-8, 2008. Invited Member of the 2° International Consensus Conference on Laparoscopic Liver Surgery Iwate, Japan October 4-6, 2014.

Editorial Board Member HPB, JHPBS, Hepatogastroenterology, Updates in Surgery.


Author of 11 HPB book chapters, Invited Speakers in 105 National and 61 International Congress.

Author of 351 Publications
Expert Panels

Joseph Buell
Tulane Transplant Institute and Louisiana State University
USA

Education:
MBA Tulane University
Transplant Hepatobiliary Fellowship University of Chicago
Surgical Oncology Fellowship National Cancer Institute, National Institutes of Health
General Surgery Residency University of Maryland
MD University of Rochester
BA Fordham University

Hospital Appointments:
Director, Tulane Transplant Institute, Tulane University
Director, New Orleans Children’s Hospital, Louisiana State University
Hepatobiliary Director, Charity Hospital, Louisiana State University

Profile:
Dr. Buell was an early innovator in laparoscopic liver surgery. He was the initial program director for the First International Consensus Conference on Laparoscopic Liver Surgery held in Louisville, Kentucky. Dr. Buell continues to innovate in medical device development, and bioengineering. His group at Tulane and LSU has concentrated on the development of a disparity health care unit. His current interests include quality outcomes and disparity effects from the Affordable Care Act, or Obamacare.
Xiujun Cai is a professor of Surgery of Zhejiang University. For now, he is the president of Sir Run Run Shao Hospital of Zhejiang University, the director of the Institute of Minimally Invasive Surgery of Zhejiang University, and the chief of the Key Lab of Surgery of Zhejiang Province. He graduated from Zhejiang University School of Medicine in 1986 and he got a doctoral degree of general surgery in Zhejiang University in 1993 after 5 years learning and practice. Between 1994 and 1995, He had the fellowship in the West Virginia University Medical Center, USA.

Cai is the executive member of Chinese Society of Surgery, the vice director of the Hepatic Committee of Chinese Society of Surgery, the vice director of Committee of Pancreatic Cancer of Chinese Anti-cancer Association. He is also the fellow of American College of Surgeon (FACS) and the member of the International Hepato-Pancreato-Biliary Association and the Endoscopic and Laparoscopic Surgeons of Asia (ELSA). He is the chief editor of the channel of Minimally Invasive Surgery of the Medical Reference, and the associate chief editor of both the Chinese Journal of Practical Surgery and the Chinese Journal of Minimally Invasive Surgery.

Cai is specializing in Hepato-Pancreato-Biliary surgery and minimally invasive surgery. He developed the new technique of laparoscopic hepatectomy by curettage and aspiration and invented a special instrument for laparoscopic liver resection: Laparoscopic Multifunctional Operative Dissector (LMOD). In 2007, he was granted the Ho Leung Ho Lee Foundation Youth Innovation Prize for the innovation in laparoscopic liver surgery. In 2009, he was granted the National Prize of Second Grade for Advancements in Science and Technology for his contribution in laparoscopic Hepato-Pancreato-Biliary surgery, and in 2014, he was granted The 14th WU Jieping -Paul Adriaan Jan medical award.
Kuo-Hsin Chen
Far-Eastern Memorial Hospital
Taiwan

Education:

1993 College of Medicine, National Taiwan University
2001 Clinical Fellow, Minimally Invasive Surgery Center, Cleveland Clinic Foundation, Cleveland, Ohio, USA
2007 Visiting Scholar, Department of HPB & Transplant Surgery, Kyoto University, Kyoto, Japan

Hospital Appointments:

2000 Attending Staff, Department of Surgery, Far-Eastern Memorial Hospital
2004 Chief, Division of General Surgery, Department of Surgery, Far-Eastern Memorial Hospital
2012 Assistant Professor, Oriental Institute of Technology

Profile:

Graduated from National Taiwan University and received surgical residency at the National Taiwan University Hospital, Dr. CHEN Kuo-Hsin is one of the early adopters of minimally invasive HBP surgery in Taiwan.

He started the first robotic HBP surgery program there in 2010 and had accumulated about 100 cases of robotic liver, pancreatic and biliary resections. Based on personal experience of over 400 laparoscopic hepatectomy, he initiated totally laparoscopic donor hepatectomy for adult in March 2012. Dr. CHEN is a board member of Taiwan association for Endoscopic Surgery, Taiwan Robotic Surgery Association, Taiwanese Hernia Society, Taiwan Surgical Society of Gastroenterology, and The Transplantation Society of Taiwan.
Xiao-ping Chen
Tongji Hospital Huazhong University of Science and Technology
China

Education:

1970 to 1973, Bengbu Medical College, BS
1979 to 1982, Tongji Medical University, MS
1983-1985, Tongji Medical University, MD
Postdoctoral training: 1986 to 1987, Heidelberg University Germany
Visiting scholar: 1991 to 1992, University of Cincinnati USA

Hospital Appointments:

1998  Director, Hepatic Surgery Center, Tongji Hospital
2002  Chairman, Department of Surgery, Tongji Hospital
2002  Director, Institute of Hepato-Pancreato-Biliary Surgery, Tongji Hospital
2004  President, the Chinese Chapter of IHPBA
2005  Chairman, Liver Surgery Group of the Chinese Medical Association
2005  Fellow, American College of Surgeons
2006  Director, Institute of Organ Transplantation, Tongji Hospital
2007  Vice Chairman, Surgical Branch of the Chinese Physician Association
2011  Honorary fellowship, American Surgical Association
2013  President, Asia-Pacific Hepato-Pancreato-Biliary Association

Profile:

Prof. Chen has devoted himself to clinic work, teaching, and research for over 30 years. He has performed more than 10 thousand hepato–biliary operations, in which over 6000 cases are liver resections, and achieved very good clinical outcomes. He established some important theories and improved a lot of surgical techniques of liver surgery.

He is editor-in-chief or editor for more than 50 kinds of national and international journals, has more than 500 papers published in national and international journals, the papers have been cited for over 2000 times.
**Education:**

1974 – 1980: Medical School – University of Paris  
- 10/86-10/87: Paul Brousse Hosp, Paris – Prof. Henri Bismuth  
- 11/87-11/88: University of Chicago, USA – Prof. Christoph Broelsch

**Hospital Appointments:**

1988-2010: Henri Mondor Hospital – University of Paris – Creteil-Paris, France  
Professor and Chief of GI, HPB and Liver Transplantation Surgery  
2010-2013: New York Presbyterian Hospital – Weill Cornell Medical Center, New York, USA  
Professor and Chief of HPB Surgery and Liver Transplantation  
2013- : Paul Brousse Hospital – University of Paris – Villejuif-Paris, France  
Professor and Surgical Director of the Liver Transplantation Program

**Profile:**

Prof. Daniel Cherqui is a highly experienced liver surgeon, having performed over 2,500 complex hepatobiliary and liver transplant procedures over the past two decades. He is an expert in primary and secondary liver cancer, open and laparoscopic liver surgery and liver transplantation. Prof. Cherqui has over 200 referenced publications in Pubmed as of September 2014. He has also published many reviews and book chapters and given numerous international invited lectures. He is the current Associate Editor of the Journal of Hepatology for HPB and Liver Transplant Surgery. He is considered one of the pioneers of laparoscopic liver surgery and developed innovations in open and minimally invasive liver surgery. In 2001, he performed the first pure laparoscopic living donor hepatectomy.
Education:

1992-1998  Yonsei University College of Medicine, Seoul, Korea  
2006-2008  Master Degree, Graduate School, Yonsei University  
2009-2013  Doctor of Philosophy, Graduate School, Yonsei University

Hospital Appointments:

2006-2007  Clinical fellowship, Department of Surgery Yonsei University College of Medicine  
2008-2009  Full-time Faculty Instructor, Department of Surgery Yonsei University College of Medicine  
2009-2013  Assistant Professor, Department of Surgery Yonsei University College of Medicine  
2014-      Associate Professor, Department of Surgery Yonsei University College of Medicine

Profile:

Throughout his academic career, Dr. Choi focused on surgical treatment of primary and metastatic liver cancer, hilar cholangiocarcinoma and living donor hepatectomy. Especially, he was interested in minimally invasive liver surgery including laparoscopy and robotic surgery. Now, he has performed the largest number of robotic liver resections in Korea. He has published approximately 45 publications in international peer-reviewed scientific journals.

His academic memberships include the Korean Association of Surgical Society, the Korean Association of Hepato-Biliary-Pancreatic Surgery, the Korean Association of the Study of Liver, the Korean Society for Transplantation. He is a research director of the Korean Association of Robotic Surgeons.
Sean Cleary
University of Toronto
Canada

Education:

2012: Fellow of the American College of Surgeons
2009: Masters of Public Health: Community Health and Epidemiology
   Dalla Lana School of Public Health Sciences, University of Toronto
2005-2007: Surgical Fellowship in Hepatobiliary Oncology and Transplantation. Toronto General Hospital,
   University of Toronto
2005: Fellow of the Royal College of Surgeons of Canada (FRCSC), Specialization in General Surgery.
2004: Masters of Science: Institute of Medical Sciences, University of Toronto, Toronto, Ontario.
1999: Doctor of Medicine (M.D.), University of Western Ontario, London, Ontario
1995: Bachelor of Science with Honours (BScH.) Queen’s University, Kingston, Ontario.

Hospital Appointments:

Hepatobiliary, Pancreatic and General Surgery. Division of General Surgery, Department of Surgery, University
Health Network, University of Toronto. Toronto, Ontario, Canada

Profile:

Sean Cleary received a BSch from Queen’s University and his MD from the University of Western Ontario.
He completed a General Surgery residency and fellowship training in Hepatobiliary and Pancreatic Transplantation
and Surgical Oncology at the University of Toronto, Canada. In addition he obtained a Masters of Science in
Cancer Genetics followed by a MPH in Public Health and Epidemiology in the Dala Lana School of Public Health
at the University of Toronto. Sean is an Associate Professor in the Department of Surgery at the University of
Toronto, staff surgeon in the Divisions of General Surgery and Surgical Oncology at the Toronto General Hospital
and a Research Associate in the Prosserman Centre at the Lunenfeld-Tanenbaum Research Institute.
His clinical interests include the surgical treatment of pancreatic, hepatic and biliary malignancies including
minimally invasive approaches to these cancers. His research interests include the genetic epidemiology of
colorectal, pancreatic and hepatobiliary cancers.
Expert Panels

Ibrahim Dagher

Paris-South University Hospitals

France

Education

Professor Dagher is head of the Department of Liver and Minimally Invasive Surgery at Paris-Sud University Hospitals, Professor of Surgery at Paris XI University and the Director of the national Master in Surgical Sciences in France. He has pioneered laparoscopic liver resections, especially anatomical and major hepatectomies. Recently, he developed single-incision surgery, with successful applications of this approach in hepatobiliary surgery.

His clinical interests and his devoted journey in surgery are pointed out in his numerous international scientific studies and papers. He also has an active role in teaching laparoscopy and promoting surgical research.
Bjørn Edwin
University of Oslo
Norway

Education:
Royal Technical University (KTH) Stockholm Sweden (Metallurgy) 1975-1976
Medical exam 1983, University of Oslo and University of Munich
1991, Specialist in general surgery
1995, Specialist in gastro-intestinal surgery
Leader Education: 2006 Norges handelshøyskole (NHH).
Professor: Minimal Invasive Surgery, Medical Faculty, University of Oslo,

Hospital Appointments:
1983 – 1985 Training license Sweden
1985 – 1986 Registrar (general surgery) Sweden
1986 – 1991 Registrar (general surgery)
1992 – 1995 Senior registrar (gastro-intestinal surgery)
1995 – 1996 Consultant surgeon, The Central Hospital in Akershus
1996 – 2001 Consultant surgeon, Oslo University Hospital-RikshospitaletInterventional Centre / Department of HPB, Gastrointestinal and Pediatric Surgery
2002 - Section manager, The Intervention centre (Section: Clinical Research)
Professor, minimal invasive surgery, Oslo University Hospital
Visiting surgeon in different hospitals for teaching and demonstration operation in Norway, Sweden, Denmark, Finland, England, Germany, Lebanon, Russia, Belgium.

Profile:
HPB surgery, Endocrine surgery, Gastro-intestinal surgery, Urology and Pediatric surgery.
Field of research:
R&D in Minimal invasive therapy in HPB surgery: eg QoL, economic studies, immunological studies, gene studies in bio bank (COMET study), survival etc.
R&D in minimal invasive therapy in colon surgery, urology and pediatric surgery.
R&D of local ablation in liver malignances, Cryotherapy, Radio frequency ablation and High Intensity focused ultrasound (HIFU).
R&D of Implants of Biomedical material, (percutaneous implants for stomas.)
R&D of Passive and Interactive navigation maps for liver surgery.
Main and co supervisor for 15 PhD candidates
Teaching activity in laparoscopic general surgery and laparoscopic HPB surgery.
Gayet Brice
Institut Mutualiste Montsouris
France

Education:
Degree in general anatomy and organogenesis in 1977
Medical Degree in 1980, Ph D in 1982

Hospital Appointments:
Head of Digestive Diseases Department, Université Paris Descartes,
Since 2010, he is a permanent member of ISIR, the robotic institute of University of Paris (UPMC).

Profile:
He had a diploma in computer science from the Jussieu Faculty of Science at the University of Paris.
Dr Gayet was Professor of Anatomy before becoming Professor of Digestive Surgery.
He was at the forefront of laparoscopy in the end-1980s. His department - gastroenterology, endoscopy, surgery - has become world renowned in multi-disciplinary disease management that focused on treating patients with complex gastrointestinal (600 proctectomies, 450 esophagectomies by laparoscopy and hepatopancreatobilary diseases (over 500 hepatectomies and 250 pancreatectomies by laparoscopy).
Dr Gayet is the author or coauthor of more than 415 publications including over 180 original articles. He has given over 750 presentations or lectures in his career and has edited 110 videos on laparoscopic techniques. Additionally, Professor Gayet has been involved with health care at the national level by working as a councilor to the ministry of health in France, Bernard Kouchner. He is a current member of the French University National Council (CNU).
David A. Geller
University of Pittsburgh
USA

Education:
Northwestern University (BS - 1984), Evanston, IL, USA
Northwestern University Medical School (MD - 1988), Chicago, IL, USA

Hospital Appointments:
University of Pittsburgh Medical Center (UPMC): 1996 – present
Richard L. Simmons Professor of Surgery
Chief, Division of Hepatobiliary and Pancreatic Surgery
Director, UPMC Liver Cancer Center

Profile:
Dr. Geller is the Richard L. Simmons Professor of Surgery at the University of Pittsburgh School of Medicine. He serves as Chief of the Division of Hepatobiliary and Pancreatic Surgery, and Director of the UPMC Liver Cancer Center. Clinically, he specializes in laparoscopic liver resection surgery. His research interests include molecular mechanisms of hepatic injury, and liver cancer cell biology. Dr. Geller is a member of the Society of University Surgeons (President 2009-2010), Society of Surgical Oncology, American Society of Transplant Surgeons, American Surgical Association, AHPBA, IHPBA, SSAT, and the American Society of Clinical Investigation. Dr. Geller has published 260 scientific papers and chapters, and has presented at more than 350 meetings. He has active research grants from the NIH, and is also the Principal Investigator on clinical trials for liver cancer.
Ho-Seong Han
Seoul National University Bundang Hospital
Korea

EDUCATION & DEGREES:
1978-1984 M.D., Seoul National University College of Medicine

POSITIONS:
1984-1989 Intern, Resident, Department of Surgery Seoul National University Hospital
2003- Present. Professor of Department of Surgery
2011- Present. Director of Comprehensive Cancer Center
2012- Present. Director of Future Strategy Bureau
2013- Present. Vice Director in Cancer and Neuroscience Seoul National University Bundang Hospital

MEMBERSHIP:
President, Korean Study Group of Laparoscopic Liver Surgery (2008- Present)
President, Korean Study Group of Pancreatic Surgery (2012- 2014)
Chairman of Board of Committee, Korean Society of Surgical Oncology (2014 – Present)
President, Korean Society of Surgical Metabolism and Nutrition(2014 – Present)
(2010 – 2012)
Chairman of public relations committee, Korean Society of Hepatobiliary Pancreas Surgery (2009 – 2011)
Vice President, Korean Society of Traumatology (2011- Present)

EDITORIAL BOARD:
Associate Editor, Hepatogastroenterology(2010 – Present)
Scientific Advisory Board (Asian Pacific Region), Annals of Surgical Oncology(2011 – Present)
Paulo Herman
University of São Paulo Medical School
Brazil

Education:
Graduated in Medicine at the University of São Paulo Medical School in 1984; Residency (General Surgery and GI Surgery) at the Hospital das Clínicas - University of São Paulo Medical School from 1985 to 1989. Fellowship at Liver Surgery and Liver Transplantation at the Queen Elisabeth Hospital - Birmingham, England.

Profile:
Associate Professor at the Department of Gastroenterology University of São Paulo Medical School.
Head of the Liver Surgery Unit.
Former President of the Brazilian Chapter IHPBA; General Secretary of the 2016 IHPBA World Congress.
Expert Panels

Hironori Kaneko
Toho University School of Medicine
Japan

Education:

1976  Graduate Toho University, School of Medicine, Tokyo, Japan

Hospital Appointments:

2008 -  Chairman and Professor, Department of Surgery, School of Medicine, Toho University
2004 - 2008  Professor, Department of Surgery, Omori Medical Center, Toho University
1996 - 2004  Associated professor of 2nd Department of Surgery, Toho University
1990 - 1996  Assistant professor of 2nd Department of Surgery, Toho University
1987 - 1990  Clinical and Research Fellow; Department of Surgery and Transplantation center,
             Hartford hospital, University of Connecticut
1980 - 1987  Medical Staff Member, 2nd Department of Surgery, Toho University
1979        Medical Staff Member, Department of Surgery and Department of Anesthesiology,
             National Cancer Center
1976 - 1978  Intern, 2nd Department of Surgery, Toho University

Profile:

Dr. Hironori Kaneko is a chairman and professor, Department of Surgery, School of Medicine, Toho University at present. Dr. Kaneko completed his PhD from Toho University, School of Medicine in 1987 and he did surgical training at Hartford Hospital in Connecticut for 3 years. He holds numerous professional appointments as described below. Dr. Kaneko is the Fellow of the American College of Surgeons, Editorial Board Member of Journal of Hepato-Biliary-Pancreatic Science, National Editor of International Association of Surgeons, Gastroenterologists and Oncologists, Member of International Society of Surgery, Member of Endoscopic and Laparoscopic Surgeons of Asia, and the councilor of many Japanese surgical societies including the president of Japanese Liver Study Group of Endoscopic Surgery. He is actively involved in both experimentally and clinical research, has published numerous scientific publication, and serves on academic advisory board. He is initially performed laparoscopic surgery to patient with HCC since 1993 and one of world leader of Laparoscopic liver surgery.
Alan J Koffron
Beaumont Health System

USA

Education:

1988-1992 Medical School: The University of Iowa College of Medicine, Iowa City, Iowa
1996-1997 Resident, Pediatric General Surgery: Toronto Hospital for Sick Children University of Toronto, Toronto, Ontario
1997-1998 Chief Resident, Trauma Surgery: University of Health Sciences/Chicago Medical School, Chicago, Illinois
1999-2001 American Society of Transplant Surgeons (ASTS) Clinical Fellowship, Northwestern University Medical School
2000-2001 Pediatric Liver Transplant and Hepatobiliary Fellowship: Children’s Memorial Hospital, Chicago, Illinois

Hospital Appointments:

2012-Present Health System Chair of Surgery, Beaumont Health System
2008-Present Chief of Surgery William Beaumont Hospital, Royal Oak, Michigan
2008 Director, Multi-organ Transplantation, Department of Surgery, William Beaumont Hospital, Royal Oak, MI

Profile:

A native of Iowa, Dr. Koffron received his undergraduate degree at Iowa State University, Ames, Iowa (BS in Zoology and Chemistry), and graduate degree at the University of Iowa College of Medicine. He went on to pursue post-graduate training in surgery with the Chicago Medical School, pausing for two years of Transplantation Immunology/Virology Research at Northwestern University Medical School, and Pediatric Surgery Training at the Toronto Hospital for Sick Children. He returned to complete general surgery training in Chicago, including two Chief residency years focusing on trauma and thoracic surgery. Dr. Koffron went on to adult transplantation and hepatobiliary surgery at Northwestern University Medical School, followed by pediatric transplantation and hepatobiliary surgery at Children’s Memorial Hospital in Chicago.

Dr. Koffron currently is Professor and Chair of Surgery, Director and Chief of Transplantation, Beaumont Health System. He has authored over 100 publications and 20 book chapters, performed 32 externally-funded research projects, and presented research at greater than 200 scientific meetings worldwide. His clinical focus is hepatobiliary malignancy and the full spectrum of surgical treatment from liver-directed therapy to organ-replacement.
Choon Hyuck David Kwon
Sungkyunkwan University
Korea

Education:

1991.3 ~ 1995.2  Medical Degree, Seoul National University Seoul, Korea
2005.3 ~ 2010.8  Doctor of Philosophy, Seoul National University, Korea
1996.3 ~ 2000.2  Surgical Residency, Seoul National University Hospital, Korea
2003.5 ~ 2005.3  Fellowship, HBP surgery and liver transplantation, Seoul National University Hospital, Korea
2005.4 ~ 2005.8  Fellowship, HBP surgery and liver transplantation, Samsung Medical Center, Korea

Hospital Appointments:

2005.9 ~ 2011.3  Assistant Professor, Dept. of Surgery, Samsung Medical Center, Sungkyunkwan University
                    School of Medicine, Seoul, Korea
2011.4 ~ present  Associate Professor, Dept. of Surgery, Samsung Medical Center, Sungkyunkwan University
                    School of Medicine, Seoul, Korea

Profile:

He is currently working as editorial, scientific, and research board member in various Korean societies related with HPB surgery, liver transplantation, and minimally invasive surgery. He has recently launched a laparoscopic living donor hepatectomy program for both adult and pediatric LDLT in 2013 having performed more than 25 cases. He has attended as operator in about 1000 liver transplantations and has performed more than 500 laparoscopic liver resections until now. He has authored or co-authored in 98 international and domestic peer-reviewed journals in the last 5 years.
Marcel Autran Machado
University of São Paulo
Brazil

Education:

1990 – Graduation University of São Paulo
1992 – General Surgery Residency
1994 – Digestive Surgery Residency

Hospital Appointments:

1994 – Visiting Resident Mayo Clinic
1995 – Digestive Surgery Specialization – Université de Rennes, France
1995 – Médicin Attaché - Centre Hospitalier Regional de Rennes (France)
1999 – Ph.D. Digestive Surgery – University of São Paulo, Brazil
2003 – Professor of Surgery – University of São Paulo, Brazil

Profile:

- More than 150 published papers in Pubmed
- More than 200 laparoscopic liver resections since 2007 (personal experience)
- Described a simplified technique for intrahepatic Glissonian approach for both open and laparoscopic anatomical liver resection
- Published the feasibility of a totally laparoscopic ALPPS
- Member of Scientific Committee of the ALPPS registry
- Ad-hoc reviewer of several journals
- Member of IHPBA and A-HPBA, ACS, Brazilian College of Surgeons and others
- Interested in advanced laparoscopic techniques of liver, pancreas and biliary surgery
Expert Panels

Nicholas O’Rourke
Royal Brisbane Hospital
Australia

Education:

Bachelor of Medicine, Bachelor of Surgery (MBBS) (University of QLD)
FRACS  1991
Fellowship with Merv Rees, Basingstoke, UK

Appointments:

Chairman of General Surgery at Royal Brisbane Hospital
Head of Hepatobiliary Surgery at Royal Brisbane Hospital
Clinical Surgical supervisor for the University of QLD,
Examiner for the Royal Australian College of Surgeons

Profile:

Nick O’Rourke has a long interest in laparoscopic liver and pancreas surgery, having reported the first series of laparoscopic right hepatectomies in 2004. He is the current Chair of Training for the Australian and New Zealand Hepatobiliary Association (ANZHBA), and is the associations immediate past president.
Juan Pekolj

Hospital Italiano Buenos Aires Argentina

Argentina

Dr Pekolj was born in 1959. He attended the School of Medicine in Universidad Nacional de Cuyo (Mendoza) Argentina, and was graduated as MD in 1984. He was resident and Chief of Residents in Surgery in Hospital Italiano of Buenos Aires Argentina (the most complex surgical hospital in Argentina) between 1984 and 1989. After that he gets a staff Surgeon in HBP Surgery Section. In 1992 at University of Nebraska Medical Center (Omaha NE) received training in liver and pancreas transplantation under the direction of the Chair Byers Shaw. He and Dr. de Santibañes developed the Fellowship in HPB Surgery in Hospital Italiano de Buenos Aires Argentina. It was the first in Latin America, with 2 years curricula. Forty five surgeons were trained in the field of HPB surgery since the beginning of the program in 1993.

He also was a pioneer in Argentina in the topics ultrasound for surgeons, laparoscopic skill training courses, ultrasound skill training courses and design of phantoms, HPB laparoscopic surgery, liver and pancreatic resections by laparoscopy, and percutaneous abdominal and biliary procedures.

