What’s new since Morioka?

Go Wakabayashi, MD, PhD, FACS
Director, Center for Advanced Treatment of HPB Diseases
Chief, Surgical Services
Deputy Director
Ageo Central General Hospital
An operation consists of imaging and manipulation

Basic MIS

The main issue in MIS is:

Exposure

If you can't see...you can't operate!
Laparoscopic hepatectomy is theoretically better than open hepatectomy: preparing for the 2nd International Consensus Conference on Laparoscopic Liver Resection

Go Wakabayashi · Daniel Cherqui · David A. Geller · Ho-Seong Han · Hironori Kaneko · Joseph F. Buell

Published online: 5 August 2014
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**Comparative Short-term Benefits of Laparoscopic Liver Resection: 9000 Cases and Climbing**

Ruben Ciria, MD, PhD,**†** Daniel Cherqui, MD,**‡** David A. Geller, MD,**§** Javier Briceno, MD, PhD,**†** and Go Wakabayashi, MD, PhD, FACS**§**

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**Total number of worldwide reported laparoscopic liver cases per year**

*Minor resection* | *Major resection* | *Not-specified*
---|---|---
| 12 | 6 | 4 | 43 | 49 | 17 | 82 | 166 | 70 | 48 | 44 | 433 | 650 | 1063 | 816 | 620 | 660 | 1331 | 1381 |
| 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 40 |

---

Forest plots from meta-analysis in comparative series

**MINOR-ONLY LIVER RESECTIONS**

**OVERALL COMPLICATIONS**

- Studies
- Forest plot

**ESTIMATED BLOOD LOSS**

- Studies
- Forest plot

- Forest plot

**TRANSFUSIONS**

- Studies
- Forest plot

**OPERATIVE TIME**

- Studies
- Forest plot

---

**MAJOR-ONLY LIVER RESECTIONS**

**OVERALL COMPLICATIONS**

- Studies
- Forest plot

**ESTIMATED BLOOD LOSS**

- Studies
- Forest plot

- Forest plot

**TRANSFUSIONS**

- Studies
- Forest plot

**OPERATIVE TIME**

- Studies
- Forest plot

---

**HOSPITAL STAY**

- Studies
- Forest plot

**RATE OF POSITIVE RESECTION MARGIN**

- Studies
- Forest plot

Specific Aim

• To develop a simple and practical scoring system to assess the difficulty of various laparoscopic liver resection performed in a daily clinical setting.
### Extent of liver resection

<table>
<thead>
<tr>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hr0 (partial resection)</td>
<td>0</td>
</tr>
<tr>
<td>Hr-LLR (left lateral sectionectomy)</td>
<td>2</td>
</tr>
<tr>
<td>Hr-S (segmentectomy)</td>
<td>3</td>
</tr>
<tr>
<td>Hr-1, 2 (not less than a sectionectomy)</td>
<td>4</td>
</tr>
</tbody>
</table>

### Tumor location

<table>
<thead>
<tr>
<th>Segment</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2</td>
<td>2</td>
</tr>
<tr>
<td>S3</td>
<td>1</td>
</tr>
<tr>
<td>S4</td>
<td>3</td>
</tr>
<tr>
<td>S5</td>
<td>3</td>
</tr>
<tr>
<td>S6</td>
<td>2</td>
</tr>
<tr>
<td>S7</td>
<td>5</td>
</tr>
<tr>
<td>S8</td>
<td>5</td>
</tr>
</tbody>
</table>

### Tumor size

<table>
<thead>
<tr>
<th>Size</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3 cm</td>
<td>0</td>
</tr>
<tr>
<td>≥3 cm</td>
<td>1</td>
</tr>
</tbody>
</table>

### Proximity to major vessel

<table>
<thead>
<tr>
<th>Proximity to major vessel*</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>0</td>
</tr>
<tr>
<td>yes</td>
<td>1</td>
</tr>
</tbody>
</table>

*The main or second branches of Glisson’s tree, Major hepatic vein, and inferior vena cava

### Liver function

<table>
<thead>
<tr>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Pugh A</td>
</tr>
<tr>
<td>Child Pugh B</td>
</tr>
</tbody>
</table>