Dr Pekolj is professor and PhD in Surgery in Medical School of Universidad de Buenos Aires Argentina. He is an active member in local surgical Societies as Asociación Argentina de Cirugía, Academia Argentina de Cirugía, and International societies as AHPBA and IHPBA, and is Fellow of the American College of Surgeons. Nowadays he is the Chief of HPB Surgery Section in General Surgery Service and Member of Liver Transplant Unit at Hospital Italiano de Buenos Aires Argentina, General Secretary of Academia Argentina de Cirugía, Member of the Board of Asociación Argentina de Cirugía and President of 85º Argentine Congress of Surgery.
**Patrick Pessaux**

Institut Hospitalo-Universitaire
France

**Education:**

- Medical Doctor (MD) 2001
- PhD degree in "Analysis of Health systems" 2005
- Professor of Surgery 2007

**Hospital Appointments:**

- Head of the hepatobiliary and pancreatic surgical unit
- Head of the hepatobiliary-pancreatic research program in the Institut Hospito-Universitaire (IHU) of Strasbourg
- Director of the hepatobiliary-pancreatic course in IRCAD

**Profile:**

- General Secretary of the French Association of Surgery: AFC (Association Française de Chirurgie)
- Associated Editor of World Journal of Emergency Surgery
Olivier Scatton
Hôpital Pitié Salpétrière
France

Education:

MD in 2002
PhD in 2008

Hospital Appointments:

Residency in surgery, 1996-2003
Gold Medal of Surgery, 2003
Fellow, 2004 - 2007
Assistant Professor, 2007 – 2011
Professor of Surgery, 2011
Director of HBP Surgery and Liver Transplantation, Pitié-Salpétrière, Paris, 2014

Profile:

HBP Surgeon since 2004 and also specialized in Liver Transplantation.
Trained in laparoscopy (digestive and HPB) since 2004
Laparoscopic living donor since 2004
Liver transplantation including living donor, split liver transplantation
Member of the Scientific council of the Agence de Biomedecine (ABM)
Expert for liver living donation for the ABM since 2008.
Member of the International Hepato-Pancreato-Biliary Association since 2005
Secretary of the IHPBA Paris congress in 2012
Expert Panels

Michael R. Schön
Klinikum Karlsruhe
Germany

Education:

1985 Scholarship University of North Carolina at Chapel Hill, School of Medicine, Department of Pharmacology
1987 University of Düsseldorf, School of Medicine

Hospital Appointments:

1987-1989 Fellow, Department of Surgery, University of Heidelberg
1989-1991 Research Fellow, Department of Surgery, University of Cambridge, UK
1991-2002 Fellow, Department of Surgery, Humboldt-University, Virchow Klinikum and Charité, Berlin
1998 Board Certification General Surgery
2000 Board Certification Vascular Surgery
2002-2007 Consultant Department of Surgery, University of Leipzig
2005 Board Certification Visceral Surgery
2005 Professor of Surgery
2006 Board member: Center of Clinical Studies, KKSL, University of Leipzig
2007 Director: Department of Surgery Klinikum Karlsruhe

Profile:

Member study group: Liver and Pancreatic Surgery, Deutsche Gesellschaft für Chirurgie
Faculty: Training Courses in laparoscopic liver surgery, Wendisch-Rietz, Berlin and IRCAD-Strassbourg, France
Expert Panels

Olivier Soubrane
Beaujon Hospital
France

Specialty areas
Benign and malignant diseases of the liver, biliary tract and pancreas
Liver and biliary surgery
Laparoscopic liver resection
Liver transplantation in adults and children, including split liver
Right lobe and left lateral section live donor liver transplantation

Current Professional Activities
Chief of service – Sept 2014
Service of HPB Surgery and Liver Transplant, Beaujon Hospital, Clichy, France
Chief of service – Nov 2009 – Aug 2014
Service of HPB Surgery and Liver Transplant, St Antoine Hospital, Paris, France
Chief of Department – 2007 – 2009
Department of Liver Diseases, Cochin Hospital, Paris, France
Chief of Service – 2003 – 2006
Department of surgery, Cochin Hospital, Paris, France
Professor of Digestive Surgery (Paris Descartes University)
Hospital instruction since 1996
Director of the liver transplant program
Hospital Cochin Paris 1996- 2009, Hospital St Antoine 2009 to present
Laboratory Director 1998 - 2006
Therapeutic innovations in Liver diseases; EA 1633, Faculty of Medicine Cochin-Port Royal, University Paris Descartes

Licenses and Certifications
Baccalaureate scientific 1976.
Doctorate in Medicine, Faculty of Medicine Lariboisiere St Louis, 1986.
University Paris VII
Gold Medal of Surgery, 1988
Hospitals of Paris

Research Interest
Liver regeneration
Ischemia-reperfusion injury

Professional Affiliations
Member of Scientific Council of the Faculty of Medicine Cochin-Port Royal, University Paris Descartes
Elected 1997/ Re-elected 2001
Member of Commission for structure, hygiene and security of the faculty of Medicine Cochin-Port Royal 1997
Jury Member National examination Board
Reserved for foreigners and the right to practice medicine in France, 1997
Jury Member National examination board
Reserved for foreign surgeons in South France, 1998

Committee member of experts in Biomedical research of INSERM, 1999-2003
Member of the National Committee of Clinical research, French Ministry of Health, 1999-2000
Member of Scientific Council of PhD in Surgical Sciences, 2000-2005
Nominated member of commission #5 of INSERM (transplantation, gene therapy, cell therapy), 2000-2003

Memberships in professional societies
Member of the “French association for the study of the liver” since 1992.
Administration council of the of the “French association for the study of the liver” (1997- 2000).
French association of hepatobiliary surgery and liver transplantation since 2002.
Member of the International Hepato-Pancreato-Biliary Association since 2005
Member of the International Liver Transplant Society since 2008
Faculty Member of the International Association of Surgeons, Gastroenterologists and Oncologists since 2013
Member of the Surgical Society of the Alimentary Tract since 2014

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Atsushi Sugioka
Fujita Health University
Japan

**Education and Training:**

1982
Graduated from Keio University School of Medicine

1982-1983
Residency in Department of Surgery, Keio University

1983-1984
Medical Staff in Surgery, Nihon-Kokan Hospital

1984-1985
Medical Staff in Surgery, National Saitama Hospital

1985-1987
Lecturer, Department of Surgery, Keio University

**Hospital Appointments:**

1987-1992
Vice director of Surgery, Hamamatsu Red Cross Hospital

**Academic Appointments:**

1992-1997
Lecturer, 1st Department of Gastroenterological Surgery, Fujita Health University

1997-1999
Assistant Professor, 1st Department of Gastroenterological Surgery, Fujita Health University

1999-2005
Associate Professor, 1st Department of Gastroenterological Surgery, Fujita Health University

2005-date
Professor and Chairman, Department of Hepatobiliary Surgery, Fujita Health University
Minoru Tanabe  
Tokyo Medical and Dental University
Japan

Education:

1996  Ph.D. Keio University School of Medicine, Tokyo, Japan
1985  M.D. Keio University School of Medicine, Tokyo, Japan

Hospital Appointments:

April, 2013 –  Professor & Chairman, Department of Hepatobiliary & Pancreatic Surgery, Tokyo Medical and Dental University, Tokyo.
2008 – 2013  Associate Professor, Chief of HPB and Transplant Surgery, Department of Surgery, Keio University School of Medicine, Tokyo.
1999 – 2008  Staff surgeon and Assistant Professor, Department of Surgery, Keio University School of Medicine, Tokyo.
1991 – 1994  Research Fellow, Transplantation Institute, University of Pittsburgh Medical Center, Pittsburgh, USA.

Profile:

After graduating from Keio University School of Medicine, I received post-graduate training in Keio University Hospital. Then I participated in research program and worked as visiting surgeon at Transplant Surgery, University of Pittsburgh from 1991 to1994, where Professor T.E. Starzel supervised my work. I returned to Japan in 1994 and was invited as a teaching staff of General & Gastrointestinal Surgery in Keio University in 1999. I served as a chief & Associate Professor of the Division of HBP & Transplant Surgery in Keio University from 2008 to 2013. From April 1, 2013, I was appointed as a Professor & Chairman of Department of Hepatobiliary & Pancreatic Surgery in Tokyo Medical and Dental University. Besides liver transplantation and advanced HBP surgery, I am specialized in minimal invasive HBP surgery such as laparoscopic operation and tumor ablation therapy.
Chung Ngai Tang
Pamela Youde Nethersole Eastern Hospital
Hong Kong

Education:
1989 M.B.B.S University of Hong Kong

Hospital Appointments:
• Consultant Surgeon, Chief of Service
• Chief of Hepatobiliary Surgery
• Director of Minimal Access Surgery Training Centre
• Deputy Hospital Chief Executive

Honorary Appointments:
• Honorary Clinical Associate Professor (The Chinese University of Hong Kong)
• Honorary Clinical Associate Professor (The University of Hong Kong)
• Honorary Professor (Tung Wah College, Hong Kong)
• Founding President of the Hong Kong Society of Robotic Surgery
• Secretary General of Clinical Robotic Surgery Association (CRSA)
Roberto Troisi
Ghent University Hospital Medical School
Belgium

Education:

1989  M.B.B.S University of Naples “Federico II” (Italy)
1994  Board certified Digestive Surgeon (Italy)
1994  D.U. Laparoscopic Surgery (France)
1997  Board certified General Surgeon (Belgium)

Hospital Appointments:

• Chairman Dept. of General & Hepatobiliary Surgery Ghent University Hospital (2009)
• Hon. Consultant Surgeon at the King Faisal Specialist Hospital, Riyadh -KSA (2013; 2014)
  “Establishing the Laparoscopic LD Hepatectomy Program”

Honorary Appointments:

• Associate Professor of Surgery (Ghent Faculty of Medicine, Belgium) (2004)
• Appointed Professor of General Surgery (Salerno Faculty of Medicine, Italy) (2010)
• Past President Belgian Transplantation Society (2010-2012)
• Board Eurotransplant Foundation (2010-2012)
• Board European Liver Intestine Transplant Association (ELITA) (2012)
• Director Laparoscopic liver resection Masterclasses (Alliver.org) Institute of Anatomy, Ghent Faculty of
  Medicine (2010)
Allan Tsung
University of Pittsburgh Medical Center
USA

Education:

UNDERGRADUATE: Cornell University B.S.

GRADUATE: SUNY Health Science M.D.
Center at Brooklyn

POSTGRADUATE: University of Pittsburgh Surgery Residency
University of Pittsburgh HPB Fellowship

Hospital Appointments:

Roberta G. Simmons Associate Professor of Surgery

Profile:

Dr. Allan Tsung is currently an Associate Professor of Surgery at the University of Pittsburgh and holds the Roberta Simmons Endowed Chair. His clinical interests center on the evaluation and management of patients with liver, bile duct, and pancreas cancers. He is specialty-trained in liver and pancreatic surgery, with a focus in minimally invasive (laparoscopic and robotic) surgery. Dr. Tsung also co-leads the liver-directed therapy program utilizing hepatic artery chemoembolization and Yttrium 90 internal radiation for primary and metastatic liver cancers. Dr. Tsung’s primary research interest is directed toward hepatobiliary clinical trials and the role of inflammation in tumorigenesis of primary and metastatic liver cancers. Dr. Tsung has active research grants from the Howard Hughes Medical Institute and the NIH, and is also the Principal Investigator on multiple clinical trials for liver cancer.
Ronald M. van Dam

Maastricht University Medical Center, Netherlands/Univeristätsklinikum Aachen, Germany

The Netherlands / Germany

1993 Medical School at Groningen University, The Netherlands.
1995 Doctor of Medicin at Amsterdam Free University, The Netherlands.
1996 Surgical training at Maastricht University Medical Center and Eindhoven Deaconess Hospital, The Netherlands.
2000 Founder and CEO of iMedical ltd. Healthcare Internet Solutions.
2004 Fellow in Gastro-Intestinal- and Oncologic Surgery at Maastricht University Medical Center, The Netherlands.
2006 Consultant surgeon in HPB surgery at the European HPB Center Aachen Maastricht. of Maastricht University Medical Center, The Netherlands and Universitätsklinikum Aachen, Germany.
2010 Principal investigator in the European multicenter randomized controlled ORANGE II trial, ORANGE II Plus trial and PANDA trial. Optimizing perioperative care in liver and pancreas surgery and assessing the benefits of laparoscopic strategies in liver surgery.

Profile:

Working as consultant surgeon at the Aachen Maastricht HPB team. Lecturer at Maastricht University Medical School. Responsible for clinical trials, clinical process optimization in HPB surgery and development of minimal invasive liver- and pancreas-surgery. Co-developer of the ERAS enhanced recovery liver surgery program and the ERAS enhanced recovery pancreas surgery program.
Consensus Information

Period

4th - 6th October, 2014

Venue

Morioka Grand Hotel
1-10 Atagoshita, Morioka City, Iwate, 020-8501, Japan
TEL: +81-19-625-2111

Theme

Improving Quality of Laparoscopic Liver Resection

Official Language

English

Exhibition

A technical exhibition will be held during the following hours at Hiten-no ma.
October 4th, Saturday 8:00-19:30
October 5th, Sunday 8:00-19:30
October 6th, Monday 8:00-16:00

Mobile Phones

Please turn off your mobile phones or switch it to the silent mode, and refrain from talking on the phone during the program.

Smoking

Smoking is prohibited anywhere except in the designated smoking areas.

Social Events

Cocktail hour
Date: 4th and 5th October, 2014
Time: 18:00-19:30
Place: Hiten-no ma, Morioka Grand Hotel 1F

Welcome Reception
Date: 4th October, 2014
Time: 19:30-21:30
Place: Hikan-no ma, Morioka Grand Hotel 1F
Fee: JPY 5,000

Gala Dinner
Date: 5th October, 2014
Time: 19:30-21:30
Place: Hobu-no ma, Morioka Grand Hotel 1F
Fee: JPY 7,000
Registration

Registration Desk

The Registration Desk will be located in front of the Hiten-no ma, 1F, Morioka Grand Hotel and will be operating as follows:
October 4th, Saturday 7:30-17:30
October 5th, Sunday 7:30-17:30
October 6th, Monday 7:30-16:00

Registration Fees

<table>
<thead>
<tr>
<th>Category</th>
<th>On-Site Registration (Available at the conference venue)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor/Trainee</td>
<td>15,000 JPY</td>
</tr>
<tr>
<td>Welcome Reception</td>
<td>5,000 JPY</td>
</tr>
<tr>
<td>Gala Dinner</td>
<td>7,000 JPY</td>
</tr>
<tr>
<td>Accompanying Person</td>
<td>10,000 JPY *Includes Welcome Reception and Gala Dinner</td>
</tr>
</tbody>
</table>

On-site Registration

Payment must be made only in Japanese Yen, by cash.
Floor Plan

[1F]

Entrance

Poster Presentation Exhibition
[Hiten-no-ma]

Cafe “Bellevue”

Restaurant “Grand-Veneur”

Welcome Reception
[Hokan-no-ma]

4th October, 19:30～

Gala Dinner
[Hibu-no-ma]

5th October, 19:30～

[B1F]

Main Hall
[Hiryo-no-ma]

Chapel

[1F]

Entrance

Poster Presentation Exhibition
[Hiten-no-ma]

Cafe “Bellevue”

Restaurant “Grand-Veneur”

Welcome Reception
[Hokan-no-ma]

4th October, 19:30～

Gala Dinner
[Hibu-no-ma]

5th October, 19:30～

[B1F]

Main Hall
[Hiryo-no-ma]

Chapel
Instruction for Moderators and Speakers

Session Time

<table>
<thead>
<tr>
<th>Session</th>
<th>Presentation</th>
<th>Discussion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experts Video Session</td>
<td>8 mins.</td>
<td>2 mins.</td>
<td>10 mins.</td>
</tr>
<tr>
<td>Selected Video Session</td>
<td>8 mins.</td>
<td>2 mins.</td>
<td>10 mins.</td>
</tr>
<tr>
<td>Poster Session</td>
<td>4 mins.</td>
<td>2 mins.</td>
<td>6 mins.</td>
</tr>
</tbody>
</table>

Moderators

All moderators are asked to be in their session room no later than 15 minutes prior to the session. Moderators should make effort to maintain the time schedule in cooperation with the time keeper, and give warnings to the speakers, if needed.

Speaker Ready Desk

There is no Speaker Ready Desk.
Please register your presentation slides at the operator’s desk in Hiryu-no-ma at least 30 minutes before your session starts.

Operating hours

- October 4th, Saturday  7:30-17:30
- October 5th, Sunday    7:30-17:30
- October 6th, Monday    7:30-16:00

PowerPoint Presenters

Please bring your presentation on a Windows readable USB flash Drive. In case using a video files, you should bring your own laptop and make sure that the data is applicable to Windows Media Player.
Only the standard fonts with Windows 7 (OS) (e.g., Arial, Arial Black, Century, Century Gothic, Times New Roman) are accepted for your presentation file, and unusual fonts may not be displayed properly on the computers in session rooms.
Include any external files utilized (e.g. movie files) in the same folder as your presentation file. Copy the entire folder to the USB flash Drive.
Video clips (other than certain animated gif files) are not embedded in PowerPoint presentations; you will need to bring the own laptops and the power cable.
Separate video files (WMV type is recommended) and submit them along with your presentation file.
In order to avoid virus infection, please scan your presentation file with updated anti-virus software beforehand.

Important note for Macintosh users

You should bring your own Macintosh since there would be technical issues that can arise when PowerPoint files created on a Macintosh are run on a Windows PC.
Speakers using their own laptops MUST HAVE a VGA D-sub 15pin female output. Special video output cable is required for some laptops to use the D-sub 15pin to connect to external monitors and data projectors.
Please note that we are not equipped with that special cable and you must bring it in case it is necessary. The laptop output resolution should be in XGA (1024×768). The higher resolutions than the native resolution (1024×768) would possibly lose some information or not project by forcing the data projector into a compression mode.
You should have your data backed up in case of any computer trouble.
Please turn off the screen-saver and energy saving mode beforehand.
**Poster Session**

*Display*
✓ Please refer to following poster image for your poster.
✓ Please present a label showing the title, institution and the speaker's name.
✓ Pins for mounting will be available at the venue.
✓ Posters should be brought to the conference and not mailed, as the Organizing Committee cannot be responsible for any loss or mishandling.

![Poster dimensions](image)

**Presentation schedule**

Presenters are requested to follow the schedule below in mounting their posters on their assigned boards. A poster program number will be posted on each poster board.
Length of presentation: **6 minutes** (4minutes presentation, 2minutes discussion)

<table>
<thead>
<tr>
<th></th>
<th>4th October</th>
<th>5th October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>7:30-12:00</td>
<td>7:30-12:00</td>
</tr>
<tr>
<td>Presentation</td>
<td>18:00-19:30</td>
<td>18:00-19:30</td>
</tr>
<tr>
<td>Removal</td>
<td>19:30-20:00</td>
<td>-16:00 6th October</td>
</tr>
</tbody>
</table>

**For speakers on 4th October,**
Please remove your poster(s) between 19:30-20:00. For those who have not removed poster(s) until 20:00, the secretariat will keep it until the end of the conference at Registration Desk. 1F, Morioka Grand Hotel.

**For speakers on 5th October,**
Please remove your poster(s) before 16:00, 6th October.

*The secretariat will discard any posters that have remained after 16:00, 6th October.*
Program at a Glance

Day 1 (Oct 4, 2014)
- Opening Ceremony
- Impact of the Louisville Consensus
- Experts Video Session
- Coffee Break
- Selected Video Session 1
- How to build consensus
  Liver surgery data from NSQIP
- The spread of LLR -CQ5
- Luncheon Presentation
- Short term comparative outcomes -CQ1
- Coffee Break
- Short term comparative outcomes -2
- Donor Hepatectomy -CQ14
- Poster tour with cocktails
- Welcome Reception

Day 2 (Oct. 5, 2014)
- Selected Video Session 2
- Coffee Break
- Long term comparative outcomes -CQ2
- Patient selection
- Role of hybrid and Hals -CQ7
- Role of robotic hepatectomy -CQ8
- Conceptual change -CQ9
- Cutting edge areas
- Coffee Break
- IWATE Criteria
- RCT-CQ17
- Poster tour with cocktails
- Gala Dinner

Day 3 (Oct. 6, 2014)
- Basics and tips for LLR
- Parenchymal transection and energy devices-CQ11&13
- Coffee Break
- Hilar approach-CQ12
- Luncheon Presentation
- Consensus building-1
- Consensus building-2
- Coffee Break
- Conclusion
- Closing Remarks
### Day 1 (October 4, 2014)

#### 8:10-8:15
Opening Ceremony

#### 8:15-8:30
Impact of The Louisville consensus

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:15-8:30</td>
<td>Joseph Buell</td>
<td>USA</td>
</tr>
</tbody>
</table>

#### 8:30-10:10
Experts Video Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-10:10</td>
<td>Joseph Buell</td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td>Marcel Autran Machado</td>
<td>Brazil</td>
</tr>
</tbody>
</table>

- **Donor right** (8’)
  - Olivier Soubrane
    - France
- **Donor left** (8’)
  - Daniel Cherqui
    - France
- **Anatomic resection** (8’)
  - Ho-Seong Han
    - Korea
- **Robotic hepatectomy** (8’)
  - Chung-Ngai Tang
    - China
- **Higher approach** (8’)
  - Brice Gayet
    - France
- **Argentina way** (8’)
  - Juan Pekolj
    - Argentina
- **American way** (8’)
  - Horacio Asbun
    - USA
- **Brazilian way** (8’)
  - Paulo Herman
    - Brazil

#### 10:10-10:30
Coffee Break

#### 10:30-11:00
Selected Video Session 1

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30-11:00</td>
<td>Giulio Belli</td>
<td>Italy</td>
</tr>
<tr>
<td></td>
<td>Xiujun Cai</td>
<td>China</td>
</tr>
</tbody>
</table>

- **Laparoscopic anatomical liver resection of S8**
  - Goro Honda
    - Japan
- **A Novel Extra-Glissonian and Anterior approach for totally laparoscopic difficult right hepatectomy**
  - Thuan Nguyen
    - Viet Nam
- **Pure laparoscopic resection of caudate lobe liver cancer**
  - Tan To Cheung
    - Hong Kong

#### 11:00-11:20
How to build consensus

<table>
<thead>
<tr>
<th>Time</th>
<th>Chair</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00-11:20</td>
<td>Steven Strasberg</td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td>Jeffrey Barkun</td>
<td>Canada</td>
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</table>

#### 11:20-11:30
Liver surgery data from NSQIP

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:20-11:30</td>
<td>Steven Strasberg</td>
<td>USA</td>
</tr>
</tbody>
</table>

#### 11:30-12:30
The spread of LLR -CQ5

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:30-12:30</td>
<td>Ho-Seong Han</td>
<td>Korea</td>
</tr>
<tr>
<td></td>
<td>Horacio Asbun</td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td>Taizo Hibi</td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>Michael R. Schön</td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td>Xiaoping Chen</td>
<td>China</td>
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<tr>
<td>12:30-13:30</td>
<td>Luncheon Presentation-1</td>
<td></td>
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<tr>
<td>------------</td>
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<td></td>
</tr>
<tr>
<td>Why 3D and why not</td>
<td>Katsuki Fuchu, Japan</td>
<td></td>
</tr>
<tr>
<td>Chair: Masakazu Yamamoto, Japan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A New Era of Laparoscopic Liver Resection - Experience of 3D Imaging System and THUNDERBEAT-</td>
<td>Go Wakabayashi, Japan</td>
<td></td>
</tr>
<tr>
<td><strong>Sponsored by:</strong> OLymus Medical Systems corp./SonyBusiness solutions corp.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LiVac-A. revolution in liver retraction</td>
<td>Philip Gan, Australia</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>13:30-15:30</th>
<th>Short term comparative outcomes - CQ1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair: Daniel Cherqui, France</td>
<td></td>
</tr>
<tr>
<td>Chair: Hironori Kaneko, Japan</td>
<td></td>
</tr>
<tr>
<td>Minor (left lateral &amp; other) (15’)</td>
<td>Olivier Scatton, France</td>
</tr>
<tr>
<td>Major (right hepatectomy &amp; other) (15’)</td>
<td>Mohammad Abu Hilal, UK</td>
</tr>
<tr>
<td>Cirrhotic liver (15’)</td>
<td>Kuo-Hsin Chen, Taiwan</td>
</tr>
<tr>
<td>Meta-analyses (15’)</td>
<td>David Geller, USA</td>
</tr>
</tbody>
</table>

| 15:30-15:50 | Coffee Break |

<table>
<thead>
<tr>
<th>15:50-17:20</th>
<th>Short term comparative outcomes-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair: Horacio Asbun, USA</td>
<td></td>
</tr>
<tr>
<td>Chair: Mohammad Abu Hilal, UK</td>
<td></td>
</tr>
<tr>
<td>LOS &amp; COST (15’)-CQ3</td>
<td>Sean Cleary, Canada</td>
</tr>
<tr>
<td>QOL &amp; pain control (15’)-CQ4</td>
<td>Nicholas O’Rourke, Australia</td>
</tr>
<tr>
<td>Single incision hepatectomy (15’)</td>
<td>Luca Aldrighetti, Italy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>17:20-17:50</th>
<th>Donor hepatectomy - CQ14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair: Go Wakabayashi</td>
<td></td>
</tr>
<tr>
<td>Chair: Oliver Scatton, France</td>
<td></td>
</tr>
<tr>
<td>Laparoscopic donor hepatectomy (15’)</td>
<td>Roberto Troisi, Belgium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>18:00-19:30</th>
<th>Poster tour with cocktail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair: Hong-Jin Kim, Korea</td>
<td></td>
</tr>
<tr>
<td>Chair: Mitsuo Shimada, Japan</td>
<td></td>
</tr>
<tr>
<td>Scoring System to Predict the Ease of Laparoscopic Liver Resection</td>
<td>Kumar Palaniappan, India</td>
</tr>
<tr>
<td>Classification of Technical Demand for Laparoscopic Liver Resection</td>
<td>Yoshihuni Kawaguchi, France</td>
</tr>
<tr>
<td>Trendspotting of Robotic Liver Resection after Systemic Review</td>
<td>Cheng-Maw Ho, Taiwan</td>
</tr>
<tr>
<td>Robotic hepatectomy, Initial experience at Singapore General Hospital</td>
<td>Juinn Huar Kam, Singapore</td>
</tr>
<tr>
<td>Robotics in Liver Surgery - Single Surgeon Experience in a Large Scale Tertiary Care Institution</td>
<td>Ramanathan Madras Seshadri, USA</td>
</tr>
<tr>
<td>Robotic Anatomical Liver Resection with Glissonian approach</td>
<td>Jin Ho Lee, Korea</td>
</tr>
<tr>
<td>Poster Session2</td>
<td>Chair: Chung Yip Chan</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>18:45-18:51</td>
<td>Transarterial Chemoembolization Prior to Laparoscopic Liver Resection for Hepatocellular Carcinoma</td>
</tr>
<tr>
<td>18:51-18:57</td>
<td>Effectiveness of Laparoscopic Hepatic Resection for Hepatocellular Carcinoma -Comparison to Open Surgery-</td>
</tr>
<tr>
<td>18:57-19:03</td>
<td>Short and middle term outcomes after laparoscopic versus open liver resection for hepatocellular carcinoma: A single institution experience.</td>
</tr>
<tr>
<td>19:03-19:09</td>
<td>Early laparoscopic liver resection for spontaneously ruptured hepatocellular carcinoma</td>
</tr>
<tr>
<td>19:09-19:15</td>
<td>Benefit of laparoscopic splenectomy and hepatectomy for HCC in patient of liver cirrhosis with portal hypertension</td>
</tr>
<tr>
<td>19:15-19:21</td>
<td>Laparoscopic hepatectomy in Hokkaido University Hospital</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Poster Session3</th>
<th>Chair: Jigjidsuren Chinburen</th>
<th>Mongolia</th>
</tr>
</thead>
<tbody>
<tr>
<td>18:00-18:06</td>
<td>Should we be afraid of conversion in laparoscopic major liver resection? A multi-institutional analysis of the incidence, risk factors and consequences of conversion.</td>
<td>David Fuks</td>
</tr>
<tr>
<td>18:06-18:12</td>
<td>Learning Curve of Laparoscopic Left Lateral Sectionectomy: a feasible and safe stairway for a gold standard procedure. Results from an international multi-institutional analysis on 245 cases from four single surgeons.</td>
<td>Francesca Ratti</td>
</tr>
<tr>
<td>18:12-18:18</td>
<td>The single-surgeon learning curve in laparoscopic liver resection: a continuous evolving process through stepwise difficulties. Analysis of 341 procedures over ten years time.</td>
<td>F. Tomassini</td>
</tr>
<tr>
<td>18:18-18:24</td>
<td>Laparoscopic Writing: A New Way to Improve Laparoscopic Precision in Beginners</td>
<td>Kithsiri Janakantha Senanayake</td>
</tr>
<tr>
<td>18:24-18:30</td>
<td>Need for Laparoscopic Liver Resection in a Liver Transplant/HPB Unit</td>
<td>Kumar Palaniappan</td>
</tr>
<tr>
<td>18:30-18:36</td>
<td>Learning curve for major laparoscopic liver resection: experience of a single center</td>
<td>David Fuks</td>
</tr>
<tr>
<td>18:36-18:42</td>
<td>The Influence of the Learning Curve in the Results of the Laparoscopic Liver Surgery</td>
<td>Ricardo Robles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster Session4</th>
<th>Chair: Giovanni Dapri</th>
<th>Belgium</th>
</tr>
</thead>
<tbody>
<tr>
<td>18:45-18:51</td>
<td>The cost and cost effectiveness of replacing open surgery with laparoscopic surgery in liver resections for colorectal metastases.</td>
<td>Asmund Avdem Fretland</td>
</tr>
<tr>
<td>18:51-18:57</td>
<td>Laparoscopic hepatectomy for hepatocellular carcinoma using a puncture method by indocyanine green injection under laparoscopic ultrasound</td>
<td>Masahiko Sakoda</td>
</tr>
<tr>
<td>18:57-19:03</td>
<td>An experimental study on the relationships among airway pressure, central venous pressure and pneumoperitoneum pressure in pure laparoscopic hepatectomy</td>
<td>Goro Honda</td>
</tr>
<tr>
<td>19:03-19:09</td>
<td>Open liver resection induced an increased inflammatory response compared to laparoscopic liver resection.</td>
<td>Asmund Avdem Fretland</td>
</tr>
<tr>
<td>19:09-19:15</td>
<td>Prospective and randomized study to analyze the inflammatory response after Hand assisted laparoscopic and open liver resection in patients with colorectal liver metastasis (CRLM).</td>
<td>Ricardo Robles</td>
</tr>
<tr>
<td>19:15-19:21</td>
<td>The use of intercostal and transthoracic trocars for laparoscopic resection of segment VII/VIII dome liver lesions compared to conventional laparoscopic approaches</td>
<td>Bavahuna Manoharan</td>
</tr>
<tr>
<td>19:21-19:27</td>
<td>Quality of life after open and laparoscopic liver resection - results from a randomized controlled trial</td>
<td>Asmund Avdem Fretland</td>
</tr>
</tbody>
</table>
### 8:00-9:40

#### Selected Video Session 2

<table>
<thead>
<tr>
<th>Session</th>
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<tbody>
<tr>
<td>Single-incision Transumbilical Laparoscopic Liver Surgery</td>
<td>Giovanni Dapri, Belgium</td>
</tr>
<tr>
<td>Laparoscopic anatomical liver resection of Segment VIII using 3D computer-assisted simulation and navigation</td>
<td>Yuta Abe, Japan</td>
</tr>
<tr>
<td>Totally laparoscopic liver resection for Hepatocellular Carcinoma Glissonian approach for most of anatomical liver resections</td>
<td>Long Tran Cong Duy, Viet Nam</td>
</tr>
<tr>
<td>LaparoEndoscopic Single Site (LESS) surgery for Left Lateral hepatic Sectionectomy (LLS) as an alternative to traditional laparoscopy</td>
<td>Francesca Ratti, Italy</td>
</tr>
<tr>
<td>Laparoscopic anatomic S8 segmentectomy</td>
<td>Yutarao Kato, Japan</td>
</tr>
<tr>
<td>Laparoscopic extended left hepatectomy for a metastatic colorectal cancer overriding confluence of left and middle hepatic vein</td>
<td>Tehung Chen, Taiwan</td>
</tr>
<tr>
<td>Pure Laparoscopic Full Left Hepatectomy Including The Middle Hepatic Vein for Adult Living Donor Liver Transplantation: Description of The Technique</td>
<td>Federico Tomassini, Belgium</td>
</tr>
<tr>
<td>Laparoscopic Liver Surgery in Obese Patients</td>
<td>Claudius Conrad, USA</td>
</tr>
<tr>
<td>Laparoscopic extended right hepatectomy with biliary reconstruction for hilar cholangiocarcinoma</td>
<td>Shin Nakahira, Japan</td>
</tr>
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</table>

#### 9:40-10:00

**Coffee Break**

#### 10:00-11:30

#### Long term comparative outcomes -CQ2

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
</tr>
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<td>HCC (15’)</td>
<td>Giulio Belli, Italy</td>
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<td>CRM (15’)</td>
<td>Bjørn Edwin, Norway</td>
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<td>Meta-analyses (15’)</td>
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#### 11:30-12:30

#### Patient selection

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<td>Difficulty score (15’)-CQ6</td>
<td>Minoru Tanabe, Japan</td>
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<td>Role of Hybrid and HALS-CQ7</td>
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Day 3 (October 6, 2014)

8:00-9:00 Basics and tips for LLR

Chair: Olivier Soubrane  France
Chair: Michael R. Schön  Germany

- Essentials in bleeding control (15’)-CQ10  Ronald Van Dam  The Netherlands
- How to start major hepatectomy (15’)  Ibrahim Dagher  France
- How I started pure right donor (15’)  Choon Hyuck David Kwon  Korea

9:00-10:40 Parenchymal Transection And Energy Devices-CQ11&13

Chair: Sean Cleary  Canada
Chair: Alan Koffron  USA

- Stapler hepatectomy (15’)  Joseph Buell  USA
- Peng’s dissector (15’)  Xiujun Cai  China
- CUSA or clamp crush (15’)  Hironori Kaneko  Japan

Poster Session 8

Chair: Yoo-Seok Yoon  Korea
Chair: Shoji Kubo  Japan

- Hand-Assisted Laparoscopic Liver Surgery (HALLS): Indications and Results  Ricardo Robles  Spain
- Review of laparoscopic hepatectomy in conformity with the medical insurance system  Yoichi Toyama  Japan
- Pure laparoscopic liver resection for the caudate lobe; its advantage over laparotomy  Hideaki Sueoka  Japan
- A prospective and randomized study comparing open and laparoscopic liver surgery in colorectal liver metastases  Ricardo Robles  Spain
- Standard Laparoscopic Resection and Laparoscopic Wedge Resections of Hepatocellular adenomas; a measurement of clinical and histopathological outcomes  Bavahuna Manoharan  Australia
- Initial results of the laparoscopic hepatectomy (LH) for small liver cancer  Akihiro Takai  Japan

Laparoscopy decreases pulmonary complications in patients undergoing major liver resection: a propensity score analysis  David Fuks  France
Laparoscopic Hepatectomy for Superoposterior Segments (S4 superior, 7,8) in Patients with HCC  Atsuyuki Maeda  Japan
Laparoscopic liver resection: Our early experience of 25 cases  Akira Kenjo  Japan
Short- and Long-Term Outcomes of Laparoscopic Versus Open Hepatectomy for Small Malignant Liver Tumors  Fumitoshi Hirokawa  Japan

Consensus Sessions: Discussions with the Jury
ABC
Discussions with the Expert Panels

Jury: Steven Strasberg (Chair)
Jeffrey Barkun, Pierre-Alain Clavien, William Jarnagin, Palepu Jagannath, Norhiro Kokudo, Chung-Mau Lo, Russell Strong, Masakazu Yamamoto

18:18-18:24 Laparoscopy decreases pulmonary complications in patients undergoing major liver resection: a propensity score analysis  David Fuks  France
18:24-18:30 Laparoscopic Hepatectomy for Superoposterior Segments (S4 superior, 7,8) in Patients with HCC  Atsuyuki Maeda  Japan
18:30-18:36 Laparoscopic liver resection: Our early experience of 25 cases  Akira Kenjo  Japan
18:36-18:42 Short- and Long-Term Outcomes of Laparoscopic Versus Open Hepatectomy for Small Malignant Liver Tumors  Fumitoshi Hirokawa  Japan
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<td>Kuo-Hsin Chen, Taiwan</td>
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<td>Intra hepatic Glissonian (15’)</td>
<td>Marcel Autran Machado, Brazil</td>
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<td>Individual approach (15’)</td>
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<td>12:00-13:00</td>
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<td>Chair: Minoru Tanabe, Japan</td>
<td>Sean Cleary, Canada</td>
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<td>Laparoscopic liver resection with waterjet technology</td>
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<td>Laparoscopic liver resection-Light up navigation by ICG-</td>
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<td>Chair: Jeffrey Barkun, Canada</td>
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<td>Principal CQ authors present statements and recommendations</td>
<td>These statements and recommendations will be reviewed by the jury</td>
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<td>Chair: Nicholas O’Rourke, Australia</td>
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<td>Principal CQ authors present statements and recommendations</td>
<td>The voting among the audience will define the strength of these recommendations</td>
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Laparoscopic anatomical liver resection of S8

Goro Honda, Masanao Kurata, Shin Kobayashi, Katsunori Sakamoto, Yukihiro Okuda, Masahiko Honjo
Tokyo Metropolitan Komagome Hospital

Because the roots of Glissonean branches of S8 are located at the deepest portion, some particular techniques are required for anatomical resection of S8. We will present two different procedures for the anatomical resection of S8.

Case 1: Laparoscopic anatomical resection of the dorsal half-segment of S8 for a solitary hepatocellular carcinoma of 1.8 cm in the dorsal side of S8. The most dorsal of the Glissonean branches of S8 was isolated at this root by dividing the cranial portion of the anterior fissure. After cutting this Glissonean branch, the dorsal half-segment area of S8 was identified and then resected, exposing the right hepatic vein.

Case 2: Laparoscopic anatomical resection of S8 by exposing the Glissonean tree of the anterior section continuously from the hepatic hilum for a metastatic liver tumor of the colon. After complete division of the Cantlie line, the anterior Glissonean trunk was exposed toward the periphery. Three Glissonean branches of S8 were cut at their roots, and the S8 parenchyma was resected anatomically.

A Novel Extra-Glissonian and Anterior approach for totally laparoscopic difficult right hepatectomy

Thuan Duc Nguyen, Long Cong Duy Tran, Bac Hoang Bac, Dat Tien Le, Viet Quoc Dang
University Medical Center Viet Nam

BACKGROUND
Right hepatectomy still represents one of the most common operations in liver surgery. The anterior approach is reported to have a better outcome than the classic approach in large tumours during right hepatectomy. The extra-Glissonian approach has been proven useful in open major hepatectomies. The objective is to describe a simple technique for total laparoscopic right hepatectomy. Anterior approach technique combined with glissonian approach and principle of liver hanging maneuver were used.

METHODS
The patient have a 10-cm-diameter HCC located at right liver. The right Glissonean pedicle is encircled extrahepatically.

The whole right pedicle was transsection using a vascular linear.

The liver parenchyma was then transected from the anterior liver edge posteriorly towards the inferior vena cava without previous mobilization of the right hemiliver. The right hepatic veins was secured and divided at the end of the parenchymal dissection with an endovascular stapler.

RESULTS
Operative time was 240 min with minimum blood loss and no need for blood transfusion. Postoperative recovery was uneventful and the patient was discharged on the postoperative day 7.

CONCLUSIONS
Extra-Glissonian approach and anterior approach technique for totally laparoscopic difficult right hepatectomy is feasible, safe, and effective. The surgical technique holds promise for providing advantages of minimally invasive surgery, extra-Glissonian approach and anterior approach technique.
Abstracts (Video Session)

Pure laparoscopic resection of caudate lobe liver cancer
Tan To Cheung, Ronnie Poon, Chung Mau Lo
The University of Hong Kong

Laparoscopic resection of the caudate lobe lesion is technically challenging. This video demonstrated the approach to this area by pure laparoscopic approach. The patients is a 50 years old lady with history of carcinoma of the colon with laparoscopic right hemicolecotomy performed. She has a isolated liver metastasis in the left caudate lobe. Pure laparoscopic resection of the caudate lobe lesion was performed using 4 ports. The inferior vena cava was completely exposed. This video included the technique of controlling of bleeding from short hepatic vein of IVC by pure laparoscopic approach. The resected specimen showed clear margin. She has no recurrence of the disease 1 year after the operation.
SINGLE-INCISION TRANSUMBILICAL LAPAROSCOPIC LIVER SURGERY

G.Dapri1), N.Takehiro1,2), K.Grozdev1), G.B.Cadière1), V.Donckier3)
European School of Laparoscopic Surgery, Saint-Pierre University Hospital, Brussels, Belgium1), Hokkaido University, Japan2), Erasme University Hospital, Brussels, Belgium3)

Background: Single-incision transumbilical laparoscopy (SITL) recently gained interest mainly to improve the cosmetic outcomes, while other advantages are again under evaluation. This video shows 5 liver surgeries through SITL: cyst unroofing, left lobectomy, cysto-pericystectomy, wedge resection and hepatic parenchima suturing after left lobectomy.

Patients and Methods: All patients were females with an average age of 46.4 years (24-65), and a mean BMI of 22.8 kg/m² (20.6-25.5). Four patients had no surgical history, while one patient had benefited of laparoscopic total mesorectal excision for adenocarcinoma. Preoperative work-up showed a simple hepatic cyst of segments 4-7-8 (1st patient), an hydatic cyst of segment 2-3 (2nd patient), an hydatic cyst of the segment 7 (3rd patient), a solitary liver metastasis of segment 8 (4th patient), and an intrahepatic lithiasis of left liver lobe (5th patient). SITL was performed using an 11-mm trocar for a 10-mm, 30°, rigid, standard length scope, besides a 5-mm trocar for Ligasure V and DAPRI curved reusable instruments. SITL finished with the extraction of the specimen transumbilically in a custom-made plastic bag.

Results: No conversion to open surgery or multi-trocar laparoscopy was necessary. Mean laparoscopic time was 137.4 minutes (81-210), and mean scar length was 17 mm (14-20). Mean hospital stay was 4.4 days (3-5). After a mean follow-up of 34.4 months (8-53), no early or late complications were achieved.

Conclusion: SITL is beneficial in liver surgery for benign and small malignant lesions because the final scar can be kept minimal in length, which has cosmetic as well as additional potential advantages, that need to be further investigated. SITL hepatic parenchima suturing is feasible too, but after appropriate learning curve.

Laparoscopic anatomical liver resection of Segment VIII using 3D computer-assisted simulation and navigation

Yuta Abe, Osamu Itano, Masahiro Shinoda, Minoru Kitago, Hiroshi Yagi, Taizo Hibi, Yuko Kitagawa
Keio University School of Medicine

AIM: Theoretically, anatomical liver resection requires in-depth understanding of liver anatomy and is technically demanding even by laparotomy. We describe a case of pure laparoscopic S-VIII resection using 3D computer-assisted simulation and navigation (3D-CASN).

METHODS: Precise preoperative evaluation by 3D imaging enabled us to identify each portal pedicle and hepatic vein and simulate the cutting plane of the liver while securing adequate tumor margins. In the operating room, we started from isolating the portal pedicles from the hepatic hilum, which could be done easily with the magnified view of laparoscopy and 3D-CASN. Then, the transection of the liver parenchyma followed the demarcated line.

VIDEO: 71-year-old man had three metastatic liver tumors. One of these was 2.5cm in diameter and located in deep position with close to the P-VIII pedicles. 3D-CAS revealed that all tumors could be removed by complete anatomical resection of S-VIII. By identifying all anatomical structures and reproducing the transection plane that was planned preoperatively, we successfully performed liver resection with 150mL blood loss.

CONCLUSION: With the combination of precise understanding of the vascular anatomy and the luxury of magnified view by laparoscopic surgery, we can now perform a more accurate, “truly” anatomical liver resection.
Totally laparoscopic liver resection for Hepatocellular Carcinoma Glissonean approach for most of anatomical liver resections

Long Tran Cong Duy
University Medical Center, Ho Chi Minh City

Laparoscopic liver resection is further and further developing and popularizing. It is necessary to develop and standardize the optimal (simple, effective, safe) approach in order to narrow the gap between open and laparoscopic surgery. Similar to open surgery, there are some principles that we must respect in laparoscopic surgery in treatment for HCC.

• Effective inflow control during liver parenchymal transection. The more selective control, the better liver function reserved.
• Anatomical transection plane helps to minimize blood loss and shorten operative time
• Anatomical resection results in better oncologic outcome
Extra Glissonean approach is very useful and facilitates the obedience of these principles.

Recently, we have developed and improved the totally laparoscopic Glissonean approach for most of anatomical liver resection for HCC treatment.

Technique of surgery (video and image)
1. Laparoscopic Extra Glissonean approach
2. Right liver resection
3. Left liver resection
4. Right Posterior Sectionectomy
5. Right Anterior Sectionectomy
6. Left medial sectionectomy
7. Left lateral sectionectomy

Conclusion
Laparoscopic liver resection with extra Glissonean approach is effective and safe. This technique has been developing and standardizing in order to apply routinely for all kinds of anatomical liver resection.
LaparoEndoscopic Single Site (LESS) surgery for Left Lateral hepatic Sectionectomy (LLS) as an alternative to traditional laparoscopy.
Francesca Ratti, Federica Cipriani, Marco Catena, Michele Paganelli, Luca A M Aldrighetti
Hepatobiliary Surgery Unit - IRCCS San Raffaele Hospital

Introduction
Laparoscopy is considered the gold standard to perform Left Lateral Sectionectomy (LLS) allowing a reduction of postoperative pain and disability, shortening hospital stay and patient recovery time. As the emphasis on minimizing the invasiveness of surgical techniques continues, LESS (LaparoEndoscopic Single Site) surgery has been proposed and applied even in liver surgery.

Methods
Video reports three cases of patients requiring LLS. Case 1: Young female with benign lesion (adenoma vs focal nodular hyperplasia). Case 2: Woman with colorectal liver metastases previously treated with chemotherapy. Case 3: 80-years old woman with hepatocellular carcinoma in Child B cirrhosis.

Results
Median length of surgery was 145 min, median blood loss was 150 mL. No conversion was required. All patients had negative margins resection. Time required for functional recovery was 3 days. In case 3 mild ascites developed in the postoperative course, requiring diuretics; other patients had uneventful postoperative course.

Conclusions
LESS surgery is technically feasible and as safe as traditional laparoscopic surgery in terms of intra and postoperative results even requiring both hepatobiliary and laparoscopic technique experience. Real advantages in terms of cosmetic benefit, pain management, impact on wall portosistemic shunts and risk of incisional hernias are still a matter of debate.

Laparoscopic anatomic S8 segmentectomy
Yutaro Kato, Atsushi Sugioika, Gozo Kiguchi, Takashi Nitta, Yoshinao Tanahashi, Tadashi Kagawa, Takamasa Tokoro
Fujita Health University

We present our approach to laparoscopic anatomic S8 segmentectomy. The patient was set in the left lateral decubitus position. Cholecystectomy was done by dissecting between the cystic plate and the liver Laennec’s capsule, which allowed easy exposure of the root of the Glissonian pedicle of the anterior section (G-ant). By retracting the tape of G-ant downward, the deeper ventral branch of G-ant, i.e. segment 5 pedicle (G5), was identified and taped. We taped the segment 8 pedicle (G8) by subtracting G5 tape from G-ant tape. By clamping G8, demarcation line was observed and marked on the liver surface. After exposing the root of the middle hepatic vein (MHV), we started liver transection, in a downward direction from MHV root to periphery, dividing S8 venous branches. The G8 was found at the dorsal to MHV and divided. Holding the specimen up above, we continued to resect the parenchyma, keeping the cutting plane from left to right and exposing the right hepatic vein (RHV) from its root to periphery. The Glissonean pedicle approach to secure G8 at the hilum, MHV and RHV exposure from its root and one-way liver resection, may be essential for standardization of laparoscopic anatomic S8 segmentectomy.
Laparoscopic extended left hepatectomy for a metastatic colorectal cancer overriding confluence of left and middle hepatic vein

Tehung Chen, Horng-Ren Yang, Tzu-Liang Chen, Long-Bin Jeng
China Medical University Hospital

We report a case of a 67-year-old female patient affected by descending colon cancer and a synchronous metastatic lesion measuring 5.5cm in diameter and invasive to conjoint vein of left and middle hepatic vein. This patient received laparoscopic left hemicolectomy and adjuvant chemotherapy. The tumor shrink to 4 cm in diameter. After laparoscopic ultrasonography exploration of liver to detect occult liver lesions, left side of Caudate lobe was mobilization and free from IVC upper to the origin of left hepatic vein. The conjoint vessel of left and middle hepatic vein was encircled with a tape. After cholecystectomy, left hepatic artery and left portal vein were selectively dissected and ligated. Parenchyma transection with Ligasure and CUSA was performed along the demarcation line and toward to right side of middle hepatic vein. The left IHD was clipped with hem-o-lock and divide. The conjoint vessel was divided with a linear cutter. The specimen was extracted through a Pfannenstiel incision wound. The blood loss was 300 ml and duration was 370 minutes. The resection margin was free. The patient recovered and discharged 8 days later.

Laparoscopic liver resection can be safely performed in selected patients with tumor involving major vessels.