---

### Up-versioned IWATE Criteria Including S1,4a/b, and HALS/Hybrid

<table>
<thead>
<tr>
<th>Difficulty index</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty level</td>
<td>Low</td>
<td>Intermediate</td>
<td>Advanced</td>
<td>Expert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index surgery</td>
<td>Left lateral sectionectomy</td>
<td>Right or left hepatectomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simple and small partial hepatectomy in segment III</td>
<td>Posterior sectionectomy for segment VII tumor ≥ 3 cm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Scoring system

#### Tumor location (Couinaud segment)

<table>
<thead>
<tr>
<th>Segment</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>4</td>
</tr>
<tr>
<td>S2</td>
<td>2</td>
</tr>
<tr>
<td>S3</td>
<td>1</td>
</tr>
<tr>
<td>S4a</td>
<td>4</td>
</tr>
<tr>
<td>S4b</td>
<td>3</td>
</tr>
<tr>
<td>S5</td>
<td>3</td>
</tr>
<tr>
<td>S6</td>
<td>2</td>
</tr>
<tr>
<td>S7</td>
<td>5</td>
</tr>
<tr>
<td>S8</td>
<td>5</td>
</tr>
</tbody>
</table>

#### Tumor size

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>&lt;3 cm</td>
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<td>≥3 cm</td>
</tr>
</tbody>
</table>

#### Proximity to major vessel

<table>
<thead>
<tr>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

*Main or second branch of Glisson’s tree, major hepatic vein, or inferior vena cava*

### Extent of liver resection

<table>
<thead>
<tr>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial resection</td>
</tr>
<tr>
<td>Left lateral sectionectomy</td>
</tr>
<tr>
<td>Segmentectomy</td>
</tr>
<tr>
<td>Sectionectomy and more</td>
</tr>
</tbody>
</table>

### HALS/Hybrid

<table>
<thead>
<tr>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

### Liver function

<table>
<thead>
<tr>
<th>Score</th>
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<tbody>
<tr>
<td>Child Pugh A</td>
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<td>Child Pugh B</td>
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</tbody>
</table>

Publications from the ICCLLR 2014


Publications from the ICCLLR 2014


Most important message from the ICCLLR 2014

To protect patients from this new surgical procedure

- Prospective reporting registry for transparency
- A difficulty scoring system to select patients
- Creation of a formal structure of education

Ann Surg. 2015; 261: 619-29
Multi-institutional study

Conversion for Unfavorable Intraoperative Events Results in Significantly Worst Outcomes During Laparoscopic Liver Resection: Lessons Learned From a Multicenter Review of 2861 Cases.


Outcome after laparoscopic and open resections of posterosuperior segments of the liver.


Laparoscopic Versus Open Liver Resection for Colorectal Metastases in Elderly and Octogenarian Patients: A Multicenter Propensity Score Based Analysis of Short- and Long-term Outcomes.


Outcome and Learning Curve in 159 Consecutive Patients Undergoing Total Laparoscopic Hemihepatectomy.

van der Poel MJ, Besselink MG, Cipriani F, Armstrong T, Takhar AS, van Dieren S, Primrose JN, Pearce NW, Abu Hilal M.
More laparoscopic donor


The First Comparative Study of the Perioperative Outcomes Between Pure Laparoscopic Donor Hepatectomy and Laparoscopy-Assisted Donor Hepatectomy in a Single Institution.


Initial Outcomes of Pure Laparoscopic Living Donor Right Hepatectomy in an Experienced Adult Living Donor Liver Transplant Center.
Kim KH, Kang SH, Jung DH, Yoon YI, Kim WJ, Shin MH, Lee SG.


Totally Laparoscopic Right Hepatectomy for Living Donor Liver Transplantation: Analysis of a Preliminary Experience on 5 Consecutive Cases.


Laparoscopic Living Donor Left Lateral Sectionectomy: A New Standard Practice for Donor Hepatectomy.


Pure 3-dimensional laparoscopic extended right heptectomy in a living donor.
Suh KS, Hong SK, Yi NJ, Lee KW, Kim HS, Yoon KC, Kim H.