Pure Laparoscopic Full Left Hepatectomy Including the Middle Hepatic Vein for Adult Living Donor Liver Transplantation: Description of the Technique

Federico Tomassini, V. Scuderi, A. Vanlander, X. Rogiers, R I Troisi
Liver Transplantation Service, Ghent University Hospital and Medical School

Donor left hepatectomy is associated with less morbidity compared to the right hepatectomy. Laparoscopic liver resection has shown favorable results in terms of reduced blood losses, pain and a shorter hospital stay. The technique of laparoscopic full-left hepatectomy is shown in this video. Five trocars are inserted. A) We mobilize the left liver dissecting the space between the right and the middle HV with the Goldfinger dissector (GD). B) After cholecystectomy, the left hepatic artery and portal vein (LPV) are freed. C) The MHV is marked with the IOUS and parenchymal transection is performed with the ultrasonic dissector and bipolar electro-cautery. D) The transection of the left hepatic duct is based on intraoperative standard and fluorescent cholangiography. E) A “hanging-over” maneuver with the GD is performed at the completion of the parenchymal division. F) The pedicle branches to the caudate lobe are secured by high-energy device. G) Pfannenstiel incision is performed and a Gel Port is placed. H) The left hepatic artery is secured by 2 Hem-o-lock clips, the Multifire EndoTA 30 is used for the LPV and the junction of the MHV and LHV is secured with an EndoGia Tristapler 60 mm. The graft is extracted and immediately flushed.
Laparoscopic Liver Surgery in Obese Patients
Lilian Schwarz, Thomas A. Aloia, Jean-Nicolas Vauthey, Claudius H. Conrad
UT MD Anderson Cancer Center

The prevalence of obesity continues to rise worldwide and today at least a third of men and women in the US are obese. In this population open liver surgery has been shown to result in worse outcomes. Special consideration also needs to be taken when performing laparoscopic liver resections. Further, new benign and malignant disease entities are emerging such as adenomas in obese males and hepatocellular carcinoma or cholangiocellular carcinoma arising in a background of non-alcoholic fatty liver disease. Laparoscopic liver surgeons must take special pre-, intra-, and postoperative consideration in ensuring optimal outcomes. This video aims to address these considerations with respect to patient selection and positioning, parenchymal transection, resection after weight-loss surgery, limitations of intraoperative ultrasonography, techniques for managing parenchymal bleeding, omental advancement flap use, closure of trocar orifices and postoperative care. From our experience, the oncologic management of obese patients requires a tailored approach in which laparoscopic liver resection plays an important role. Good outcomes can be achieved if the above mentioned factors are taken into account.

Laparoscopic extended right hepatectomy with biliary reconstruction for hilar cholangiocarcinoma
Shin Nakahira1,2), Yutaka Takeda2), Yoshiteru Katsura2), Takeshi Kato2), Nobutaka Hatanaka1), Shigeyuki Tamura2)
National Hospital Organization Kure Medical Center and Chugoku Cancer Center1), Kansai Rosai Hospital2)

Introduction: Although laparoscopic surgery has been widely adopted for also Hepato-biliary-pancreatic surgery, laparoscopic resection of hilar cholangiocarcinoma remains uncommon because of its difficult procedures consisted of major hepatectomy, lymph node dissection and biliary reconstruction.

Video: The patient was a 60-year-old man who was diagnosed to have hilar cholangiocarcinoma. The patient was placed in left hemilateral position and five laparoscopic trocars were positioned. The right lobe and the caudate lobe were completely mobilized. After the Kocher maneuver, lymphadenectomy was performed using LCS. Then the common bile duct, the right hepatic artery and the right portal vein were divided. A hepatic parenchymal transection was performed by BiClamp using a modified hanging maneuver and the right hepatic vein was divided using a linear stapler. The left hepatic duct was divided adjacent to the umbilical portion and the specimen was retrieved through the minilaparotomy. End-to-side endoscopic hepaticojejunostomy was performed with running sutures.

Total operative time was 867 minutes and blood loss was 100g. The patient was discharged on 16th postoperative day without any adverse incidence. Pathology revealed an adenocarcinoma with negative lymph nodes and clear surgical margins.

Conclusions: Laparoscopic resection for hilar cholangiocarcinoma is safe and feasible in selected patients.
**V-1-1 Useful Maneuvers for Precise Laparoscopic Right Hepatectomy**

**Rawisak Chanwat**, Chairat Bunchaliew  
National Cancer Institute

**Background**  In open surgery for major hepatectomies, the glissonian approach and liver hanging maneuver have proven useful. However, these techniques are not routinely applied in laparoscopic context due to some intrinsic difficulty. Published techniques for laparoscopic major hepatectomy generally involve hilar dissection with separate transection of vasculo-biliary elements and anatomical parenchymal transection along demarcation line. This video demonstrates the feasibility of the glissonian approach and liver hanging maneuver that performed for total laparoscopic right hepatectomy.

**Methods**  A 57-year-old woman suffering from huge liver mass was referred for surgical treatment. A total laparoscopic right hepatectomy was performed for this lesion. The operation followed 5 distinct phases: early hanging maneuver, extrahepatic extrafascial access to the right portal pedicle, parenchymal transection, control and division of the right hepatic vein, and complete mobilization of the right liver.

**Results**  Operative time was 400 min. The estimated blood loss was 150 ml and no need for blood transfusion. The pathological examination confirmed a 8 x 6 x 7 cm HCC with clear surgical margin. Recovery was uneventful, and the patient was discharged on the sixth postoperative day.

**Conclusions**  Glissonian approach and hanging maneuver have proven as safe and useful procedures for performing precise laparoscopic right hepatectomy.

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**V-1-2 Pure laparoscopic ALPPS**

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**Introduction:** Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) has been introduced as a feasible strategy that allows resection with curative intention in patients with unresectable disease due to insufficient future liver remnant (FLR). Minimally invasive surgery has several benefits over the open approach in different surgical areas. We report a case of a pure laparoscopic ALPPS.

**Case Description:** We present a 73-year-old woman with a single hepatic metastasis from breast cancer. She had been treated with bilateral mastectomy 30 and 15 years before referral. An MRI and PET-CT demonstrated a single hypermetabolic 68 mm mass located in the right lobe without other systemic dissemination. A laparoscopic right hepatectomy was scheduled. Due to unexpected tumor extension during exploration and the need for a larger than planned liver resection a laparoscopic ALPPS was performed. After a 41% FLR hypertrophy, the patient underwent a laparoscopic completion surgery without complications. She was discharged on the 3rd postoperative day.

The histopathological analysis indicated negative resection margins.

**Discussion and Conclusion:** Laparoscopic ALPPS is feasible and may be performed safely in experienced hands. Minimally invasive access may represent a good alternative to reduce the surgical impact of ALPPS in terms of postoperative recovery.
V-1-3  Tape-guided pure laparoscopic partial hepatectomy for laterally located hepatic tumors

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Difficulty of correctly identifying tumor borders as well as controlling a dividing plane of liver parenchyma are the representative major drawbacks of performing pure laparoscopic hepatectomy (PLH). In order to solve these problems, we applied a cotton tape to PLH. Before transecting liver parenchyma, a cotton tape, which was easily identified by an intraoperative ultrasound as a hyperechoic line, was placed just behind the presumed cutting line. An ultrasound probe placed the anterior liver surface determined the appropriate dividing plane by making a cutting line between the probe and the cotton tape. The tape was also used to raise the deeper part of the dividing plane, which made parenchymal transection easier. We applied this tape guided PLH to seven patients. Parenchymal transection was accomplished by a vessel sealing device, BiClamp™. The median operation time was 373 min. The median intraoperative blood loss was 10 gram. All the resected specimens had an appropriate tumor free surgical margin. No postoperative complication occurred in these patients. This tape-guided technique not only yielded an appropriate tumor free surgical margin but also made parenchymal transection easier in PLH.

V-1-4  Laparoscopic Left Hepatectomy with Tumor Thrombectomy in Patients with Hepatocellular Carcinoma Concomitant with Advanced Portal Vein Tumor Thrombus

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The patient was a 61-year-old woman who had multiple hepatocellular carcinoma (HCC) caused by chronic hepatitis B classified as Grade A on the Child-Pugh classification. She underwent 8 transcatheter arterial chemoembolization sessions at another hospital. She rapidly developed portal vein tumor thrombus (PVTT) and was referred to our hospital for left hepatectomy with tumor thrombectomy for maintenance of portal patency and subsequent treatment with sorafenib. We adopted a laparoscopic technique to allow the early administration of sorafenib. The patient was placed in the supine position, and 4 laparoscopic trocars were positioned. The left lobe was completely mobilized and hepatic parenchymal transection was performed with BiClamp. The left hepatic duct and the left hepatic vein were divided. The left portal vein was divided with the portal trunk and the right portal vein clamped with endovascular clips. The PVTT in the right portal vein was retrieved, and the stump of the left portal vein was sutured. Total operative time was 592 min, and the blood loss was minimal. The patient was discharged on the 9th postoperative day. She was treated with sorafenib 1 month after resection, and survived for 3 postoperative months, during which, decreased tumor marker levels were observed.
V-1-5  En bloc middle hepatic vein and colorectal liver metastasis resection

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Background: Laparoscopic parenchyma-sparing surgery for “badly-located” tumours may be challenging, thus leading to an extension of the hepatectomy to a major resection or conversion to open surgery.

Aim: To demonstrate our technique with laparoscopic parenchyma-sparing hepatectomy (PSH) for “badly-located” metastases.

Methods: A 46-year-old woman was diagnosed with a metachronous S4A colorectal metastasis invading the middle hepatic vein (MHV) and adherent to the left hepatic vein (LHV). A local resection was considered and the LHV was dissected and preserved and a laparoscopic En bloc S4A/8-MHV resection was performed. Deep dissection with CUSA and MHV isolation and slinging above (at insertion in the IVC) and below the lesion was completed to facilitate the resection and achieve macroscopically clear margins.

Results: Operative time was 270 min, no postoperative complications were observed and the patient was discharged on day 3. Histopathology confirmed R0 excision.

Conclusions: Parenchyma-sparing surgery should always be aimed for the treatment of liver metastases and the mini-invasive approach should not widen the extent of liver resection. Laparoscopic approach can be safe for parenchyma-sparing liver resections even in case of “badly-located” tumours.

V-1-6  Laparoscopic right hepatectomy and partial caudate resection for CRLM adherent to IVC

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Background: Laparoscopic major resections for lesions adjacent to major vessels remains limited.

Aim: In this video, we demonstrate our technique in a major resection for multiple liver lesions, the most medial, adherent to the IVC and inflow after response to the chemotherapy

Methods: A 61-year-old woman was diagnosed with colorectal metastases in the right hemiliver, with the most medial in S5/8/1 adjacent to IVC. The patient underwent slightly extended laparoscopic right hepatectomy and partial caudate resection. Hilar dissection was performed with right arterial/portal and biliary branches isolation. Extensive mobilization and caval dissection was completed with the help of a hanging manoeuvre. CUSA transection and intraparenchymal control of all structures was completed to ensure a safe and oncological resection.

Results: Operative time was 300min. The patient was discharged after 3 days with no postoperative problems. R0 resection was confirmed on histological exam.

Conclusions: Laparoscopic approach can be safe for LMH even in case of tumours adjacent major vessels. Extensive experience in both open and laparoscopic liver surgery, as well as adequate facility for different technical skills, should support such challenging procedures.
V-1-7  Totally laparoscopic anatomical hepatectomy exposing the major hepatic veins from the root side

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Aims: We performed totally laparoscopic anatomical hepatectomy for 94 patients from August, 2008 to April, 2014. We will present our standardized procedures exposing the major hepatic veins from the root side.

Methods: The patient was a 75-year-old man with liver cirrhosis. A solitary HCC of 1.5cm was noted in the right anterior sector and right anterior sectorectomy was scheduled. The liver was divided, exposing the major vessels by CUSA without pre-coagulation. By clamping the anterior Glissonean pedicle, the cutting lines were marked. The inferior aspect of the middle hepatic vein was exposed near the hilum. Exposing the entire length of the middle hepatic vein, the cutting plane was extended and the major hepatic fissure divided. After transection of the anterior Glissonean pedicle, the right hepatic vein was exposed from the root side toward the periphery by lifting the excised liver and the resection was completed.

Results: The operation time was 269 min. Blood loss was 130 g. He was discharged without any complications.

Conclusion: This procedure can avoid splitting the bifurcation of the hepatic vein by moving CUSA from the root side toward the periphery as well as utilizing the unique view from the caudal side in the laparoscopic approach.

V-1-8  Totally laparoscopic hepatectomy exposing the vessels around the tumor intended to secure the surgical margin

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Introduction: Anatomical hepatectomy (AH) is basically not required for metastatic tumors in terms of oncology. However, the surgeon cannot secure the surgical margin by palpation via a laparoscopic approach. Therefore, AH exposing the vessels around the tumor is often better, because unexpected exposure of the tumor on the cutting plane can be avoided by creating a cutting plane on the side of exposed vessels.

Method: We performed totally laparoscopic AH for 37 patients to secure the surgical margin of metastatic tumors by May, 2014.

Results: The median operative time was 377 (range, 184-744) min, with median blood loss of 173 (range, 0-580) g. Conversion was performed for 2 patients. Postoperative morbidity rate was 13.5% (peroneal palsy in 2, ileus in 1, biloma in 1, pulmonary embolism in 1). Mortality was zero. The median length of the hospital stay after surgery was 9 (range, 4-21) days. Only 1 patient, who underwent extended posterior sectorectomy for a tumor invading to the right anterior Glissonean branch, had a microscopically positive margin.

Conclusion: Totally laparoscopic hepatectomy exposing the vessels around the tumor can be performed safely and is useful to secure the surgical margin in patients with a metastatic tumor.
V-1-9  Single incisional laproscopic hepatectomy(SILH) - a 25 cases series experience

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Objective: To prove the feasibility and safety of SILH for peripheral segments of liver.
Methods: Between October 2011 and May 2014, a total of 25 patients with hepatic tumors involving the peripheral liver segments underwent SILH in our hospital.
Results: The 10 male and 15 female patients ranged in age from 24 to 86 years (mean 55.8). Surgical procedures included partial hepatectomies for 8 patients and left lateral segmentectomies for the other 17 patients. The mean duration of the operation was 93.8±41.5 minutes (35-165). The blood loss during surgery was ranged from minimal to 300 ml with mean 102±116 ml. Mean hospital stay was 4.4 ± 1.3 days postsurgery.
Conclusion: SILH is feasible for selected patients with lesions in the peripheral segment of liver. Individuals with small tumors may benefit; because multiple port wounds or extension umbilical wound is not required and complication rate might be reduced.

V-1-10  Comparison of morbidity and surgical margin status in laparoscopic sectionectomy and partial liver resection

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Purpose: To elucidate the optimal laparoscopic procedure in comparison with the morbidity and the status of surgical margin in laparoscopic sectionectomy (SX) and partial liver resection (PR).
Methods: Between 2010 and 2014, 70 patients with liver tumor underwent laparoscopic surgeries were enrolled. SX (n=19) included 7 HCC, 8 metastatic disease (MET), and 4 benign tumors, and PR (n=51) included 39 HCC, 10 MET, and 2 benign. Hepatic virus infection were seen 26% in SX and 75% in PR. SX consisted of 12 lateral sectionectomies, 2 posterior sectionectomies, 2 anterior sectionectomies, and 3 hemihepatectomies.
Results: Mean operation time/blood loss were 143 min/172 ml in SX and 173 min/293 ml in PR; the rate of morbidity was 0% in SX and 16% in PR (p=.019); the positive surgical margin was proven in 0% in SX and 17.6% in PR (p=.049), and the mean lengths of surgical margin were 12.1 mm in SX and 7.6 mm in PR (p=.041).
Conclusion: Although the decreased liver functions were often seen in PR, SX likely presented less morbidity and negative surgical margin compared to PR. SX might be a preferable procedure in laparoscopic surgery if the liver residual function was tolerable.
V-1-11  A new device of soft-pre-coagulation using suction needle to reduce blood loss for laparoscopic partial liver resection with liver cirrhosis

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BACKGROUND: We experienced eight cases of laparoscopic partial liver resection of surface-type hepatoma with liver cirrhosis between August 2010 and May 2014. We devised a new technique of pre-coagulation to reduce blood loss for hepatectomy with liver cirrhosis and investigated.

METHODS: Seven cases of hepatocellular carcinoma and one case of atypical adenomatous hyperplasia were treated. Eight laparoscopic partial hepatectomy were undergone. Our device to reduce blood loss was pre-coagulation of VIO soft-coagulation system using suction needle 16-22G with each 1cm scale (Hakko Inc., Nagano, Japan), and was undergone in the 4 cases after.

RESULTS: In 4 cases before vs 4 cases after the starting of soft-pre-coagulation using suction needle, average age 70 vs 78 year-old, average tumor diameter 31 vs 20 mm, average operation time 263 vs 268 min, average post-operative stay 11.8 vs 11.3 days were not significantly different. However, average blood loss 388 vs 38 g was significantly (P<0.05, Welch) decreased in the 4 cases after. There was neither case of post-operative bile leakage or bleeding.

CONCLUSIONS: For laparoscopic partial liver resection with liver cirrhosis, pre-coagulation of VIO soft-coagulation system using suction needle was effective and feasible to reduce blood loss significantly.

V-1-12  Two-surgeon technique reduces blood loss in patients undergoing laparoscopic anatomical liver resection

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【Background】Hemorrhage during hepatic parenchymal transection is a major concern in laparoscopic liver resection. Two-surgeon technique (TST) has been reported as a beneficial method to reduce blood loss during open liver resection. The purpose of this study was to evaluate efficacy of TST in laparoscopic liver resection.

【Methods】Sixty-seven laparoscopic liver resection cases were enrolled in this study. The first 25 cases underwent single-surgeon operation (S group), while TST was applied in the current 42 cases (T group). Operative variables were retrospectively analyzed to identify differences between 2 groups.

【Results】Patients characteristics are equivalent between the 2 groups. In the patients who underwent partial resection, the 2 groups were similar in terms of operative outcomes. However, in the patients who underwent anatomical resection, the amount of blood loss was less in T group (648 ± 652g in S group vs 229 ± 230 g in T group).

【Conclusion】TST is a safe and effective method to decrease blood loss during laparoscopic anatomical liver resection.
**V-1-13  Additional techniques for enhancing efficacy of laparoscopic hepatectomy: fluorescence imaging, intercostal trocars, and epidural anesthesia**

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**Aims:** To introduce additional laparoscopic techniques that can enhance efficacy of minimally-invasive surgical treatment for hepatic malignancies.

**Methods and Results:** 1) Fluorescence imaging following intravenous administration of indocyanine green has been used to identify hepatic malignancies, biliary tract, and boundaries between hepatic segments during laparoscopic hepatectomy. The latest fluorescence imaging system enabled the superimposition of fluorescence images on full-color images, which was helpful for surgeons to confirm surgical margins and hepatic anatomy in real time during laparoscopic procedures. 2) The use of intercostal trocars for a laparoscope and a left-hand forceps was safe and provided surgeons a sufficient surgical view and working area to remove hepatic tumors located in segment 7 and/or 8. 3) Laparoscopic hepatectomy with a low risk of bleeding could be performed safely under epidural anesthesia without endotracheal general anesthesia, which might extend opportunities for elderly patients with respiratory diseases to receive radical treatment for hepatic malignancies.

**Conclusions:** Further technical advances are still needed not only to extend indication of laparoscopic surgery to major hepatectomy but also to enhance safety and accuracy of standardized laparoscopic procedures such as wedge resections and left lateral sectionectomy.

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**V-1-14  Limited anatomical liver resection in HCC patients with impaired liver function**

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Anatomical liver resection has been recommended for HCC, while partial resection is often applied to patients with impaired liver function. To obtain sufficient surgical margins is sometimes difficult in partial resection, especially in pure laparoscopic procedure. We have tried limited anatomical liver resection to secure sufficient surgical margins in HCC patients, employing preoperative 3D simulation and intraoperative US.

**Methods** Using 3D simulation software, branching pattern of Glissonean pedicles was preoperatively examined in each patient. Peripheral Glissonean branches feeding targeted HCCs were identified, and limited anatomical resection securing surgical margins was planned. During operation, US was employed to identify the peripheral Glissonean branches. Because such peripheral branches cannot be observed from the hepatic hilum, hepatic parenchyma was partially transected in advance toward the branches. After exposing such branches avoiding injury to the main pedicles, each branch was clipped. With these procedures, appeared demarcation lines were compared with the preoperative simulation. Parenchymal transection was performed using BiClamp and LCS or CUSA. To avoid injury to biliary branches in the remnant liver is the most important knack in this method.

**Results** Fifteen patients undergone this method without major complication, suggesting its usefulness for HCC patients with impaired liver function.
V-1-15  Laparoscopic right posterior sectionectomy using a modified liver hanging manoeuvre

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The liver hanging manoeuvre is a widely used technique to facilitate liver resection by anterior approach, where parenchyma is transected prior to hepatic mobilization. By slinging a tape around the right hepatic vein, the liver can be lifted off the inferior vena cava (IVC), hence enabling dissection of the space between the right and middle hepatic veins, guide hepatic transaction and reduce bleeding. We describe a modified liver hanging manoeuvre to facilitate laparoscopic right posterior sectionectomy for a patient with a 4cm hepatocellular carcinoma in segment VI on a background of Hepatitis B. We describe this technique by slinging a tape around the Makuuchi ligament. This lifts the right liver off the IVC, allowing us to dissect the space between the right hepatic vein and the Makuuchi ligament and to guide the transection plane. The procedure was completed in 244 min with blood loss of 800 mls. No conversion was required. A 2 cm tumour-free resection margin was achieved. The patient was discharged on post-operative day 5 with no complications. While laparoscopic manipulation of the right posterior section may be challenging, the modified liver hanging manoeuvre was successful in facilitating hepatic transection for laparoscopic right posterior sectionectomy.

V-1-16  Thoracoscopic Access Facilitates Safe Exposure of Posterior/Superior Liver Lesions in Patients Ineligible for Laparoscopy

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Prior abdominal operations in patients presenting for laparoscopic liver surgery can impact safety when performing a transabdominal laparoscopic approach. In this video we present the benefits and challenges of a transthoracic laparoscopic approach to a lesion in SIVa. A 67 year-old male who suffered from sigmoid colon adenocarcinoma three years prior underwent a laparoscopic sigmoid colectomy, metasectomy in SII and SIII complicated by leak. He subsequently presented with a SIVa recurrence. Due to his hostile abdomen, the patient underwent a transthoracic approach. Transdiaphragmatic ultrasound was used to identify the lesion in SIVa. After axial phrenotomy, a non-anatomic resection with a 1 cm margin was performed. This video demonstrates the feasibility of a transthoracic liver resection for patients with a non-virgin abdomen. This thoracoscopic approach avoids prolonged lysis of adhesions and facilitates exposure of lesions in the posterior/superior location. However, inflow control using a Pringle maneuver and bleeding from hepatic veins can be difficult to control and the surgeon must be prepared for staged conversion as well as being conversant with performing a posterolateral approach to the hepatoduodenal ligament for inflow control.
**V-1-17 Laparoscopy-assisted hybrid left-side donor hepatectomy**

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We aimed to evaluate the feasibility, safety and efficacy of laparoscopy-assisted hybrid donor hepatectomy (LADH) to obtain left side grafts.

A total of 31 consecutive live liver donors of left side liver grafts underwent LADH, including left lateral segmentectomy (n=17) and left liver resection with or without the caudate lobe (n=14) (LADH group). We compared the clinical data between the LADH group and the group of donors in whom traditional open donor hepatectomy was performed (ODH group, n=79).

LADH was feasible in all the patients and there was no mortality over a follow-up period of 25.9+-9.8 months. The operation time to procure a left-lobe graft was significantly longer in the LADH group (510+-90min) than in the ODH group (P<0.001). A large right lobe on CT was identified as a significant risk factor for prolonged operative time (P=0.007). Evaluation using the SF36-v2 questionnaire revealed faster recovery of the physical component summary and bodily pain score in the LADH group.

LADH for procuring left side grafts was safe and effective up to the left liver with the caudate lobe. Left-lobe LADH in donors with a large right lobe should be carefully planned in view of the potential surgical difficulty.

**V-1-18 Laparoscopic Liver Resection: 3-year Experience From A Single Japanese General Hospital**

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**INTRODUCTION**
Laparoscopic liver resection (LLR) has rapidly evolved in Japan since April 2010, when the national medical insurance system started covering partial resection and left lateral sectionectomy. However, LLR is still a challenging procedure for most general institutions other than the selected expert centers. In this study, we present the results of our initial experiences of LLR.

**METHOD**
Between April 2011 and March 2014, 33 patients underwent LLR in our institution. Preoperative diagnoses were hepatocellular carcinoma (n=22), metastatic liver cancer (n=6) and others (n=5). The 4 cases out of 33 that underwent simultaneous resection of primary colorectal carcinoma were excluded. We examined operating time, blood loss, hospital stay and complications.

**RESULTS**
We performed 9 laparoscopy-assisted liver resections (hybrid-LLRs) and 20 totally laparoscopic liver resections (pure-LLRs). The procedures included partial resection (n=12), anatomical segmentectomy (n=6), left lateral sectionectomy (n=6), right lobectomy (n=3) and left lobectomy (n=1). Only 1 patient was converted to open liver resection due to uncontrollable bleeding. The mean operating time, blood loss, and hospital stay in the hybrid-LLRs and pure-LLRs were 410 and 206 minutes, 839 and 148 ml, 17 and 11 days. There were no postoperative complications.

**CONCLUSION**
LLR is safe with acceptable morbidity and mortality for various types of liver tumors.
V-1-19  Development of real-time navigation system for laparoscopic hepatectomy

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Background: We are going to try development of real-time navigation system for laparoscopic hepatectomy, which resembles a car navigation system. We report our real-time navigation system and surgical procedure.

Methods: Virtual 3D liver and body images are reconstructed using “New-VES” system developed by Graduate School of Information Science, Nagoya University. These images correspond to maps of car navigation system. Some of patient’s body parts are registered in virtual 3D liver and body images using a magnetic position sensor. Patient’s body after registration corresponds to The Earth. A transmitter for magnetic position sensor, which corresponds to an artificial satellite, is placed about 30cm above patient’s body. A micro magnetic sensor, which corresponds to GPS antenna, fixes on the handling part of laparoscope. Laparoscopic hepatectomy is performed using both real operative and virtual monitors.

Fiducial registration error (FRE) is utilized to evaluate accuracy of real-time navigation system.

Results: Mean FRE of initial 5 patients was 17.7mm (range, 12.2 to 24.3 mm). Mean FRE of following 7 patients, whose MDCT were taken using radiological markers for registration of body parts, was 10.5mm (range, 6.0 to 16.5 mm) and decreased (p = 0.025).

Conclusions: Our real-time navigation system can assist laparoscopic hepatectomy.

V-1-20  Laparoscopic Spiegel lobectomy: the difficulty and its improvement

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We introduce the improvement to perform laparoscopic Spiegel lobectomy much more safely.

We performed Spiegel lobectomy in nine patients including seven open and four laparoscopic surgeries. From 2012, we started laparoscopic Spiegel lobectomy and performed it safely. All tumors were located in Spiegel lobe and three in hepatocellular carcinoma (HCC) and one in colorectal metastatic carcinoma (CRCM). All of four surgeries were finished as pure laparoscopic surgery, regardless two patients had the history of open laparotomy. Operating time was 199.0± 26.2 min and intraoperative blood loss was 41.3 ± 33.5 ml. We improved these four points to perform safe laparoscopic Spiegel lobectomy as follows; i) four or five ports were used; umbilicus as scope, subxiphoid, right and left subcostal incision; ii) 30 degree rigid laparoscope was used instead of flexible scope, we usually used in another laparoscopic liver surgery; iii) tract stomach and omentum to caudal side using sponge for endoscopic surgery; iv) vessels tape was used as hanging maneuver after the dissection of Spiegel lobe.

We performed laparoscopic Spiegel lobectomy as safe as open surgery. We devised a new approach to safe laparoscopic Spiegel lobectomy as above and these techniques contribute to safe operation.
V-1-21 Pure Laparoscopic right hepatectomy combined with resection of the inferior vena cava by anterior approach

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Background: Laparoscopic right hepatectomy has become a standard procedure for laparoscopic liver resection in specialized centers; however, tumor involvement of the inferior vena cava (IVC) is still considered a contraindication. Here, we describe a safe technique of pure laparoscopic extended right hepatectomy to segment 1 combined with IVC resection using an anterior approach.

Methods: The video illustrates this procedure in a 58-year-old female with bilateral colorectal liver metastases involving the right-anterior wall of the retrohepatic IVC. Right hepatectomy was performed by initial hilar dissection and ligation of vascular inflow followed by division of the hepatic parenchyma. The right hepatic vein was divided using an endoscopic vascular stapler. As the involved portion of IVC could be isolated with the application of a single vascular clamp, the right IVC wall was divided using an endoscopic stapler. Results: The surgical duration was 270 min and blood loss was 50 mL. The postoperative period was uneventful. Histopathological examination confirmed the presence of a colorectal metastasis with tumor-free margin.

Conclusion: We devised a secure procedure to perform totally laparoscopic right hepatectomy combined with IVC resection using an anterior approach; this may be a safe and useful technique to perform laparoscopic right hepatectomy.

V-1-22 Laparoscopic caudate lobe resection

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Laparoscopic caudate lobe resection poses a surgical challenge due to the anatomy: The caudate lobe is situated between the hepatic hilum and the inferior vena cava, its proximity to major structures and its short inflow and outflow vessels makes it technically difficult. Laparoscopic approach provides excellent visualization for dissection and vascular control in addition to the validated benefits of a minimally invasive procedure. We present 3 cases of laparoscopic caudate lobe resections. The mean patient age was 60 year-old, the indications were colorectal liver metastasis, hepatocellular carcinoma (HCC) and biliary cystadenoma. The patient with the HCC had an isolated caudate lobe resection; the other 2 patients’ caudate resections were combined with a left hepatectomy. Mean operative time, estimated blood loss and length of hospital stay were 343mins(125-505), 183mls(50-300) and 4 days(4-5) respectively. Pringle’s maneuver was used in the patient with the isolated caudate lobe resection(15+5mins). All achieved R0 resections. All resections were guided with laparoscopic ultrasound, parenchymal dissection performed with Cavitron Ultrasonic Surgical Aspirator(CUSA) and transection with a combination of diathermy, clips, THUNDERBEAT(Olympus) and staplers. There was no 90-day morbidity, mortality or readmissions. The video illustrates our learning experience and laparoscopic techniques in caudate resection.
V-1-23  Laparoscopic liver resection using the rubber band retraction technique: its usefulness and perioperative outcome of 100 consecutive cases (with Video)

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Introduction: The purpose of this study was to introduce the basic principle of our rubber band retraction technique and perioperative outcomes.

Methods: From August 2008 to June 2013, 100 consecutive patients underwent laparoscopic liver resection. In all patients, rubber band retraction technique was used to expose the parenchymal resection plane.

Results: Eighty-five minor resections (59 wedge resection, 12 segmentectomy and 14 left lateral sectionectomy) were performed in 65 patients with favorable location tumor and 20 with unfavorable location tumor. Fifteen patients underwent major hepatectomies (12 left hemihepatectomy and 3 right hemihepatectomy). There were four conversions to open surgery. There was no postoperative mortality. When we compared surgical outcomes according to tumor location, general characteristics were similar between the favorable (n=65) and unfavorable location tumor group (n=20). Operative time was significantly longer in the unfavorable location tumor group (197.3±81.9 vs. 245.9±116.8 min, P=0.040), while there were no differences found in any parameters such as conversion rate, postoperative complications and length of hospital stay.

Conclusion: Our retraction technique using the elastic rubber band provides useful and safe laparoscopic liver resection. This method enables to apply it any location tumor with a constant surgical principle in an appropriate patient selection.

V-1-24  Robotic central bisectionectomy of liver in patient with hepatocellular carcinoma

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Background: Robotic systems improve surgeon’s dexterity and enable us to perform more complex laparoscopic surgeries. Therefore, we reported a case of robotic central bisectionectomy in patient with hepatocellular carcinoma (HCC).

Methods: A 54-year-old male was diagnosed with HCC in segment 8. The tumor was about 2cm in diameter and abutted both the right anterior portal pedicle and the middle hepatic vein. The patient was placed supine in 15° reverse Trendelenburg position. Five ports (four robotic arms and one assistant) were used. We first transected liver parenchyma at the just right side of the umbilical portion and then the right anterior portal pedicle was isolated. Finally, right side parenchymal transection was conducted following the ischemic demarcation line. During parenchymal transection, the rubber band retraction method was used to expose parenchymal transection plane.

Results: The operation time was 9hr 50 minutes. The estimated blood loss was 200mL. There was no abnormal finding on postoperative CT image. The patient was discharged on the ninth postoperative day without any complication.

Conclusions: Robotic central bisectionectomy of liver seems to be a feasible and safe. Robotic surgery is expected to expand the indications of laparoscopic liver resection, especially for more complex liver resection.
V-1-25  Pure Laparoscopic posterior segmentectomy in semiprone position using an auto irrigation bipolar system (Silicone Jacket Irrigator) and dual handling technique with an intercostal port.

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Background: We developed a novel method of performing laparoscopic liver resection in the semi-prone position for safety resection especially patients with tumors in the anterosuperior and posterior segments.

Patient and Methods: The patient was a 70-year-old man with hepatitis C chronic hepatitis, Child-Pugh score A. During follow-up computed tomography, a 35 mm lesion was observed in the posterior segment. The ingenuities of our surgical techniques are as follows: 1. The patient is placed in semi-prone position. 2. The hepatoduodenal ligament is encircled with cotton tape for Pringle manoeuvre. 3. To perform hilar dissection, Rouviere’s sulcus was oriented and the portal pedicle of the posterior segment was encircled by dividing between the hepatic pellicle and Glisson sheath whole circumference carefully. 4. The bipolar irrigation system was used as surgical energy for all procedures. 5. The vessels are individually closed with ligations and vascular clips (Hem-o-lokTM).

Results: Operative time was 264 min. Blood loss was 120 g, and no perioperative transfusion was required. Postoperative recovery was uneventful. The patient was discharged on postoperative day 7.

Conclusions: This procedure is considered to be a safe modality for anatomical laparoscopic hepatectomy.

V-1-26  Pure Laparoscopic Extended Sectorectomy of the Liver Combined with the Major Hepatic Vein Resection

Zenichi Morise, Masashi Isetani, Satoshi Arakawa, Jin Kawase, Hidetoshi Nagata, Norihiko Kawabe, Hirokazu Tomishige  
Fujita Health University School of Medicine Banbuntane Houtokukai Hospital

Pure laparoscopic extended sectorectomy of the liver combined with the major hepatic vein resection is a complex procedure. We experienced 88 pure laparoscopic hepatectomies, including 33 anatomical resections. Among them, there are 5 (2 anterior, 2 median, and 1 posterior) pure laparoscopic extended sectorectomies combined with the major hepatic vein resection. Their operating times and bleedings are during 352-625 min and 100-1250 ml.

Morbidity is 1/5. We present the video from one of the cases. 58 y/o man with C-hepatitis developed 7cm HCC in segment 8-1. The tumor compressed IVC and the right hepatic vein widely and involved the middle hepatic vein. This patient underwent extended anterior sectorectomy combined with the middle hepatic vein resection. This case is one of the most complex cases due to the long dissection of IVC-right hepatic vein and the resection of the middle hepatic vein at its root. Although a small branch pulled out and bled at the root of the right hepatic vein, the bleeding was controlled with clamping with forceps and suturing. The operating time was 603min and the amount of bleeding was 750ml. Although he developed postoperative pleural effusion treated conservatively, he is well without recurrence 10 months after the surgery.
V-1-27  Caudal approach in the left lateral or semi-prone position of pure laparoscopic hepatectomy for the tumors in the dorsal right liver

Zenichi Morise, Masashi Isetani, Satoshi Arakawa, Jin Kawase, Hidetoshi Nagata, Norihiko Kawabe, Hirokazu Tomishige
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During parenchymal transection of open hepatectomy for the right liver, operator's hand is placed behind the liver after mobilization for compression/opening the transection plane and as a guide for the transection direction. However, in pure laparoscopic hepatectomy (LH), there is no ventral space for lifting up without laparotomy. On the other hand, a good view from caudal/dorsal directions is an advantage of LH. We apply the caudal approach of pure LH with prior transection to mobilization in the left lateral or semi-prone position for the tumors in the dorsal right liver. This procedure could be also oncologically-beneficial as the anterior approach in open hepatectomy.

The steps of the approach are as follows:
1. The patient is placed in a left lateral or semi-prone position.
2. The posterior-sector is not mobilized, fixing to the retroperitoneum.
3. The Glissonian pedicle of resected sector is encircled and clamped extra-hepatically, if needed.
4. Liver transection proceeds from caudal to cranial (exposing IVC and RHV in posterior-sectorectomy). Since the remnant liver sinks and the resected liver fixed to the retroperitoneum, the cutting plane is well-opened.
5. Transection is completed at reaching to the diaphragm.
6. Dissection of the resected liver from the retroperitoneum is easily performed with gravity.

V-1-28  Pure laparoscopic hepatectomy for HCC with severe liver dysfunction

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Fujita Health University School of Medicine Banbuntane Houtokukai Hospital

We had reported the favorable perioperative course of the patients with severe liver dysfunction (Child B/C and ICG R15 ≥ 40% or more) who underwent pure laparoscopic hepatectomy. The procedure could also be an advantageous option in bridging therapy to transplantation for certain patients.

Patients who undergo hepatectomy are exposed to three different types of stresses: 1) general, whole-body surgical stress, 2) reduced liver function due to resected liver volume, 3) surgery-induced injury for the environment around the liver and liver parenchyma caused by destruction of the collateral blood/lymphatic flow by laparotomy/mobilization and injury by compression. Reduction of the third mentioned stress by laparoscopic hepatectomy should lower the risk for patients with severe liver dysfunction. Laparoscopic hepatectomy has the advantage of minimal ascites in addition to usual advantages of laparoscopic surgery, which leads to lowering the risks of disturbance in water and/or electrolyte balance and hypoproteinemia that could trigger fatal liver failure.

The patients with the tumor located on the surface of the liver and severe liver dysfunction are good candidates for laparoscopic hepatectomy. In those cases, the dissection of the attachments/adhesion and the compression of the liver should be minimal in the meticulous procedure. We present our procedure in the video.
V-1-29  Near-infrared fluorescent navigation for laparoscopic intraoperative liver segmentation

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Wakayama Medical University Hospital

Background and aim: Intraoperative hepatic segmentation is necessary to perform anatomical liver resection. However, because of difficulty of handling intraoperative ultrasonography or limitation of the visual field at laparoscopic procedure, determination of the segmental borderline is sometimes difficult. Recently, near-infrared fluorescence (NIRF) imaging system with indocyanine green (ICG) injection was provided and reported to be a novel navigation system at open liver surgery. In this time, we used this system at laparoscopic surgery and evaluated its usefulness.

Patient and method: In this preliminary study, one patient with HCC at segment 3 was administered anatomical resection using laparoscopic NIRF imaging system (D-light P system, Karl Storz, Germany). Navigation of anatomical liver resection was performed as follows: 1) Encircle and clamp the Glissonian pedicel of segment 3. 2) Inject 1ml of ICG water solution (2.5mg/mL) intravenously and observe the fluorescent area. 3) Determine the cutting line and perform parenchymal resection. 4) Observe NIRF imaging several times and re-estimate the accurate direction of anatomical resection.

Results: Operating time was 220 minutes and blood loss was a little. Fluorescent navigation was continuously visible during liver resection.

Conclusion: Our novel navigation technique using NIRF imaging might be useful for laparoscopic anatomical liver resection

V-1-30  Laparoscopic Partial Hepatectomy

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We present 42 years male with a 4cm segment II+III tumor on computer tomography scans. No history of hepatitis, cirrhosis or malignancy and normal tumor markers. He underwent laparoscopic partial hepatectomy for segments II+III.

Used ‘French’ position with surgeon between the legs. Used two 12mm ports, one umbilical and other midway between umbilicus and costal margin. Additional 5mm port in each upper quadrant. Intraoperative ultrasonography (BK Medical, Herlev, Denmark) confirmed a 4cm segment II+III tumor and used to mark transection line. Left triangular ligament was taken down and left inferior phrenic vein was ligated and divided. Used no Pringle’s manoeuvre. First 1cm of hepatic parenchymal was transected using 5mm LigaSureR, (Covidien, Mansfield, Massachusetts). Followed by using multiple fires of 45mm, 2.5mm endovascular stapler, (Covidien, Mansfield, Massachusetts). Further hemostasis was achieved by using monopolar electonenergy and fibrin glue, (Tissucol; Baxter, Vienna, Austria). Specimen is extracted in a retrieval bag by enlarging the supraumblical incision. No drain was left.

Operative time was 90 minutes with 50 cc estimated blood loss and discharged home on day two. Final pathology was hemangioma.
V-1-31  Laparoscopic Caudate Lobectomy (Segmentectomy 1)
Osamu Itano, Masahiro Shinoda, Minoru Kitago, Yuta Abe, Taizo Hibi, Hiroshi Yagi, Yuko Kitagawa
Keio University School of Medicine

Introduction: Caudate lobectomy is still technical challenge even in open surgery because of a hard-to-approach anatomic location.

Materials and Methods: The patient in the video was a 74 year old woman who was diagnosed as hepatocellular carcinoma located in segment 1. Firstly, the mobilization of the lateral segment and the right lobe was performed, followed by the complete mobilization of the caudate lobe from the IVC. Secondly, all Glisson’s branches to the paracaval portion and the Spiegel’s lobe are divided, and then the caudate lobe was completely separated from the hepatic hilum. Thirdly, liver transection was performed along landmarks, three main hepatic veins and hepatic hilum with the reference to the preoperative 3D imaging simulation. After complete resection of the caudate lobe, the ventral surface of the IVC and the dorsal surfaces of the RHV, MHV, and hepatic hilum are exposed completely on the raw surface of the liver.

Results and Conclusions: A total of 3 cases underwent laparoscopic caudate lobectomy. The mean operative time was 587 minutes and the mean blood loss was 460 ml. Histological examination of resected specimens revealed curative status with clear margins in all cases. We conclude that this operation is feasible and safe.

V-1-32  Parenchyma sparing liver resection: Repeat resections in both left and right lobe
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Introduction: Parenchyma sparing liver resection can be technically more demanding than formal resections, but leaves patient and surgeon with more options for treatment of recurrent tumours.

Method: At Oslo University Hospital, laparoscopic parenchyma sparing liver resection is performed whenever possible. Depending on the tumor etiology, we obtain resection margins from 1 mm to 10mm.

Results: We here present a patient with colorectal liver metastases. Her first liver tumour is solitary, located in s7. A new tumour is resected after 1 year, in segment 7/8, close to a large branch of the right hepatic vein. This was a new tumour, not a local recurrence. Shortly after this resection the patient got three more metastases located in both right and left lobe. These were resected laparoscopically. She got neo-adjuvant chemotherapy before both repeat resections.

Conclusion: For this patient, a right hepatectomy would have been the treatment of choice in many specialized centers. However, her second recurrence mandated a large resection of the left lobe. This would not have been possible after a right hepatectomy. The patient is now recurrence free, 6 months after the second repeat resection.
V-1-33 Parenchyma sparing liver resection: Large resection in segment 6/7

Asmund Avdem Fretland¹,², Bjørn Edwin¹,²
Oslo University Hospital, Norway¹, University of Oslo, Norway²

Introduction: Parenchyma sparing liver resection can be technically more demanding than formal resections, but leaves patient and surgeon with more options for treatment of recurrent tumours.

Method: At Oslo University Hospital parenchyma sparing liver resection is performed whenever possible. Depending on the tumor etiology, we obtain resection margins from 1 mm to 10mm.

Results: We here present a patient with a solitary colorectal liver metastasis located deep in segment 6/7. A right hepatectomy was initially planned, but after use of 3d reconstruction and resection planning system, the tumour could be resected sparing large parts of the right lobe.

Conclusion: A video of the operation will be presented, including the use of 3d reconstruction and a liver resection map that facilitates advanced laparoscopic liver resection.

V-1-34 The introduction and standardization of laparoscopic hepatectomy in our institute

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Background: Although laparoscopic hepatectomy (LH) is becoming a standard procedure, effective surgical techniques and appropriate equipment to dissect the liver are required. The aim of this study is to review our experiences and to present what techniques and equipment were effective for the standardization of LH. Methods: The study included 57 patients who underwent laparoscopic hepatectomy from April 2010 to May 2014. Patient characteristics, operative data, and surgical outcomes were retrospectively collected and analyzed.

Results: The mean tumor size was 21mm (range: 11-85mm). Fifty-five patients underwent partial resection of the hepatic segment (S1, 2, 3, 4, 5, 6, 7, 8), and two patients underwent lateral segmentectomy.

The mean operation time was 451 min (range: 119-1275min). The mean blood loss was 102 ml (range: 0-2755 ml). The mean postoperative hospital stay was 14.5 days (range: 6-65 days). Only one complication of bile leakage developed. There was no 90-days postoperative mortality.

Crushing and clumping or dividing on activation with BiClamp forceps followed by the use of a vessel sealing system or using CUSA with monopolar electrotome was effective and safety in dissecting a liver. Conclusions: LH using various surgical instruments can be safely performed. The use of Biclamp are useful for novices towards the standardization of the procedures for laparoscopic liver resection. Laparoscopic ICG fluorescence imaging enables real-time identification of subcapsular liver cancers, thus facilitating estimation of the required extent of hepatic mobilization and determination of the location of an appropriate hepatic transection line.
V-1-35  Robotic-assisted left lateral hepatic segmentectomy for huge hepatocellular carcinoma

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A 20-year-old female complained upper abdominal pain. Chemical analysis showed serum AFP level was elevated up to 2725 ng/ml. Enhanced CT demonstrated a 12 cm hepatic tumor hanging down from the left lateral segment. Because of the location and size of the lesion, we chose to perform left lateral segmentectomy using da Vinci surgical system. Our operative procedure is shown as below: 1) Arantius and umbilical plate was separated from live and taped from the bifurcation of glisson 3 and 4 through the entering point of the Arantius duct to the portal vein after elevating the round ligament. 2) Glisson 2 and 3 were taped separately and cut with linear stapler. 3) Following the liver dissection process, the left hepatic vein was cut with linear stapler and the liver tumor was removed. The procedure was successfully completed with an inoperative time of 328 min and an inoperative blood loss of 159 ml. The postoperative course was uneventful and the patient was discharged on postoperative day 8. Pathological study showed well differentiated hepatocellular carcinoma. Operation using da Vinci surgical system has advantage in procedure to separate whole Glissonean capsule and systematic liver resection due to the excellent ability to handle forceps.

V-1-36  The proper strategy of laparoscopic liver resection: Nagasaki University experience.

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Nagasaki University

Aim
The aim of this study to show our strategy and the point of surgical technique to use three laparoscopic procedures, pure laparoscopic (Pure), hybrid (Hybrid), and HALS.

Patients and Methods
In our department, the first pure laparoscopic lateral segmentectomy was performed in 1996. Thereafter, we have developed the laparoscopic procedure step by step, and our current policy is as follows;
- Pure lap for left lateral segmentectomy and partial hepatectomy.
- Hybrid for all types of hepatectomy including anatomical resection and multiple tumors.
- HALS for selected cases as with tight adhesion due to previous hepatectomy.

In the cases of huge tumor or massive intraabdominal adhesion, ordinary laparotomy (Mercedes Benz or subcostal incision) is adopted.

Results
Of 480 hepatectomies, Pure lap was performed in 44, Hybrid in 142 (65 in living donor hepatectomy), and HALS in 4. Hybrid was mainly performed, and there was no significant differences in the duration of surgery, blood loss, and postoperative complications between Hybrid and the ordinary laparotomy in living donor hepatectomy.

Conclusion
We believe our policy to perform Hybrid is reasonable, to secure the patient safety with maintaining radical curability, with accurate intraoperative evaluation using ultrasound, cholangiography, and possible recovery shot for accidental massive bleeding.
V-1-37 Laparoscopic Right Hemihepatectomy Preliminary experience of 20 patients in China Medical University Hospital

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China Medical University Hospital

Purpose:
We report our experience with laparoscopic right hemihepatectomy in China Medical University Hospital.

Materials and methods:
From March 2011 to March 2014, 20 patients underwent laparoscopic right hemihepatectomy in our institute. Inflow was controlled selectively. Parenchymal transection was performed with CUSA, Harmonic scalpel or Ligasure. Right hepatic vein was divided with linear cutter. The prospectively collected clinical data were retrospectively analyzed.

Result:
The indications for laparoscopic hepatic resection include HCC (n=12), metastatic tumor from colorectal cancer (n=5), and benign tumors (n=3). The mean tumor size was 4.47±2.4 cm (range, 1.6-9.5). Minimally invasive approaches to liver resection include pure laparoscopic (n=19) and laparoscopic-assisted approach open “hybrid” approaches (n=1). The mean operation time was 530±144 min (range, 408-843) minutes, mean blood loss was 311±164 ml (range, 100-700), and one patient needed blood transfusion. No patient required conversion to open surgery. The mean length of stay was 8.5±5.3 days (range, 5-30). Three patients developed complications, including one bile leaks, one wound dehiscence, and one liver insufficiency. One patient died of postoperative liver failure.

Conclusion:
Compared to traditional liver resection, laparoscopic approach was feasible and safe for selected patients.

V-1-38 A single center experience of Laparoscopic liver resections with special focus on the right posterior sectionectomy

Takashi Kaizu, Yusuke Kumamoto, Hiroshi Tajima, Hirofumi Kubo, Tohru Nishiyama, Masahiko Watanabe
Kitasato University School of Medicine

In spite of many experience of laparoscopic liver resection (LLR), the right posterior sectionectomy (rt-pos-sec) has still been challenging. We report our institutional experience of LLR with a central focus on the rt-pos-sec.

METHODS: Between August 2002 and June 2014, 132 LLRs were performed and included in this retrospective study.

RESULTS: Ninety six resections (73%) were performed totally laparoscopically (Pure), 24 (18%) were HALS and 12 (9%) were Hybrid. There were 9 (7%) conversions to laparotomy (4 bleeding and 3 adhesion). The resections included 71 (54%) partial resections, 29 (22%) anatomic left lateral sectionectomies, 6 (5%) left hemihepatectomies, 9 (7%) right hemihepatectomies and 13 (10%) rt-pos-sec. Median operative time, intraoperative blood loss and postoperative hospital stay were 410.4 min, 471.2 ml and 10.5 days, respectively. Postoperative complications occurred in 11 (8%) patients (3 bile leak). In case of rt-pos-sec, pure-lap showed better surgical outcome as compared with Hybrid or HALS.

CONCLUSIONS: Although LLRs are safe and feasible with acceptable morbidity, improving quality is especially required for major hepatectomies. During liver transection for rt-pos-sec, HALS prefer anterior approach to caudal approach, however, Pure-lap enable us to choose both approaches, may contribute to improvement of surgical outcome in Pure-lap technique.
**V-1-39** Laparoscopic Left Lateral Sectionectomy with Preoperative Chemoembolization

**Ricardo Robles, Asunción López Conesa, Roberto Brusadin, Erik Llacer, Pascual Parrilla**
Virgen de la Arrixaca University Hospital

**CASE REPORT.**
Male, 39 years old, with an history of intake of anabolic steroids during 15 years. He is diagnosed with an hepatocarcinoma of 12 cm in left hepatic lobe with infiltration of less gastric curvature. We indicated a transarterial chemoembolization of the tumour prior to laparoscopic liver resection than we performed surgery.