Validation of a Difficulty Scoring System for Laparoscopic Liver Resection: A Multicenter Analysis by the Endoscopic Liver Surgery Study Group in Japan.

Tanaka S¹, Kubo S², Kanazawa A³, Takeda Y⁴, Hirokawa F⁵, Nitta H⁶, Nakajima T⁷, Kaizu T⁸, Kaneko H⁹, Wakabayashi G¹⁰.


Difficulty of Laparoscopic Liver Resection: Proposal for a New Classification.

Kawaguchi Y¹, Fuks D, Kokudo N, Gayet B.


Prediction of surgical outcomes of laparoscopic liver resections for hepatocellular carcinoma by defining surgical difficulty.

Periyasamy M¹,², Cho JY³, Ahn S⁴, Han HS¹, Yoon YS¹, Choi Y¹, Jang JS¹, Kwon SU¹, Kim S¹, Choi JK¹, Guro H¹,⁵.


Validation of difficulty scoring system for laparoscopic liver resection in patients who underwent laparoscopic left lateral sectionectomy.

Im C¹, Cho JY², Han HS¹, Yoon YS¹, Choi Y¹, Jang JY¹, Choi H¹, Jang JS¹, Kwon SU¹.
Learning curve


Development Process and Technical Aspects of Laparoscopic Hepatectomy: Learning Curve Based on 15 Years of Experience.
Komatsu S¹, Scatton O¹, Goumand C¹, Sepulveda A², Brustia R¹, Perdigao F¹, Soubrane O³.


The Learning Curve in Laparoscopic Major Hepatectomy: What Is the Magic Number?
Cheek SM¹, Geller DA¹.


Safely extending the indications of laparoscopic liver resection: When should we start laparoscopic major hepatectomy?
Hasegawa Y¹, Nitta H², Takahara T², Katagiri H², Baba S², Takeda D², Makabe K², Wakabayashi G², Sasaki A².


The learning curve of laparoscopic liver resection after the Louisville statement 2008: Will it be more effective and smooth?
Lin CW¹,², Tsai T²,³,⁴, Cheng TY³,⁴, Wei HK³,⁴, Hung CF⁵, Chen YY³,⁴, Chen CM³,⁴.


Learning curve for laparoscopic major hepatectomy.
Nomi T¹, Fuks D, Kawaguchi Y, Mal F, Nakajima Y, Gayet B.
Laparoscopic 2-stage

Laparoscopic two-stage hepatectomy for bilobar colorectal liver metastases.
Fuks D¹, Nomi T¹,², Ogiso S¹,³, Gelli M¹, Velayutham V¹, Conrad C¹,⁴, Louvet C¹, Gayet B¹.

Transition from open to laparoscopic ALPPS for patients with very small FLR: the initial experience.
Machado MA¹, Makdissi FF², Surjan RC², Basseres T², Schadde E³.

Total Laparoscopic Reversal ALPPS.
Machado MA¹, Surjan R², Basseres T², Makdissi F².

Totally Laparoscopic Microwave Ablation and Portal Vein Ligation for Staged Hepatectomy: A New Minimally Invasive Two-Stage Hepatectomy.
Cillo U¹, Gringeri E, Feltracco P, Bassi D, D'Amico FE, Polacco M, Boetto R.

Totally laparoscopic ALPPS in the treatment of cirrhotic hepatocellular carcinoma.
Xiao L¹, Li JW, Zheng SG.
Laparoscopic Two Stage Hepatectomy with Selective Portal Vein Embolization
Synchronous Bilobar Liver Metastasis
3D Laparoscopic Left Lateral Sectionectomy and Three Partial Resections with Selective Portal Vein Embolization
Dorsal Anterior and Posterior Sector PVE
Thirty-five days after the first intervention
3D Laparoscopic Posterior Sectionectomy and Dorsal Anterior Sectionectomy
One week later

Remnant liver volume = 617ml
PSM comparison


Short-term outcomes of laparoscopic vs. open liver resection for hepatocellular adenoma: a multicenter propensity score adjustment analysis by the AFC-HCA-2013 study group.

Landi F1, De’ Angelis N1, Scatton O2, Vidal X3, Ayav A4, Muscari F5, Dokmak S6, Torzilli G7, Demartines N8, Soubrane O6, Cherqui D9, Hardwigsen J10, Laurent A11,12.


Pure Laparoscopic Versus Open Right Hepatectomy for Hepatocellular Carcinoma in Patients With Cirrhosis: A Propensity Score Matched Analysis.


Short-term and middle-term evaluation of laparoscopic hepatectomies compared with open hepatectomies: A propensity score matching analysis.

Untereiner X1, Cagnet A1, Memeo R1, De Blasi V1, Tzedakis S1, Piardi T1, Severac F1, Mutter D1, Kianmanesh R1, Marescaux J1, Sommacale D1, Pessaux P1.


Propensity score-based analysis of outcomes of laparoscopic versus open liver resection for colorectal metastases.

Cipriani F1, Rawashdeh M1, Stanton L2, Armstrong T1, Takhar A1, Pearce NW1, Primrose J1, Abu Hilal M3.


Pure Laparoscopic Hepatectomy Versus Open Hepatectomy for Hepatocellular Carcinoma in 110 Patients With Liver Cirrhosis: A Propensity Analysis at a Single Center.

Cheung TT1, Dai WC, Tsang SH, Chan AC, Chok KS, Chan SC, Lo CM.
More PSM comparison

Propensity score analysis of outcomes following laparoscopic or open liver resection for hepatocellular carcinoma.
Sposito C¹, Battiston C¹, Facciorusso A¹, Mazzola M¹, Muscarà C¹, Scotti M¹, Romito R¹, Mariani L², Mazzaferro V¹.


Safety and feasibility of laparoscopic liver resection with associated lymphadenectomy for intrahepatic cholangiocarcinoma: a propensity score-based case-matched analysis from a single institution.
Ratti F¹, Cipriani F², Ariotti R², Gagliano A², Paganelli M², Catena M², Aldrighetti L².

Laparoscopic versus open liver resection for hepatocellular carcinoma: Case-matched study with propensity score matching.
Han HS¹, Shehta A², Ahn S³, Yoon YS¹, Cho JY¹, Choi Y¹.
# Short-term Outcomes of Major LLR after PSM with NCD

<table>
<thead>
<tr>
<th>Propensity Score Matching (major LLR n=929, major OLR n=14,262)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Matched-Lap n=929</strong></td>
</tr>
<tr>
<td>Blood loss (cc)</td>
</tr>
<tr>
<td>Op time (min)</td>
</tr>
<tr>
<td>LOS (days)</td>
</tr>
<tr>
<td>Morbidity (%)</td>
</tr>
<tr>
<td>30 days mortality (%)</td>
</tr>
<tr>
<td>In hospital mortality (%)</td>
</tr>
</tbody>
</table>

## JSHBPS project study for HCC

<table>
<thead>
<tr>
<th></th>
<th>Matched-LLR n=387</th>
<th>Matched-OLR n=387</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood loss (cc)</td>
<td>158</td>
<td>400</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Op time (min)</td>
<td>294.4 ± 158.8</td>
<td>271.0 ± 130.0</td>
<td>0.0254</td>
</tr>
<tr>
<td>LOS (days)</td>
<td>13</td>
<td>16</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>morbidity (%)</td>
<td>6.7</td>
<td>13.0</td>
<td>0.003</td>
</tr>
<tr>
<td>30 days mortality (%)</td>
<td>0</td>
<td>1 (0.26%)</td>
<td>0.317</td>
</tr>
<tr>
<td>90 days mortality (%)</td>
<td>1 (0.26%)</td>
<td>4 (1.03%)</td>
<td>0.178</td>
</tr>
</tbody>
</table>

Figure 1

Kaplan-Meier survival curve comparing OS in the PSM cohort

P = 0.3582

<table>
<thead>
<tr>
<th></th>
<th>LLR</th>
<th>OLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-year OS rate</td>
<td>95.8%</td>
<td>95.8%</td>
</tr>
<tr>
<td>3-year OS rate</td>
<td>86.2%</td>
<td>84.0%</td>
</tr>
<tr>
<td>5-year OS rate</td>
<td>76.8%</td>
<td>70.9%</td>
</tr>
</tbody>
</table>
Figure 2  
Kaplan-Meier survival curve comparing DFS in the PSM cohort