**SURGICAL TECHNIQUE:**
Total laparoscopic approach with 4 trocars; dissection of the branch to the segments II and III and section with vascular stapler. Parenchimal transection of the liver until left hepatic vein that is sectioned with vascular stapler. We confirm the invasion of the less curvature of the stomach and we perform laparoscopic resection and suture of the gastric wall.

The surgical time was 150 minutes, the blood loss was 200 cc without blood transfusion and without Pringle manoeuvre. The hospital stay was 5 days and the histology confirmed the presence of hepatocarcinoma totally necrotic.

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**V-1-40** Hand Assisted Laparoscopic Resection of SEG. VII with Ligasure and Endovascular Stapler without Pringle Maneuvre

**Ricardo Robles, Asunción López Conesa, Roberto Brusadin, Cristina Garcia, Pascual Parrilla**
Virgen de la Arrixaca University Hospital

**INTRODUCTION:**
Laparoscopic resection of seg VII represents a surgical challenge due to its posterior location. Some authors use endoscopic stapler to carry out the parenchimal transection and it could be very helpfull in laparoscopic resection of the posterior segments.

**OBJECTIVE:**
We present a segmentectomy of seg. VII using a hand assisted laparoscopic approach and laparoscopic stapler to perform the parenchimal transection without Pringle manoeuvre.

**SURGICAL TECHNIQUE**
We mobilize the right hepatic lobe with hand assisted approach. We encircle the hepatic hilum to perform Pringle manoeuvre if required. We begin he parenchimal transection with Ligasure and we continue with laparoscopic stapler to section the portal pedicle and hepatic vein without vascular occlusion. The surgical time was less than 120 minutes and blood loss was < 100 ml. There weren’t complications.

**CONCLUSIONS**
The mobilization of the right hepatic lobe with hand assisted approach is useful to expose the segment VII and facilitates its resection with laparoscopic stapler without Pringle Maneuvre.
V-1-41  Two Stage Hepatectomy by Hand Assisted Laparoscopic Liver Surgery (HALLS)

Ricardo Robles, Roberto Brusadin, Asunción López Conesa, Cristina García, Pascual Parrilla
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OBJECTIVE
To present a two stage hand assisted laparoscopic liver resection in patients with bilobar colorectal liver metastases (CRLM).

SURGICAL TECHNIQUE
We have performed 2 cases of complete two stage hand assisted laparoscopic liver resection in patients with bilobar colorectal liver metastases (CRLM). The first one was on December 2007.
In the first stage we performed a HALLS to remove the metastases in the left lobe.
On the 4th PO both the patients were discharged and on the 7th PO day we performed a right portal vein embolization. After obtaining an adequate hypertrophy of the future liver remnant we performed the right hepatectomy by HALLS. There were no complications and both patients were discharged 5 days after surgery.
In other 2 patients we performed the first time of the 2-stage liver resections, cleaning the liver metastases of the left lobe.

CONCLUSION
Two stage hepatectomy with HALLS approach could be a valid option in patients with CRLM due to a less surgical aggressiveness and faster recovery.

V-1-42  Extraparenchymal vascular control in a patient with biliary variation undergoing left hepatectomy

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Background: Laparoscopic major hepatectomies are technically challenging especially when extraparenchymal vascular control is needed. Other techniques have been reported. However, blind control not only can compromise margins but can also be dangerous especially in case of anatomical variations.

Aim: To demonstrate our technique with hilar approach and report its importance especially in presence of lesions near the bifurcations and with anatomical variations.

Methods: A 44-years man with history of colorectal cancer underwent a laparoscopic left hepatectomy for a lesion near the hilum. Differential diagnosis was between intrahepatic cholangio or metastatic lesion. Considering the proximity of the lesion to the biliary bifurcation, dissection of the left hepatic duct and control at origin was needed.
During the dissection of the left duct an abnormal branch was noted. Intraoperative cholangiogram confirmed the presence of aberrant right posterior biliary branch arising from the left biliary duct.

Results: Histology confirmed clear resection margin of colorectal liver metastasis. Operative time was 450min, hospital stay 4 days, with no intra or postoperative complications.

Conclusions: Although different techniques have been reported for laparoscopic hemihepatectomies, extraparenchymal inflow control may be essential in many cases and surgeons should be familiar with the technique if aiming to perform left hepatectomies.
V-1-43  Laparoscopic Right Hepatectomy with Hydrojet and Harmonic Scalpel Dissection

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The increasing availability of laparoscopic energy devices for vessel sealing and division has been a boon to laparoscopic surgeons worldwide. Liver resection in particular has been aided by the improved performance and evolving ergonomics of these devices. The Hydrojet dissector has proven to be of enormous benefit in open liver resection. It allows precise parenchymal dissection and clear exposure of even the smallest vessels and biliary radicles. Its adoption in open surgery has been somewhat limited, with the established technologies of CUSA, bipolar electrocautery and ultrasonic technology enjoying more widespread adoption. In laparoscopic liver surgery, few centres routinely employ the Hydrojet. Our institution routinely employs Hydrojet for live donor hepatectomy and as such we have extensive experience with the device. We have employed Hydrojet regularly for laparoscopic hepatectomy and describe herein our technique of parenchymal division during major hepatectomy, combining the benefits of the Hydrojet and the Harmonic Scalpel. We demonstrate the precise parenchymal dissection made possible by the laparoscopic Hydrojet. We propose that this technique of liver resection is safe, efficient and precise.

V-1-44  Real-Time Fluorescent Cholangiography (FCG) in Full Laparoscopic Living Donor Hepatectomy: a Reliable Road Map of the Intra Hepatic DUCTS?

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Background. Intraoperative cholangiography is used during living donor hepatectomy (LDH) to identify the biliary anatomy. Intraoperative fluorescent cholangiography (FC) using Indocyanine Green (ICG) has shown to be reliable for the main biliary ducts. This video shows different protocols of ICG injection performed during laparoscopic living donor hepatectomy (LDH).

Material and methods. We investigated 5 different protocols. Protocol A (n=3), i.v. ICG injection 2.5 mg and immediate cut of the bile ducts; B (n=3) same doses and late cut (60-90 min); C (n=1) low dose i.v. (1 mg) late cut; D (n=1) intraductal injection 2.5 mg and immediate cut; E (n=1) intraductal injection 5 mg and immediate cut. A 30° optical Storz ICG camera was used.

Results: Protocol A showed immediate signal in the vessels and in the ductal sheet. Protocol B showed intraductal excretion with a high parenchymal signal. Protocol C showed a very week signal with less parenchymography. Protocol D failed to visualize the ducts whereas protocol E showed a good signal with no contrast parenchymography. Identifying the confluence d4 and d2-3 was not clear.

Conclusion. FC is a potential useful method to evaluate the biliary ducts in laparoscopic LDH. Further experiences are needed to identify the ideal protocol.
V-1-45 Use of Intercostal, Transthoracic Trocars for Laparoscopic Resection of Posterior Segment Lesions: Resection of Segment VII for Peripheral Cholangiocarcinoma

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Background:
For patients with tumours in the posterior segments of the liver (segments VII/VIII), laparoscopic access is difficult and hence often laparoscopic right hepatectomy or an open approach is opted for. We report the novel use of intercostal and transthoracic trocars in a laparoscopic approach to these lesions.

Method:
A 63 year-old presented with a suspicious segment VII lesion. The patient was positioned in the left lateral decubitus position and normal abdominal laparoscopy performed. A pringle loop was placed to enable vascular control if required. The right liver was mobilised and RHV exposed, with laparoscopic ultrasound used to locate the lesion. Three 5mm thoracic ports were applied intercostally and through the diaphragm. Parenchymal transection progressed anteriorly and then switched to approach from transthoracic ports to complete the transection posteriorly, with the specimen retrieved using an endocatch. Topical haemostatic agents were applied and port defects in the diaphragm closed.

Results:
Operating time was 140 minutes and blood loss 240ml. The patient went home day 4 without complication. Histopathology revealed a solitary, 25mm cholangiocarcinoma and a negative surgical margin.

Conclusion:
Laparoscopic approach to posterior segment lesions using intercostal, transthoracic ports represents a novel, minimally invasive approach to lesions that would usually require major hepatectomy.
P-1-1 Scoring System to Predict the Ease of Laparoscopic Liver Resection

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AIM: Laparoscopic liver resection (LLR) is safe and shown superior outcomes in pheiripherally located small lesions. But few reports are available to predict the ease of laparoscopic liver resection. We here by propose a scoring system to predict the severity of liver resection.

Materials & Methods: LLR is dependant on many variables like tumor - size, number, location, extent, vascular involvement, patient-normal liver, post chemotherapy steatosis, cirrhotic & also technique-Pure laparoscopy, Hand assisted, Hybrid & Robotic.

Results: The variables for Beginner are size<5cm, number<3, peripherally located in seg 2/3/5,6, normal liver & benign or an early HCC. For Intermediate ease are size 5-8cm, number 3-6, located in anterior or posterior sector, post chemo status, vascular involvement & large HCC or colorectal liver met. Variable for advanced laparoscopy are size >8cm, number>6, post sector location, cirrhotic liver, vascular involvement or adjacent organ involvement & donor heptectomy.

Proposal: We propose, beginner can perform a pure laparoscopic liver resection if it fulfills all the above criteria. Intermediate category risk variables, either pure laparoscopy or assisted procedure recommended. Advanced nature of variables, assisted technique is recommended & pure laparoscopic technique is advised for only highly skilled surgeons (> 60 laparoscopic resections).

P-1-2 Classification of Technical Demand for Laparoscopic Liver Resection

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Introduction: Despite previous reports describing favorable indications for laparoscopic liver resection (LLR), technical demand for LLR remains unclear. We, herein, evaluated short-term outcomes of our experiences with the aim to propose a classification of LLR.

Methods: Subjects consisted of 491 patients who underwent LLR from 1995 to 2013. To minimize bias in operative time, 246 patients, who underwent multiple/repeat liver resections and/or other simultaneous procedures, were excluded. Thus, 245 patients were eligible for the study. Results: LLR types were classified into 3 grades including one subgroup based on operative time (Figure 1): Grade I, wedge resection and left lateral sectionectomy; Grade II, anterolateral segmentectomy and left heptectomy; Grade IIIA, posterosuperior segmentectomy and right heptectomy; Grade IIIB, central heptectomy and right/left extended heptectomy. Median operative time, median estimated blood loss, and major complication rate are significantly different among Grade I, II, IIIA, and IIIB (operative time, 120 vs. 180 vs. 240 vs. 300 min, P<0.001; blood loss, 10 vs. 120 vs. 250 vs. 520 mL, P<0.001, major complication rate, 2.1 vs. 0 vs. 16.3 vs. 25.0 %, P<0.001).

Conclusions: This classification guides liver surgeons at the beginning/intermediate level of laparoscopic approach to their optimal indications for LLR, ensuring the safe of LLR.
P-1-3  Trendspotting of Robotic Liver Resection after Systemic Review

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Background
Robotic liver resection is safe and feasible for experienced surgeons with advanced laparoscopic skills. Long-term oncologic outcomes are unclear, but short-term perioperative results seem comparable to those of conventional laparoscopic liver resection.

Aim
To track the trend of robotic liver resection after the systemic review published.

Methods
The key words of robotic, liver, and surgery were used to search original articles in Pubmed published since 2013 and not included in the review. Research and Clinical trends of the series were reviewed.

Results
Two papers published by Tsung et al. and Troisi et al. were reviewed. Both studies, one matched/single center and another retrospective/bi-institutional, focused on the comparison of surgical and postsurgical outcomes between robotic (R) and laparoscopic (L) liver resections. Both groups displayed, again, comparable profiles of safety and feasibility, though R groups tend to allow more resections of the postero-superior segments and a greater proportion of cases completed in a totally minimally invasive manner.

Conclusion
There were no significant benefits of robotic over laparoscopic techniques in operative outcomes in experienced hands. Comparative research toward long-term outcomes and cost-effectiveness is still avidly waiting to fully apply the robotic approach in the field of liver resection.

P-1-4  Robotic hepatectomy, Initial experience at Singapore General Hospital

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Introduction: The most significant advance in laparoscopy in the last 10 years is the advent of robotic laparoscopic surgery. Although robotic surgery has been adopted routinely for various surgical procedures such as prostatectomy, its use in liver surgery remains limited. This study aims to examine our institution’s preliminary experience with robotic liver resections.

Methods: This is an IRB-approved prospective study with the da Vinci-Si Surgical System (Intuitive Surgical Sunnyvalle, Calif, USA) over a 6-month period at a single institution.

Results: During the study period there were 3 robotic hepatectomies including 1 left lateral sectionectomy, 1 segment II/III resection and 1 segment V resection with cholecystectomy. 2 hepatectomies were performed for suspected HCC and 1 for a large symptomatic haemangioma. The median age of patients was 53 (range 38 to 66) years. The median total operating time (including docking time) was 350 minutes(305 to 435) and the median blood loss was 200mls(50 to 300). No conversions were required and there were no mortalities or major morbidities (> Clavien-Dindo grade 2). The median hospital stay was 5 days.

Conclusion: Our initial experience confirms the feasibility and safety of the application of robotic-assisted surgery in liver resections.
P-1-5  Robotics in Liver Surgery - Single Surgeon Experience in a Large Scale Tertiary Care Institution

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Aim: Minimally invasive liver surgery aims to achieve optimal oncological resections, early postoperative recovery, and decreased morbidity. With major liver resections being performed laparoscopically over the last two decades, using robotics is relatively new.

Methods: A single center retrospective analysis for patients who underwent minimally invasive liver resections (≥2 segments) from 2011-2014 (n=49). The Robotic group (n=23) and the Laparoscope group (n=26) were compared and demographics, BMI, diagnosis, ASA, resection type, blood loss, transfusion, OR time, length-of-stay, and 30-day mortality were recorded.

Results: The mean age of patients in Robotic group was 62.4 (±12.7) and 54.6 (±14.1) in the Laparoscope group. More patients had BMI >25 in the Laparoscope group (n=21, 17) and the most common indications for surgery in the Robotic group was liver metastases versus hepatocellular carcinoma for the Laparoscope group. Postoperative outcomes: no significant difference in median blood loss between Robotics and Laparoscope (450cc, 400cc, p=0.9722); and OR times (247min, 229min, p=0.5151). The average transfusion 90-day readmissions were significantly lower in the robotic group (600cc vs 2100cc, p<0.0001; 0days vs 8days, p=0.0042).

Conclusion: Robotic liver resections are safe, feasible and effective as compared to the outcomes of resections performed laparoscopically.

P-1-6  Robotic Anatomical Liver Resection with Glissonian approach;  
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Yonsei University College of Medicine

Background: Evolution of robotic surgery techniques has brought a variety of minimally invasive liver resection. Especially, Glissonian approach by robot allows selective vascular clamping procedure, which contributed to low rates of technical failure and complication of laparoscopic liver resection.

Method: From January 2010 to May 2014, 14 patients underwent robotic anatomical liver resection. The procedures are as follows: 1) Isolation and clamp of selective Glissonian pedicle 2) Parenchymal traction with rubber band technique and 3) Division of Glissonian pedicle after full exposure and then complete the parenchymal transection.

Result: The median age of the patients was 52.50 (range 28-71) years and 10 patients were male. There was only one conversion to open surgery. The median operation time was 493 minute (range 302-848). And the median blood loss was 190 ml (range 30-780). There was no perioperative transfusion. The overall complication rate was 64.2%. The median length of hospital stay was 7 days (range 6-11).

Conclusion: Although operation time was a little bit longer than expected, blood loss was small and there was only one conversion to open surgery so that robotic anatomical liver resection with Glissonian approach could be a feasible and safe liver resection method.
P-2-1  Transarterial Chemoembolization Prior to Laparoscopic Liver Resection for Hepatocellular Carcinoma

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Objective
We performed preoperative transarterial chemoembolizacion (TACE) in all patients with hepatocarcinoma (HCC) in which we had scheduled a laparoscopic resection (LR) with the aim to reduce surgical bleeding. We analyze local recurrence, and survival at 1, 3 , 5 years.

Method
We performed 146 LR and 24 were for HCC: 17 with Child A cirrhosis and 7 with healthy liver. A CT scan three weeks after TACE assessed the absence of vascularization on the embolized segments. Following operations were carried out: 17 pure laparoscopy, 6 hand-assisted laparoscopy, 1 SILS.

Results
No transfusion, pringle maneuvre was used in 3 patients (12.5%), blood loss 170 ml (0-500), operative time 145 min (50-240), hospital stay 4.4 days (range 2-12), morbidity 4,1%, mortality 0%. We obtained free tumour margin in all nodules. The tumor necrosis was 100% in 14 nodules, >90% in 8 nodules and between 70-80% in 2 nodules. There wasn’t local recurrence and overall survival at 1, 3 ,5 years was 100,87,87% respectively

Conclusion
The isquemic effect of TACE was useful to facilitate the LS reducing the intraoperative bleeding and its related complications, it could be reduce the recurrence on the resection’s margin.

P-2-2  Effectiveness of Laparoscopic Hepatic Resection for Hepatocellular Carcinoma -Comparison to Open Surgery-

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Background: Laparoscopic hepatic resection for hepatocellular carcinoma (HCC) is gradually gaining acceptance as a safe procedure.

Patients and Methods: Clinical records of 89 patients with HCC (initial, ≤3 nodules all ≤3 cm, no macrovascular invasion) who underwent partial hepatectomy between 2007 and 2012 were retrospectively reviewed. Of the 89 patients, 35 underwent laparoscopic approach and the remaining 54 were treated using open approach. Outcomes after surgery were compared for the two approaches.

Results: No laparoscopic approaches were converted to open surgery. There were no differences in the patients’ backgrounds, liver damage, operative factors, postoperative course (no mortality) or tumor factors between the two groups, except operation time (laparoscopic approach: median, 247 min and open approach: 200 min, p = 0.04). Postoperative hospital stay was shorter in laparoscopic group (median, 10 days) than in open group (12 days, p = 0.02). Overall survival rates at 3-/5-years were 91%/78% in laparoscopic group and 91%/81% in open group, respectively (p = 0.81). Disease-free survival rates at 1-/3-years were 79%/48% in laparoscopic group and 73%/50% in open group, respectively (p = 0.90).

Conclusions: Laparoscopic hepatectomy for HCC is safe in selected patients, and may lead to good surgical results.
P-2-3 Short and middle term outcomes after laparoscopic versus open liver resection for hepatocellular carcinoma: A single institution experience.

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The aim of this study was to analyze the perioperative results and survival outcomes of laparoscopic liver resection (LLR) versus open liver resection (OLR) for hepatocellular carcinoma.

PATIENTS AND METHODS:
Between May 2010 and October 2013, 139 patients underwent LLR for HCC at Kansai Rosai Hospital. Historical control patients of OLR (n = 92) were included for comparison.

RESULTS:
The intraoperative blood loss was lower in the LLR group than the OLR group (447.5 vs. 1343.3 ml; p<0.001). With the LLR compared with the OLR, operation time was 321.4 minutes versus 214.0 minutes (p<0.001). AST on the POD1 was 504.4 IU/L versus 420.8 IU/L (p=0.168), ALT was 358.2 IU/L versus 322.9 IU/L (p=0.459), total bilirubin was 0.95 mg/dl versus 1.21 mg/dl (p=0.002), WBC was 9319 /μl versus 11584 /μl (p<0.001), and CRP was 1.16 mg/dl versus 2.85 (p<0.001). The one year disease-free survival at 1 year of stage I, II, III HCC were 86.4% versus 76.2 % (p=0.838), 75.5% versus 79.2 % (p=0.809), and 73.3% versus 43.5 % (p=0.043) for LLR and OLR, respectively.

CONCLUSIONS:
Compared with open liver resection, laparoscopic liver resection for HCC is associated with less blood loss and lower systemic influence with no compromise in survival.

P-2-4 Early laparoscopic liver resection for spontaneously ruptured hepatocellular carcinoma

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Spontaneously ruptured hepatocellular carcinoma (HCC) occurs in up to 15% of HCC patients and is associated with a high mortality rate. Aggressive resuscitation and hemostasis via arterial embolization are imperative in the initial management. Subsequently, delayed liver resection (LR) is usually performed as a definitive treatment. Immediate LR is rarely performed because of the reported low resection rate (12.5-31%) and the high mortality rate (16-100%). However, in highly selected patients who are hemodynamically stable with a good functional liver reserve, an early one-stage procedure may be appropriate. Laparoscopic LR is now an established treatment option for HCC, however, its use in the management of spontaneously ruptured HCC has not been well described. We describe 2 cases of spontaneously ruptured HCC successfully treated via laparoscopic approaches. Both patients presented with abdominal pain and computed tomography revealed hemoperitoneum with a lesion consistent with a ruptured HCC. After initial resuscitation and transfusion, both patients were stable and the semi-urgent laparoscopic LR was performed at 28 hours (26-30) after initial presentation. Mean operating time, blood loss and length of stay was 168 mins, 400 mls and 6 days respectively. Resection margins were negative (17-20 mm). Early laparoscopic resection of ruptured HCC is feasible and can be considered in the treatment algorithm of selected patients who have been well stabilized.
P-2-5 Benefit of laparoscopic splenectomy and hepatectomy for HCC in patient of liver cirrhosis with portal hypertension

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Kanazawa university

【Introduction】We undergo laparoscopic splenectomy with hepatectomy for the cirrhosis HCC patients with portal hypertension positively now. We report advantages and problems of the laparoscopic splenectomy with hepatectomy.

【Patients】The subject is 23 patients of HCC with hypersplenism where hepatectomy was performed with Hassab operation or splenectomy for five years from 2009 through 2013. Child-Pugh score significantly decreased after the operation as compared with preoperation by performing splenectomy with hepatectomy. There was no surgery-related death. Although portal vein thrombosis was detected in 9 cases (39%), all cases were improved by anticoagulant therapy. As other complications, intra-abdominal hemorrhage was one patient, but the sepsis was not found. Eight cases performed splenectomy with hepatectomy under laparotomy and 15 cases performed laparoscopic splenectomy with hepatectomy. The laparoscopic cases significantly had less quantity of intraoperative hemorrhage and short hospital stay than the laparotomy cases. The risk of the postoperative portal vein thrombosis was high with 63% in laparotomy group, but the laparoscopic group was low with 27%.

【Conclusion】For HCC cases with hypersplenism, laparoscopic splenectomy with hepatectomy are extremely beneficial to make reduction of intraoperative hemorrhage and postoperative hospital stay as compared with laparotomy cases.

P-2-6 Laparoscopic hepatectomy in Hokkaido University Hospital

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Hokkaido University

BACKGROUND:
The laparoscopic hepatectomy in Hokkaido University Hospital was revised.

METHODS:
We performed laparoscopic hepatectomy in 88 patients between 2001 and 2014, using ultrasonic coagulating shears and monopolar sealers with a combination of radiofrequency (RF) energy.

RESULTS:
There were 55 cases of Hepatocellular carcinoma, 15 of echinococcosis as hydatid disease, 9 of metastatic liver cancer from colorectal cancer and 9 of other benign tumors. The laparoscopic hepatectomies included 27 cases of nonanatomical partial resection, 10 of segmentectomy, 30 of sectionectomy and 21 of lobectomy. The laparoscopic approaches were 48 cases of pure laparoscopic approach, 38 of hybrid approach and 2 of hand assisted approach. The mean duration of the operation was 244.2 min. The mean amount of blood loss was 247.0 ml. Postoperative complications consisted of 2 cases of bleeding, one case of bile leakage (3.4%). The conversion from laparoscopic to open hepatectomy was in one case. The mean postoperative hospital stay was 8.6 days. The mean amount of blood loss (99 ml) under pure laparoscopic approach was significantly less than that (395.8 ml) under other approach (p<0.01).

CONCLUSIONS:
Laparoscopic hepatectomy with the ultrasonic coagulating shears and monopolar sealers was safe and less invasive, even under pure laparoscopic approach.
**P-3-1** Should we be afraid of conversion in laparoscopic major liver resection? A multi-institutional analysis of the incidence, risk factors and consequences of conversion.

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Institut Mutualiste Montsouris¹), Hopital Beaujon²), Hopital Saint Antoine³)

Background. The present study aimed at determining the incidence, risk factors and postoperative consequences of conversion in patients undergoing laparoscopic major hepatectomy (LH).

Methods. From 2000-2012, all patients undergoing LH at two tertiary referral centers were retrospectively reviewed and the risk factors associated with conversion were determined on multivariate analysis. Propensity score adjusted comparisons (PSC) were performed between converted patients and matched (1) laparoscopic non-converted patients operated at the same centers but also (2) upfront laparotomy patients operated at another center.

Results. Conversion occurred in 30 (13.5%) of the 223 LH patients. The two most frequent reasons for conversion were bleeding and failure to progress in 14 (46.7%) and 8 (26.7%) cases respectively. On multivariate analysis, risk factors for conversion were a BMI>28 (p=0.010), tumor size >10 cm (p=0.014), and biliary reconstruction (p=0.048).

After PSC, complications rates in converted patients were significantly higher than in matched non-converted patients (75.0% vs. 47.3%, p=0.005), but not significantly different compared with matched upfront laparotomy patients (78.9% vs. 67.7%, p=0.438).

Conclusion. Conversion during LH should be anticipated in case of obese patients, large lesions and biliary reconstruction. While conversion reduces the benefits of laparoscopy it yields similar postoperative results as laparotomy.

**P-3-2** Learning Curve of Laparoscopic Left Lateral Sectionectomy: a feasible and safe stairway for a gold standard procedure. Results from an international multi-institutional analysis on 245 cases from four single surgeons.

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Objectives
Laparoscopy was suggested as gold standard for Left Lateral Sectionectomy (LLLS) thanks to recognized benefits compared to open approach. Aim of this study was to define LC of LLLS using Operative Time (OT) as a tool to analyze outcome of procedures performed by four experienced surgeons.

Method
LLLS performed by four experienced surgeons were prospectively collected and retrospectively reviewed. A cumulative LC was created calculating median OT. Skewness of OT was analysed and ROC curve was carried out to identify the cut-off for LC. The impact of LC on outcome was determined.

Results
245 LLLS were collected. Disease characteristics and perioperative outcome were similar among centers. Conversion rate was 1.2%. Median OT was 141 minutes, blood loss 100 mL, morbidity was 11.4% and mortality 0.4%. “Associated procedures” was the only independent factor affecting OT. The skewness of the OT was calculated and ROC curve identified cut-off point for LC after 15 LLLS. LLLS performed during and after LC period had similar outcome.

Conclusion
LLLS is a standardized and reproducible procedure. LLLS was feasible with low morbidity, mortality and conversion rate. LC in LLLS is shorter compared to minor liver resections. LC was reproducible, without affecting clinical outcome.
P-3-3  The single-surgeon learning curve in laparoscopic liver resection: a continuous evolving process through stepwise difficulties. Analysis of 341 procedures over ten years time.

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Background: Laparoscopic liver resection (LLR) is currently limited by the challenges of the technique. From the available data it is unclear whether the learning curve (LC) is related to the single surgeon or the center expertise.

Methods: Between 2003 and 2013, 341 out of 450 LLR performed by a single surgeon were pulled out from a prospective database. The LC was evaluated based on a difficulty score (DS; range 1-11) assigned to each resection according to the segmental anatomy and indication for LLR. The results were evaluated using the risk-adjusted CUSUM for: conversions, estimated blood loss (EBL), operative time (OT) and morbidity.

Results: The DS trend during the LC showed 3 different periods: I (n=91) mean DS=3.8; II (92-159) and mean DS of 5.3; III (160-341) and a mean DS of 4.7. The Period II presented the highest conversion rate, morbidity and OT (p=<0.001). Period III showed the best results (p=<0.001).

After the first 50 LLR we recorded a continuous decrease in EBL. Conclusions: A minimum of 50 LLR is needed to obtain advanced laparoscopic skills required to control the EBL.
To perform all kind of LLR with the best performances, 160 cases are necessary for a single hepato-biliary surgeon.

P-3-4  Laparoscopic Writing; A New Way to Improve Laparoscopic Precision in Beginners

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Introduction
Training laparoscopic/endoscopic skills to beginners are a challenge. They need to learn hand eye coordination, precise and fine movements using laparoscopic instruments. Writing involves well coordinated cognition with precise and fine movements. We hypothesized that letter writing using a laparoscopic simulator would improve the laparoscopic precision in beginners.

Material and Methodology
Twenty two medical students randomized into two groups. The group one (GP1) was the control group without training. The group two (GP2), was given to write A to Z letters on a white paper placed in a laparoscopic Box trainer (Ethicon Endo surgery Turtle). Each student was instructed to write letters A to Z within the given space of 1cm wide and 26 cm long. Ability to write more than 15 letters without overlap and within the space considered a ‘satisfactory’. Each student was trained until ‘satisfactory’ or 7 attempts, which ever attained earlier. Assessment was done in both groups by instructing to cut a drawn circle with a diameter of 5cm on a white paper. Time and precision (accuracy) was assessed.

Results
The precision and the time improved significantly with the laparoscopic letter writing.

Conclusion
Laparoscopic letter writing would be incorporated to laparoscopic/endoscopic training for beginners.
P-3-5  Need for Laparoscopic Liver Resection in a Liver Transplant/HPB Unit

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Global Hospitals

Aim: Laparoscopic liver resection has become increasingly acceptable worldwide. But still few centers perform or offer laparoscopic liver resection worldwide routinely. The need for laparoscopic liver resection is acutely needed. Hereby we report the patient feedback for the above need.

Materials & Methods: All patients who presented to the Institute of Liver diseases & Transplantation at Global Hospitals, Chennai with liver tumors were interviewed about laparoscopic liver surgery & the same was analyzed.

Results: From Jan 2014- June 2014, about 86 patients in the age group of 6-78 presented with liver tumors (Benign & Malignant). Out of these about 36 were operable which included 22 patients with HCC, 6 were hemangioma, 3 were intra hepatic cholangiocarcinoma, 3 colo-rectal liver secondaries & 2 were biliary cystadenoma. On interviewing about 65% were open for laparoscopic liver surgery, 20% were against & 15% were equivocal for same. Of these atleast 50% could have been completed laparoscopically.

Conclusion: Above survey shows the need for developing laparoscopic liver resection techniques in a HPB/Liver transplant unit & to avoid being laggards in the evolution of surgery.

P-3-6  Learning curve for major laparoscopic liver resection: experience of a single center

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Background: The present study aimed to evaluate the learning curve for laparoscopic major hepatectomy (LMH) at a single center.

Methods: The data of 173 consecutive patients who underwent LMH between 1998 and 2013 were recorded into a prospective database and analyzed. The learning curve was evaluated using the CUSUM method.

Results. The types of major hepatectomy included left hepatectomy in 28 (16.2%) patients, left trisectionectomy in 9 (5.2%), right hepatectomy in 115 (66.5%), right trisectionectomy in 13 (7.5%), and central hepatectomy in 8 (4.6%). The median operating time was 270 min (range:100-540), and the median blood loss was 300 mL (range:10-4500). There were 20 conversions to open procedures (11.6%). The CUSUMOT learning curve was modeled as a parabola [equation CUSUMOT (min)=0.214×case number2-30.586×case number-1118.3 (R=0.735)]. The learning curve comprised three unique phases: phase 1 (45 initial cases), phase 2 (30 intermediate cases), and phase 3 (the subsequent cases). Phase 1 represented the initial learning curve, phase 2 plateau represented increased competence with laparoscopy, and phase 3 was achieved after 75 cases and represented the mastery phase.

Conclusions: The data suggest that the learning phase of LMH included 45 to 75 cases.
P-3-7 The Influence of the Learning Curve in the Results of the Laparoscopic Liver Surgery

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OBJECTIVE:
To present the influence of the learning curve in the results of laparoscopic liver resection in our Liver Surgical Unit during a period of 12 years.

PATIENTS AND METHODS:
We divide the laparoscopic liver resections performed at our department into two groups following a chronological criteria. We compare the first 75 patients with the last 75 patients. We analyze age, sex, comorbidity, diagnosed, number of nodules, size, conversion rate, approach, surgical technique, blood loss, surgical time, hospital stay, morbidity.

RESULTS and CONCLUSIONS.-
Between January 2003 and April 2014 we have performed 1100 liver resection, 150 of them were laparoscopic. There were no differences between two groups in age, sex, comorbidity, colorectal liver metastases, primary liver tumors, benign tumors, number of resected nodules, size of the tumor, blood losses, surgical time, morbidity and mortality. In the 2nd period of this study we operated on more patients with cirrhotic liver (p<0.05); there was less conversion (p<0.05), we use less frequent the Pringle maneuver (p<0.05), less transfusion (p<0.05) and there was less hospital stay (p<0.005). But we performed more major liver resection in this 2nd period (p<0.05).
P-4-1 The cost and cost effectiveness of replacing open surgery with laparoscopic surgery in liver resections for colorectal metastases.

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Background: No evidence from prospective randomized trials exists on the cost and cost effectiveness of replacing open surgery with laparoscopic surgery in liver resection for colorectal metastasis.

Methods: A cost and a cost utility analysis will be performed using individual data on costs and Health Related Quality of Life (HRQoL) from the Oslo COMET-study, a prospective randomized controlled trial comparing laparoscopic with open surgery.

Results: Length of stay for the initial treatment will be gathered through patients’ journals. Anticipated cost drivers are costs in the operation theatre and costs of complications. Micro costs are currently gathered in the operation theatre, and complications are reported using the Accordion-classification until the 1 month follow up. Additional health care and societal costs are reported from patients at the 1 and 4 month follow up. National registry data will be used to assess resource use after 4 months. HRQoL is gathered using the SF-36 at inclusion, 1, 4 and 24 month follow up. A Markov model with a life time horizon and a societal perspective will be built to perform a cost utility analysis.

Conclusion: Results from the project will contribute to guide decision makers on whether to replace open surgery with laparoscopic surgery.

P-4-2 Laparoscopic hepatectomy for hepatocellular carcinoma using a puncture method by indocyanine green injection under laparoscopic ultrasound

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It is important to minimize surgical invasiveness in the therapy of patients with hepatocellular carcinoma (HCC) and, consequently, laparoscopic hepatic resection is widely performed. However, most anatomical resections, except left lateral sectionectomy, remain difficult technically and laparoscopy-assisted procedures have been introduced as an alternative approach because of the safety and curative success of the operation. We reported previously pure laparoscopic subsegmentectomy of the liver using puncture of the portal branch under percutaneous ultrasound (US) with artificial ascites. Herein, we describe pure anatomical laparoscopic segmentectomy using the puncture method with indocyanine green (ICG) injection under laparoscopic US.

Methods and results: Pure laparoscopic segmentectomy was planned for two patients with HCC of the liver. Identification of the segment was performed by ICG injection for optical imaging using near-infrared fluorescence (NIR) under laparoscopic US guidance. The procedures were completed successfully and the postoperative courses were uneventful.

Conclusions: Pure laparoscopic segmentectomy for HCC with a conventional puncture technique by ICG injection under laparoscopic US is considered to be a useful procedure featuring both low invasiveness and curative success.
P-4-3  An experimental study on the relationships among airway pressure, central venous pressure and pneumoperitoneum pressure in pure laparoscopic hepatectomy

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Introduction: Although the risk of pulmonary gas embolism is of concern, high pneumoperitoneum pressure (PPP) is often used to control bleeding from the hepatic vein (HV) during pure laparoscopic hepatectomy, while we noticed it was often effective to decrease airway pressure (AWP).

Methods: In 6 piglets, after establishing carbon dioxide pneumoperitoneum, CVP was measured 3 times at each of 9 levels of AWP, which was increased at increments of 5 cmH2O from 0 to 40 cmH2O, maintaining PPP at 25 mmHg. CVP was then measured in the same manner, maintaining PPP at 20, 15, 10, 5 and 0 mmHg. Correlation and regression analyses were performed among these variables.

Results: There were positive correlations between AWP and CVP as well as between PPP and CVP. AWP had a stronger correlation with CVP than PPP. When PPP increased, CVP was persistently higher than PPP under high AWP; however, CVP did not increase when PPP was higher than CVP under low AWP.

Conclusion: When AWP is high, increasing PPP is not effective to control bleeding from HV. When AWP is low, increasing PPP can cause pulmonary gas embolism. AWP should be decreased before increasing PPP when controlling bleeding from HV.

P-4-4  Open liver resection induced an increased inflammatory response compared to laparoscopic liver resection.

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Introduction: Laparoscopic liver resection is being developed into the gold-standard procedure for liver resection. The aim of this trial was to examine the inflammatory response after open and laparoscopic liver resection.

Methods: The first 45 patients included in the randomized Oslo CoMet trial were selected for the present study. All patients had parenchyma sparing resection of colorectal liver metastases (CRLM). Blood samples were obtained preoperatively, after anesthesia, at set time points during surgery and 2, 6 and 24 hours after surgery. EDTA-plasma was snap-frozen at -80°C. Cytokines, cell free DNA (cf-DNA) and complement activation (TCC) were measured using luminex and ELISA techniques.

Results: Of the 30 mediators analysed, seven showed a statistically significant increase from baseline to maximum level: HMGB-1, IL-6, IL-10, MCP-1, MIP-1β, cf-DNA and TCC. Three of these (IL-10, MIP-1β and TCC), showed no significant differences between groups. For HMGB-1, IL-6, MCP-1 and cf-DNA, however, the increase after open liver resection was significantly pronounced compared to laparoscopic resection.

Conclusion: These data indicate that open liver resection for colorectal metastasis induces a pronounced inflammatory response, reflected in a selective increase in HMGB-1, IL-6, IL-10 and cf_DNA, as compared to laparoscopic resection.
P-4-5  Prospective and randomized study to analyze the inflammatory response after hand assisted laparoscopic and open liver resection in patients with colorectal liver metastasis (CRLM).

Ricardo Robles1), Roberto Brusadin1), Beatriz Abellan2), Asunción López Conesa1), Ana García1), Rocío Álvarez1), Pascual Parrilla1) Virgen de la Arrixaca University Hospital1), Reina Sofia University Hospital2)

OBJECTIVE. -We have analyzed the inflammatory response after hepatic resection performed by hand assisted laparoscopic surgery (HALS) comparing with open surgery (OS) in CRLM patients and methods.

- A prospective randomized study for five years was conducted, including 20 patients in each group. Levels of IL-6, IL-10 and TNF-alpha at three moments were determinate: the day before surgery, 3 days after surgery and after 30 days from surgery.

RESULTS. - In HALS group IL-6 preoperative levels were 10.88 ± 10.8, increasing the third postoperative day (33.30 ± 23.45) (p<0.001), being standardized by one postoperative month (13.33 ± 12.26). IL-10 and TNF-alpha levels, there was no differences between any of the 3 times. In the OS group preoperative levels of IL-6 (8.87 ± 9.41) increase the third postoperative day (35.05 ± 40.26) (p <0.013), normalized from postoperative month one (11.17 ± 12.04). For IL-10 and TNFalpha, there was no difference between any of the 3 times. Comparing the HALS and OS group, we found no difference respect to IL-6, IL-10 and TNF-alpha levels.

CONCLUSIONS.- There are no variations between the inflammatory response that occurs after hepatic resection in patients with CRLM, comparing OS with HALS.

P-4-6 The use of intercostal and transthoracic trocars for laparoscopic resection of segment VII/VIII dome liver lesions compared to conventional laparoscopic approaches

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Introduction: Dome liver lesions in segment VII/VIII pose a challenge to standard laparoscopic techniques. The additional use of intercostal trocars improves visualization and facilitates resection over standard laparoscopic subcostal techniques.

Methods: A retrospective review of our liver resection database was performed for all resections via this technique compared to standard subcostal laparoscopic (SSL) approaches. We describe our technique of a) intercostal, b) intercostal transdiaphragmatic and c) intercostal transthoracic port insertion combined with laparoscopic techniques for resecting these lesions.

Results: 12 patients underwent laparoscopic liver resection for limited resections via intercostal and transthoracic trocars (ITT) technique. The median lesion size was 20 mm (6-34 mm) with median operating time of 120 mins (50-150 mins), and median blood loss of 200 mls (50-300 mls) in the ITT group. All resection margins were clear. There were no clinical pneumothorax or lung injuries. These patients were compared to 25 patients undergoing resections via SSL technique. There were fewer conversions, less complications with shorter hospital stay (median 2 (1-4) days (ITT) vs. 6 (2-24) days (SSL), p<0.001) compared to standard laparoscopic approaches for limited resections.

Discussion: ITT technique offers an additional method for improved laparoscopic resection of these difficult tumours.
P-4-7 Quality of life after open and laparoscopic liver resection - results from a randomized controlled trial

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Introduction:
Laparoscopic liver resection is being developed into the gold-standard procedure for liver resection in specialized centres all over the world.
The aim of this sub study of the randomized “Oslo CoMet trial” was to examine patients’ Health Related Quality of Life (HRQoL) after open and laparoscopic liver resection for colorectal liver metastases.

Methods:
120 patients, randomized to open or laparoscopic liver resection, were included in this trial. All patients were operated with parenchyma sparing resection of one or more colorectal liver metastases (CRLM). To assess patients’ HRQoL, patients filled in the SF-36 questionnaire at baseline, and at 1 month, 4 months and 2 years after surgery.

Results:
Results for HRQoL, measured after 1 and 4 months, are currently being analysed and will be presented at the ICCLLS 2014 convention.
P-5-1 Large Colorectal Liver Metastases – Is Laparoscopic Resection an Option?

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Royal Brisbane Hospital1, Wesley Hospital2, Holy Spirit Northside Hospital3

Background
The International Position on Laparoscopic Liver Surgery (2008) recommends a laparoscopic approach for lesions 5cm or less only. This study compares outcomes and long-term survival between laparoscopic and open groups for resection of large CLM.

Method
Patients undergoing resection for large colorectal liver metastases (>5cm) by 6 surgeons in 3 institutions between 2000 and 2013 were analysed on an intent-to-treat basis, comparing laparoscopic versus open resection using inverse probability weighting of propensity scores and multi-state models. Survival analysis was done using a cox proportional hazard model.

Results
Baseline covariates and patient groups were well balanced after weighting by propensity score. 26 laparoscopic resections, in as many patients, had a 5-year overall survival (OS) of 52% and 5-year primary disease free survival (PDFS) of 29%. 31 open resections in 28 patients had 5-year OS and PDFS of 57% and 32% respectively. Comparison between laparoscopic and open groups using a weighted cox marginal model for overall and disease-free survival was not significant.

Mean blood loss (MD 69ml, p=0.52) and operating time (MD 41min, p=0.14) were lower in the laparoscopic group but not reaching statistical significance. Mean hospital length of stay in the laparoscopic group was 6.1 days and in the open group 8.1 days (p=0.06).

Conclusion
For resection of large CLM, outcomes and survival are comparable between laparoscopic and open groups, indicating large tumour size is not an absolute contraindication to laparoscopic liver resection.

P-5-2 Safety assessment of laparoscopic liver resection: a 3-year experience of a single institution

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Background: To provide a less invasive liver resection, our institution adopted laparoscopic liver resection (LLR) in 2011. Because only fewer than 5 LLR procedures had been performed annually, our experience remains limited. The aim of this study was to determine whether patient safety was jeopardized in institutions that perform relatively few LLR procedures.

Methods: The surgical records of 14 patients who underwent LLR at our institution were evaluated to identify differences in surgical outcomes between the initial 7 cases and the recent 7 cases.

Results: The mean surgical duration was 262 min (range, 153-367 min) without temporal variation. The median blood loss of the recent 7 patients was 50 mL (range, 10-170 mL), which was less than that of the initial 7 patients (median, 340 mL; range, 45-2300 mL). Operative morbidity was 28.6% and all complications were classified as Clavien-Dindo grade I. Conclusion: Even in institutions without surgeons experienced in performing LLR, careful preoperative planning and patient selection can help in achieving acceptable LLR outcomes that are comparable with those achieved at high-volume centers.
**P-5-3** Laparoscopic Assisted Liver Resection for Colorectal Cancer Liver Metastases (CLCLMs) after Prolonged Chemotherapy including Bevacizumab

Wen-Yao Yin, Jian-Han Chen, Cheng-Hung Lee
Dalin Tzu Chi General Hospital

**Background:**
Laparoscopic liver resection has also been used widely with good recovery in primary liver cancer. But only a few reports in patients with perioperative chemotherapy especially with Bev which might worse postoperative complication like liver laceration, bleeding and liver abscess.

**Materials and Methods:**
A 53 y/o gentleman received continuous salvage chemotherapy for two years for Colorectal Cancer with Liver Metastases (CRCLM) including Bevacizumab (Bev). He underwent liver resection as his liver metastases got a good response but two residual resectable tumors :one on the postero-medical aspect of segment 6 and the other in segment 3. We chose laparoscopic assisted technique to overcome the difficult location on right for pure laparoscopic method and easy approach for the left side simultaneously.

**Results:**
We found that the liver was congested, fragile and purple in color with easily injured and bleeding. More attention was needed for safer operation and lesser complication. Intraoperative blood loss was about 200cc and no postoperative bile leak and liver abscess.

**Conclusions:**
Our limited experience gave us an information that perioperative chemotherapy even with Bev is advisable and laparoscopic technique is also helpful .

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**P-5-4** Laparoscopic hepatectomy performed three times to treat colorectal liver metastasis

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To date laparoscopic surgery has not been recommended for cases in which severe abdominal adhesion is anticipated. As a result, it has been considered that repeated laparoscopic hepatectomies are difficult to perform.

We report a case in which laparoscopic hepatectomy was performed three times to treat colorectal liver metastasis. A 49-year-old woman was admitted to our hospital for colorectal cancer and metastatic liver tumor in segment 3.

We used the laparoscopic procedure to simultaneously perform a low anterior resection and partial liver resection of segment 3. Seven months after the first operation, two metastatic liver tumors were detected in segments 3 and 8, and we performed a laparoscopic partial liver resection of those segments. Fifteen months after this third operation, a further metastatic liver tumor was detected in segment 5. Once again, we performed a laparoscopic partial liver resection of segment 5. Four years and five months after the first operation, the patient is alive and has had no recurrence of her illness. Laparoscopic surgery is less invasive than open surgery, and has the advantage of a reduced incidence of peritoneal adhesions and immune deficiency. In the patient, repeated laparoscopic hepatectomies were successfully performed for recurrent liver tumors.
P-5-5  Laparoscopic liver resection in the elderly patients
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【Background/Aim】In Japan, elder population has been gradually increased. Recently, laparoscopic liver resection (LLR) has performed more safely, because new techniques and instruments were developed. The aim of this study was to investigate outcomes of LLR for elderly patients in our institute.

【Methods】From January 2010 to April 2014, sixty-one cases underwent LLR in our institute. Twenty-one of the 61 cases were elderly patients (age >75yr, O group), while 40 cases were younger patients (age <75yr, Y group). Operative variables were retrospectively analyzed to identify differences between the 2 groups.

【Results】Patients characteristics were equivalent in between the 2 groups. The 2 groups were also similar in terms of operative outcomes including operation time (239 minutes in O group vs 282 minutes in Y group), postoperative complication (3 cases in O group vs 7 cases in Y group) and postoperative hospital stay (11.1 days in O group vs 15.6 days in Y group).

【Conclusion】LLR for elderly patients can be performed as safely as that for younger patients.

P-5-6  The role of laparoscopic hepatectomy for the hepatic metastases from colorectal cancer.
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【Introduction】In the hepatic metastases from colorectal cancer, treatment results are improving due to the development in chemotherapy. However, curative treatments for hepatic metastases from colorectal cancer are mainly surgical resection even today. There are great hopes in the role of laparoscopic hepatectomy.

【Purpose】In the hepatic metastases from colorectal cancer, we looked into the simultaneous hepatic resection, the surgical technique of hepatic re-resection and the treatment results so that we can discuss the role of laparoscopic hepatectomy.

【Subjects】41 laparoscopic resection cases of hepatic metastases from colorectal cancer from 2005 to 2013.
【Surgical results】Pure-LAP: 26 cases and Hybrid-LAP: 15 cases. Partial resection: 27 cases, anatomical resection: 14 cases. The averages of tumor diameter: 2.4 cm, blood loss: 262 ml, operating time: 215 minutes. The 5-year survival rate: 63.5%, and recurrence-free survival rate (5 years): 49.5%. Simultaneous hepatectomy: 9 cases. The averages of tumor diameter: 2.18 cm, blood loss: 41 ml, operating time: 139 minutes. The 5-year survival rate: 100%, and recurrence-free survival rate: 44.4%.
【Conclusion】Laparoscopic hepatectomy is performed safely for colorectal cancer hepatic metastases. In the future, expanding indications of laparoscopic hepatectomy might possibly further improve the outcome of hepatic metastases from colorectal cancer.
P-5-7 Laparoscopic vs Open Resection for Colorectal Liver Metastases –Outcomes and Survival Analysis using a Marginal Structural Model

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Background
Laparoscopic liver resection for malignancy remains controversial due to a lack of evidence that long-term survival outcomes are equivalent to an open approach. This study compares long-term survival for laparoscopic versus open resection of colorectal liver metastases (CLM).

Method
Patients CLM resection by 6 surgeons from 1998 to 2013 were analysed, comparing laparoscopic versus open resection using inverse probability weighting of propensity scores and multi-state models to assess the marginal treatment effect. Survival analysis was done using a cox proportional hazard model.

Results
A total of 280 operations were performed in 238 patients. After inverse probability weighting by propensity score, the population was well balanced across important baseline covariates.
134 patients had 144 intent-to-treat laparoscopic procedures, with 5-year overall survival (OS) of 61%, and 5-year disease-free survival (DFS) of 34%. 104 patients underwent 136 open procedures, with 5-year OS and DFS of 57% and 32% respectively. No difference was found between laparoscopic and open groups for OS and DFS.
Median blood loss (MD 300mls), operating time (MD 60mins) and hospital length of stay (MD 3 days) was significantly (p<0.005) less for the laparoscopic group.

Conclusion
Long-term survival after laparoscopic liver resection for CLM is equivalent to outcomes in open surgery.
P-6-1 Outcomes of laparoscopic liver resection for large and giant malignant tumours

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Background: Laparoscopic liver resection (LLR) for large (≥5cm) and giant (≥10cm) tumours can be technically challenging. Many would question its safety, feasibility and outcomes. The aim of this study was to evaluate the safety, feasibility and outcomes of LLR for large and giant tumours.

Methods: We reviewed a prospectively collected database of 422 LLR at Southampton University Hospital. Demographic and clinical data of 52 LLR for large malignant tumours were analyzed. A subgroup analysis was done for LLR for giant tumours.

Results: Colorectal liver metastasis was the commonest indication (42.3%). Median operative time was 240 minutes and blood loss was 500 mls. Pringle maneuver was performed in 24 patients (46.2%). There were 8 conversions (15.4%) and 9 postoperative complications (17.3%). Four patients (7.7%) had R1 resection. Median length of stay was 5 days and 30-day mortality was nil. The subgroup analysis of LLR for giant tumours revealed increased blood loss (p=0.002) without any difference in operative time (p=0.052), conversions (p=0.64), complications (p=1.0) and R1 rates (p=0.16).

Conclusion: LLR for large tumours is safe, feasible and can be performed with acceptable morbidity and oncological efficiency. LLR for giant tumours is associated with increased blood loss without increase of conversions or morbidity.

P-6-2 Hybrid-including Endoscopic versus Open Hepatic Resection for Patients with Hepatocellular Carcinoma: A Propensity Case-Matched Analysis

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Introduction: The aim of this study is to compare the efficacies of endoscopic hepatectomy (EH) and open hepatectomy (OH) for hepatocellular carcinoma (HCC) patients.

Methods: From 1999, a total of 269 HCC patients who met the Milan criteria were enrolled. A one-to-one propensity matched analysis including "difficult tumor location", "superficial location" and "vascular proximity".

Results: With propensity matching, 52 EH and 52 OH patients showed equivalent preoperative clinical characteristics. The median blood loss were significantly lower, and the median postoperative hospital stay was significantly shorter in the EH group. The morbidity rates were similar between the two groups, while mortality at 3 months was nil in both groups. The cumulative 5- and 10-year disease-free survival rates were 16.1% and 5.4% in the EH, and 18.5% and 12.3% in the OH. The cumulative 5- and 10-year overall survival rates were 63.4% and 21.7% in the EH, and 73.1% and 43.6% in the OH.

Conclusions: EH for HCC patients meeting the Milan criteria is less invasive and might provide an equivalent disease-free and overall survival when compared to conventional OH. However, this conclusion should be limited to patients only who are suitable for the EH approach.
P-6-3  Our Institutional Experience and Standardization of Pure Laparoscopic Left Hepatectomy

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Purpose: Our institute started to perform the pure laparoscopic left hepatectomy (LLH) on the basis of the experiences of the pure laparoscopic left lateral hepatectomy (LLLH), and gradually standardized its technical procedure. We analyzed the outcomes of pure LLH.

Patients and Methods: We performed Five cases of pure LLH (four males and 1 female, aged 64-78 (median 71) years old). The diseases were three cases of hepatocellular carcinoma, 1 of liver metastasis of colon cancer and 1 of hepatolithiasis. We analyzed operative outcomes and postoperative courses.

Results: The operation time of 5 cases of LLH were 359-494 (average 434) min. and blood loss were 60-550 (average 217) ml. Intraoperative accidental complication or conversion to open laparotomy was none. No case required the red cells blood transfusion. Only one case was complicated by aspiration pneumonia. Postoperative hospital stays were 7-17 (average 10) days.

Discussion: We safely introduced LLH on the base of the experiences of pure LLLH, as to the patients’ position, the sites of trocar, the extension of operation field and the manner of parenchymal and vascular transection.

Conclusion: It is suggested the standardization of safety and feasible procedure leads to the popularization of pure laparoscopic anatomical left hepatectomy.

P-6-4  Laparoscopic liver resection for lesions adjacent to major vasculature: feasibility, safety and oncological efficiency

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Background: Feasibility, safety and oncological efficiency of laparoscopic liver resection (LLR) for tumours near to major vessels (inferior vena cava - IVC, portal vein and hepatic artery) are questionable. The 1st International Consensus considered those lesions unsuitable for laparoscopic approach, but since then laparoscopic liver surgery made huge advances. The aim of this study was to report our experience in the laparoscopic management of tumours near to major vessels.

Methods: We reviewed a prospectively collected database of 403 LLR at Southampton University Hospital. Demographic and clinical data of 39 LLR for tumours near major vessels were analyzed.

Results: Twenty-six patients (67%) had malignancy and the overall mean lesion size was 65mm. Median operative time was 310min and blood loss were 300ml. There were 3 conversions (7.7%) and 8 postoperative complications (20.5%) with one Clavien-Dindo Grade 3 complication. Average length of stay was 5 days and R0 rate was 92.3%. All R1 resections were colorectal liver metastases located 10mm within IVC.

Conclusions: Location does not appear an absolute contraindication to LLR. However, long experience in laparoscopic liver surgery, respect for oncological principles and careful selection are essential to ensure patient’s safety.
P-6-5  Laparoscopic liver resection is appropriate treatment for tumors in segments 7 and 8

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[Introduction] Laparoscopic liver resection has become an important therapeutic modality for liver tumors because of technical advances and improvement of operative devices. However, the posterosuperior portion, especially segments 7 and 8, still considered difficult to be treated laparoscopically. Therefore, to elucidate the feasibility and safety of laparoscopic treatment for liver tumors located in segments 7 and 8, a retrospective study was carried out.

[Patients and methods] From January 2010 to May 2014, a total of 53 patients with liver tumors located in segments 7 or 8, underwent partial resection of the liver in Tohoku University Hospital and clinicopathological data and short-term outcomes were retrospectively reviewed.

[Results] Thirteen cases underwent partial resection with laparoscopic approach and 33 patients underwent open procedures. In laparoscopic approach, operative time was significantly longer, and intraoperative blood loss was significantly smaller compared with open approach. Morbidity in laparoscopic approach was significantly smaller than open surgery. Postoperative hospital stay tended to be shorter, but not significantly.

[Conclusion] This study demonstrates that laparoscopic partial resection for liver tumors located in segments 7 and 8 is a feasible and safe approach.

P-6-6  Short-term outcome of patients underwent pure laparoscopic liver resection for hepatic malignancies: A Japanese single hospital experience

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Background: Laparoscopic liver resection is being performed frequently for especially hepatic malignancies. The purpose of this study was to assess in-hospital complications and mortality between pure laparoscopic liver resection (LLR) and open liver resection (OLR).

Patients & methods: Between October 2012 and March 2014, 10 patients underwent LLR for hepatic malignancies located segments 2-6, whereas between May 2005 and March 2014, 37 patients underwent OLR under same condition. Short-term outcome were compared.

Results: The final histological diagnoses of all 47 patients were as follows: hepatocellular carcinoma (n=38), colorectal liver metastases (n=9). There were no significant difference between two groups regarding as gender, age, type of malignancy, comorbidity. Compared with OLR group, LLR group showed significantly longer operation time (181min vs 118min, P=0.002), however significant lower bleeding (60ml vs. 335ml, P=0.001). In hospital morbidity rate and length of hospital stay were similar between group, respectively 10% and 12 days in LLR group, whereas 8% and 13 days in OLR group (P=0.80, 0.84). There were no death in 30 days between both groups.

Conclusions: Pure laparoscopic liver resection can be undergone safely without increase of morbidity and short-term mortality.
P-6-7 Laparoscopic major hepatectomy: clinical outcomes and classification

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Background: The Louisville Statement defined laparoscopic major hepatectomy to include tri-segmentectomy/hemi-hepatectomy and resection of posterior-superior segments 4a,7,8. Aim: to compare outcomes after laparoscopic “traditional” major hepatectomy and resection of “difficult-to-access” posterior-superior segments and assess the need for a novel classification.

Methods: We reviewed a database of 390 laparoscopic liver resections at Southampton University Hospital. 156 laparoscopic major hepatectomy were divided into two sub-categories: laparoscopic “traditional” major hepatectomy (LTMH) including hemi-hepatectomies and tri-segmentectomies, and laparoscopic “posterior-superior” major hepatectomy (LPMH), including resection of posterior-superior segments. LTMH and LPMH were compared with respect to demographics, intraoperative and postoperative outcome.

Results: LTMH was performed in 128 patients (82%) and LPMH in 28(18%). Operation time was a median of 330min for LTMH and 210min for LPMH (p<0.0001). Blood loss was a median of 500ml for LTMH and 210ml for LPMH (p=0.048). Conversion rate was 9% for LTMH and nil for LPMH (p=0.219). Twenty-eight patients (22%) developed postoperative complications after LTMH and 5(17%) after LPMH (p=0.567). Hospital stay was a median of 5 days after LTMH and 4 after LPMH (p=0.026).

Conclusions: The creation of two sub-categories of laparoscopic major hepatectomy seems to appropriately reflect differences in intraoperative and postoperative outcomes between LTMH and LPMH.
P-7-1  Laparoscopic Liver Resection . The Initial Experience at Cruces University Hospital

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AIM
To present our experience in laparoscopic liver resections.

MATERIAL AND METHODS
Retrospective descriptive study of the patients treated between May 2005 and May 2012. We calculated the overall survival (OS) and disease-free survival (DFS) of malignant lesions using Kaplan-Meier.

RESULTS
65 laparoscopic liver resections were carried out; 49 were completed by pure laparoscopy and 16 by hand-assisted laparoscopy. We operated 27 cases of metastatic colorectal carcinoma (CRC), 15 cases of hepatocellular carcinoma (HCC) and 20 cases of benign solid or cystic tumors. We performed 35 tumour resections, 15 segmentectomies, 7 cyst resections, 5 fenestrations and 3 left hepatectomies.

Morbidity occurred in 26% of our patients. Based on the Clavien-Dindo, 4% patients developed grade I complications, 3% patients had grade II, 3% patients grade IIIa and 4% patients had grade IIIb. DFS and OS at 1, 3 and 5 years in patients with CRC metastases were 80.9%, 56.4% and 51.3% and 85.2%, 76.2% and 76.2%, respectively. DFS nd OS at 1, 3 and 5 years in patients with HCC were 70.7%, 44.9% and 24.9% and 92.9%, 51.6% and 51.6%, respectively.

CONCLUSIONS
Laparoscopic liver surgery is not detrimental to the disease-free survival rate and overall survival rate in malignant disease.

P-7-2  Early experience in total laparoscopic left hepatic lobectomy in Mongolia

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Background: Over 1800 new cases of HCC occur annually in Mongolia. HCC incidences are approximately 40% of all cancer cases. Hepatocellular carcinoma (HCC) is increasing in frequency in our country.

Methods: From September 2010 to april 2012, 14 patients underwent left hepatic lobectomy for malignant or benign lesions. A prospectively collected hepato-pancreatico-biliary database was analyzed retrospectively.

Result: mean of tumor size was 4cm (1.6-10cm), mean of operating time was 155min (60-210min), mean of intra-operative blood loss range was 89ml (50-200ml), mean of hospital stay was 8 day (5-15).

Conclusion: Laparoscopic left lobectomy for HCC is feasible and safe in selected patients in mongolia.
Discussion: The procedure should be performed by a surgical team expert in hepatobiliary and laparoscopic surgery. We need to have a more experience in minor liver resection to major laparoscopic heptectomy.
P-7-3 Risk factors for complications after pure laparoscopic major hepatectomy

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Background: Although laparoscopic major hepatectomy (LMH) is developed in several specialized centers, data regarding outcomes are limited. The aim of this study was to identify the risk factors for postoperative complications of pure LMH at a single center.

Methods: Between January 1998 and March 2014, 183 patients underwent pure LMH. Demographic, clinicopathologic, and perioperative factors were collected prospectively. The dependent variables studied were the occurrence of overall and major complications (Dindo-Clavien ≥3).

Results: The median operating time was 255 min (range: 100-540), and the median blood loss was 280mL (range: 10-4500). Complications occurred in 100 patients (54.6%), and the 90-day all-cause mortality rate was 2.7%. Multivariate analysis identified one independent risk factor for global postoperative complications: intraoperative associated radiofrequency ablation [Relative Risk (RR): 6.930, Confidence Interval (CI); 1.494-32.143, p = 0.013]. There were two independent risk factors for major complications: intraoperative transfusion (RR: 2.504, CI; 1.006-6.233, p = 0.049) and bilobar resection (RR: 2.469, CI; 1.004-6.060, p = 0.049).

Conclusions: The consideration of risk factors (i.e. avoid as much as possible ablation or resection of tumors in the remnant liver and intra-operative bleeding) might reduce the incidence of complications after LMH.

P-7-4 Laparoscopy decreases pulmonary complications in patients undergoing major liver resection: a propensity score analysis

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Background. The current study aimed to compare both incidence and types of PPCs between laparoscopic (LMH) and open (OMH) major hepatectomy.

Methods. In this multi-institutional study, all patients undergoing OMH or LMH between 1998-2013 were retrospectively reviewed. Comparison of both overall rate and types of PPCs between OMH and LMH patients was performed after propensity score adjustment on factors influencing the choice of the approach.

Results. LMH was performed in 226 (18.6%) of the 1,214 included patients. PPCs occurred in 480 (39.5%) patients including symptomatic pleural effusion in 366 (30.1%) patients, respiratory insufficiency in 141 (11.6%), acute respiratory distress syndrome in 84 (6.9%), pulmonary infection in 80 (6.5%), and pulmonary embolism in 47 (3.8%) patients. On multivariate analysis, preoperative hypoprotidemia (HR:1.341;p=0.049), open approach (HR:2.481;p=0.024), right-sided hepatectomy (HR:2.143;p<0.001), adjacent organ resection (HR:1.742;p=0.017), transfusion (HR:2.851;p<0.001) and operative time >6 hours (HR:1.510;p=0.006) were independently associated with PPCs. After propensity score matching, the overall incidence of PPCs (15.5%vs.33.3%), symptomatic pleural effusion (11.9%vs.26.2%, p=0.018), pleural effusion requiring drainage (2.4%vs.10.7%, p=0.029), and acute respiratory distress syndrome (2.4%vs.9.5%, p=0.050) were significantly lower in the laparoscopy group than in the open group.

Conclusion. Pure laparoscopy allows reducing PPCs in patients requiring major liver resection.
P-7-5 Laparoscopic Hepatectomy for Superoposterior Segments (S4 superior, 7,8) in Patients with HCC
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Background: We investigated retrospectively the operative outcome of laparoscopic hepatectomy for hepatocellular carcinoma (HCC), and elucidate the validity of laparoscopic approach for superoposterior segments (SPS, i.e. S4 superior, 7, and 8).

Methods: Between 2010 and May 2014, 47 patients underwent laparoscopic hepatectomy for HCC, and they were divided in two groups; SPS group (n=19) and non-SPS group (lesions in other segments, n=28), and surgical outcomes were analyzed.

Results: Mean age was 65.5 (range 30-81) years, and male: female ratio was 33:14. Background data of the tumors and liver function were identical. However, non-anatomical resection were more frequent in SPS group (52.6% vs. 42.9%, P=0.51) with higher positive rates of surgical margins (R1 or 2) (15.7% vs. 10.7%, P=0.61) without significant difference. Longer operative time (202 vs. 132 minutes, P<0.0001), more blood loss (429 vs. 116 g, P<0.0001), and longer postoperative stay (20.1 vs. 12.4, P=0.015) were observed. Morbidity (Clavien-Dindo classification > Grade II) was identified in 4 patients (21.1%, massive ascites in 3, and intraabdominal infection in 1) of SPS group, while 1patient (3.6%, P=0.0072) in non-SPS group. Morbidity rate was 0%.

Conclusions: Since laparoscopic hepatectomy for SPS in patients with HCC is complicated, indications of laparoscopic approach should be limited, and more extended hepatectomy may be required for negative surgical margins.

P-7-6 Laparoscopic liver resection: Our early experience of 25 cases
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Introduction: We review our initial experience in laparoscopic liver resection to assess the early outcomes and feasibility of the procedure.

Methods: We analyzed the retrospectively collected data on our laparoscopic liver resections between September 2010 and April 2014. Duration, intraoperative blood loss and postoperative outcomes were recorded to compare with open surgery group.

Results: Of the 25 patients in whom laparoscopic liver resection was attempted, indications were for hepatocellular carcinoma (13), colorectal liver metastases (9), intrahepatic cholangiocarcinoma (3) and inflammatory pseudo-tumor (1). Liver resection was planned as either a pure laparoscopic (n=10, 40.0%) or hybrid procedure (n=15, 60.0%). Median duration of surgery in minutes for pure and hybrid procedure was 259 and 287 respectively. The corresponding median blood loss in mL was 128 and 390. The median postoperative hospital stay was 7.5 and 11 days. In comparison with open hepatectomy, blood loss and posthospital stay was significantly decreased in laparoscopic surgery group, especially in pure laparoscopic group. One of 25 cases (4%) developed Clavien-Dindo class IIIb complication.

Conclusion: Laparoscopic liver resection is safe and feasible in selected patients. It is an important issue for our future to standardize laparoscopic procedure and the implementation of pure laparoscopic anatomical liver resection.
P-7-7  Short- and Long-Term Outcomes of Laparoscopic Versus Open Hepatectomy for Small Malignant Liver Tumors

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Background  The long-term outcomes of Laparoscopic hepatectomy (Lap-Hx) for malignant liver tumors are not oncologically guaranteed. This study compared the short- and long-term outcomes between Lap-Hx and open hepatectomy (Open-Hx) for malignant liver tumors.

Methods  The indications for Lap-Hx at our department are a tumor size of <5 cm and fewer than two lesions without macroscopic vascular invasion or the need for biliary reconstruction. In total, 163 patients underwent Lap-Hx for malignant liver tumors through April 2014. We compared the short- and long-term outcomes between Lap-Hx and Open-Hx in patients who met the above-mentioned indications.

Results  With respect to short-term outcomes, blood loss, and postoperative hospital stay after Lap-Hx were significantly better than those after Open-Hx in both the patients who underwent partial resection and lateral sectionectomy. In patients who underwent partial resection, the incidence of postoperative complications after Lap-Hx was significantly lower than that after Open-Hx; in particular, wound infection and respiratory complications were significantly lower. With respect to long-term outcomes of hepatocellular carcinoma and colorectal liver metastases, neither overall nor disease-free survival differed between the two groups.

Conclusions  Lap-Hx is a good option for selected patients with malignant liver tumors.
P-8-1 Hand-Assisted Laparoscopic Liver Surgery (HALLS): Indications and Results

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OBJECTIVE: To present our surgical indications, surgical technique and results of an original technique.

PATIENTS AND METHODS. - Between January 2003-June 2013, we have performed 146 RHL in 143 patients. 109 patients were operated on by HALLS. The indications were: liver metastases because it allows a correct staging (n= 94); huge tumor due to a tumor size (n=6); tumor located in right posterior segments (n =5); conversion from total laparoscopic liver surgery (n= 4).

RESULTS.- Not occur any conversion to laparotomy and there was no intra or postoperative deaths. 3 patients had complications, 6 received blood transfusion. The mean surgical time was 168 min. (range 60-360 min), the hospital stay was 3,5 days. In case o colorectal liver metastases, the exploration by HALLS (palpation and ultrasound exploration) detected in 8 patients more disease than detected by totally laparoscopic surgery (TLS) exploration (only ultrasound exploration).

CONCLUSIONS.- In colorectal liver metastases patients, HALLS approach allows a more correct staging of the liver. In patients with big tumors, those located in posterior right segments is a good alternative to TLS. In cases of conversion of TLS, an option is converted to HALLS.

P-8-2 Review of laparoscopic hepatectomy in conformity with the medical insurance system

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[Purpose] Evaluation of laparoscopic hepatectomy under limitation of the medical insurance system in Japan.

[Methods] Consecutive 112 patients who underwent laparoscopic hepatectomy at the Department of Surgery, the Jikei University Hospital and its an affiliated Kashiwa Hospital since 1999 were analyzed.

[Results] The patients’ age ranged from 22 to 84 (mean±SD = 64.4±12.09), and male to female ratio was 73 :39. The diseases consisted of hepatocellular carcinoma (HCC) in 85, metastatic liver cancer (MLC) in 19, and benign tumor in 8 patients. Background liver parenchymas were composed of liver cirrhosis in 56, chronic hepatitis in 22 and normal in 34 patients. Two operative methods, i.e., partial resection and lateral segmentectomy have been performed according to limitation of the medical insurance system in Japan. The operation time was 190.8 ± 92.96 minutes, and the intraoperative blood loss was 129.7 ± 291.02 g. The postoperative hospital stay was 9.2 ± 4.68 days. Only one case (0.9%) was converted to open surgery.

[Conclusion] Laparoscopic hepatectomy in conformity with the medical insurance system in Japan was safe and feasible.
P-8-3  Pure laparoscopic liver resection for the caudate lobe; its advantage over laparotomy

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Hepatic resection of the caudate lobe requires relatively advanced technique due to its unique anatomical location. Meanwhile, laparoscopic approach can provide us a better and magnified view of the lobe, and possibly makes its resection safer and easier. In the present study, we tested possible advantage of the pure laparoscopic caudate resection over the open procedure.

Methods: Seventeen patients (11 male, 6 female) who underwent caudate resection between January 2008 and June 2014 in our department were analyzed. Six patients received laparoscopic approach while eleven underwent open procedure. Intraoperative parameters and postoperative outcomes were compared between these surgical methods.

Results: operation time (lap/open; 247±89/498±189 min, p<0.01), intraoperative blood loss (153±257/917±807 ml, p<0.01), postoperative hospital stay (10.7±3.1/18.1±4.2 days, p<0.01), and total medical cost (13500±2500/18300±3000 US dollars, p<0.01) were significantly smaller in the laparoscopic approach, respectively. In addition, we experienced no major morbidity after the laparoscopic approach, while 2 patients suffered from refractory ascites after the open procedure.

Conclusion: Our data suggested an advantage of the pure laparoscopic resection of the caudate lobe over the open procedure.

P-8-4  A prospective and randomized study comparing open and laparoscopic liver surgery in colorectal liver metastases

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OBJECTIVE.- In the literature no randomized studies has been carried out to test the safety and efficacy of laparoscopic liver surgery (LLS) for colorectal liver metastases (CRLM). We compare the LLS results with the open surgery (OS) results in patients with CRLM, using a prospective randomized study.

PATIENTS AND METHODS.- We performed 146 LL resections until June 2013. We designed this prospective study after the first 50 patients with LL resection. One hundred and forty four patients with CRLM, which could be treated laparoscopically, were randomized in two groups. The patients with LLS were operated on by the hand-assissted laparoscopic surgery.

RESULTS AND CONCLUSIONS.- Both groups were homogeneous in patients related-factors, primary tumor related-factors, metastases related-factors, surgery related-factors, surgical technique performed. The results were analyzed at 56 ± 3.8 months of follow-up. The LLS group presented a higher us of pringle maneouver (52% of the cases) according to OS group (19%) (p<0.01); more surgical time (162±78 min) according to OS group (125±61 min) (P<0.02); a lower hospital stay (4±1.4 days) according to OS group (7±3.5 days); with a similar morbidity and no mortality. There were no differences between the two groups regarding overall survival and diseases free survival.
P-8-5 Standard Laparoscopic Resection and Laparoscopic Wedge Resections of Hepatocellular adenomas; a measurement of clinical and histopathological outcomes

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Introduction: Hepatocellular adenomas (HCAs) present a diagnostic challenge due to ambiguous histological and radiological profiles, potential for malignant transformation and bleeding. The indication and implication of biopsies and resection for these lesions is uncertain, as are their phenotypes, clinical manifestation and malignant risk.

Methods: Patients with HCA diagnosis and stored tissue were identified via a HPB database at the Royal Brisbane and Wesley Hospital between 2000-2012. Pathological techniques for identifying HCA subtypes were applied to surgically resected specimens. Operative data and clinical correlation data was obtained from patient records and follow-up surveys.

Results: 48 patients (89% Female; Mean Age 39yrs), were identified. 40 underwent laparoscopic resection (5 right hemi-hepatectomy, 9 Left lateral hepatectomy, 9 bisegmentectomies, 11 tumourectomies and 5 segmentectomies) and 8 laparoscopic wedge resections. Multiple subtypes verified the presence of a heterogeneous adenoma group; Inflammatory (42%; Type C), HNF-1 Alpha (27%; Type A) and beta-catenin (19%; Type B) and unclassifiable (18%; Type D). 15 HCAs were haemorrhagic, with 73% Type C, representing 32% of Type C lesions which was a significantly greater proportion than others (p<0.05). Seven patients had adenomatosis, but none were Type B. None of the resections returned positive margin involvement.

Discussion: In light of new concerns regarding potential malignant transformation of HCAs, we show current laparoscopic techniques are safe and efficacious in surgical management of these tumors.

P-8-6 Initial results of the laparoscopic hepatectomy (LH) for small liver cancer

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Purpose: We examined initial results and procedures of laparoscopic hepatectomy (LH) for small liver cancer.

Method: The cases of 32 hepatocellular carcinoma and 22 metastatic liver cancer were examined. Pure LH for 43 and hybrid LH for 14 were undertaken. A pure LH was performed by using the vessel sealing system for liver dissection with crushing method and CUSA for Glisson’s pedicle dissections. In the case of hybrid LH, we performed liver mobilization with cholecystectomy in the laparoscopic procedure and converted to open surgery.

Result: Six lateral segmentectomy, 4 sub-segmentectomy and 47 partial hepatectomy were carried out. On an average, tumor diameter, operative time, loss of bleeding during a surgery and postoperative hospitalization are 2.5 cm, 283 minutes, 281 ml and 13 days as follows. No critical postoperative complications were occurred at all.

Conclusion: A pure LH is suitable for left-sided hepatectomy and hybrid LH is for right-sided hepatectomy in the LH induction.