# JSHBPS project study for CRLM

**After Propensity Score Matching** (LLR n=210, OLR n=1121)

<table>
<thead>
<tr>
<th></th>
<th>Matched-LLR N=171</th>
<th>Matched-OLR n=342</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood loss (g)</td>
<td>163</td>
<td>405</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Op time (min)</td>
<td>282</td>
<td>277</td>
<td>0.130</td>
</tr>
<tr>
<td>LOS (days)</td>
<td>12</td>
<td>14</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>morbidity (%)</td>
<td>14.1</td>
<td>12.7</td>
<td>0.631</td>
</tr>
<tr>
<td>30 days mortality (%)</td>
<td>0</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>90 days mortality (%)</td>
<td>0</td>
<td>0.6</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Prospective registry of laparoscopic liver resection started for transparency

**Table 1** Items to be entered for online prospective registry of laparoscopic liver resection in Japan

<table>
<thead>
<tr>
<th>1. Before surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, age, height, weight, body mass index (auto calculation), institutional review board (approved or not), cost (insurance coverage, patient own coverage, research budget coverage, others with specification), malignancy or benign, indications (hepatocellular carcinoma, colorectal liver metastasis, other liver metastasis, cholangiocellular carcinoma, donor, others with specification), disease location (S1–8), max diameter, number of lesions, types of lesions (extrahepatic growth, superficially located, others), proximity to major vessel (yes or no [y/n]), vascular invasion by imaging (y/n), lymph node metastasis (y/n), extrahepatic lesion (y/n), HBs-Ag (positive or negative [p/n]), HCV-Ag (p/n), planned approach methods (pure, hand-assisted laparoscopic surgery [HALS], hybrid, thoraco, robot), planned extent of resection (Hr0, Hr-I, I-S, Hr-1, Hr-2, Hr-3)</td>
</tr>
</tbody>
</table>

| 2. Intraoperative adverse events (y/n, specification), liver texture (normal, cystic, chronic hepatitis, fatty liver, sinusoidal obstruction syndrome), pneumoperitoneal pressure (non-liver resection time [mmHg], liver resection time [mmHg], max pressure [mmHg]), operative position (supine, semi lateral, head up, head down, right up, left up, prone), liver mobilization (y/n), Pringle maneuver (y/n), hilar dissection (Glissonian, individual), intraoperative ultrasound (y/n), lymph node dissection (y/n), bile duct reconstruction (y/n, under pure, under hybrid, with robot) |

<table>
<thead>
<tr>
<th>3. After discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curability (R0, R1, R2), liquids intake (POD), food intake (POD), mobilization (POD), complication over Clavien-Dindo III (y/n), reoperation (y/n), postoperative length of stay (days), in-hospital mortality (y/n, specification of reason), complication 1 (specification, Grade III–V)</td>
</tr>
</tbody>
</table>
The New Reimbursement Policy has started in Japan

<table>
<thead>
<tr>
<th>Procedure</th>
<th>OLR</th>
<th>LLR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial resection</td>
<td>36,340 = $3,600</td>
<td>59,680 = $5,900</td>
</tr>
<tr>
<td>Sub sectionectomy</td>
<td>56,280 = $5,600</td>
<td>108,820 = $10,800</td>
</tr>
<tr>
<td>Lt lateral sectionectomy</td>
<td>46,130 = $4,600</td>
<td>74,880 = $7,400</td>
</tr>
<tr>
<td>One sectionectomy</td>
<td>60,700 = $6,100</td>
<td>130,730 = $13,100</td>
</tr>
<tr>
<td>Two sectionectomy</td>
<td>76,210 = $7,600</td>
<td>152,440 = $15,200</td>
</tr>
<tr>
<td>Three sectionectomy</td>
<td>97,050 = $9,700</td>
<td>174,090 = $17,400</td>
</tr>
</tbody>
</table>

From April 1, 2016
Number Increases in Registered Patients and Institutions in Japan

Total

Registered patients
Registered institutions

4257 patients
291 institutions

2015 2016 2017
Anatomical resection is aesthetics in liver surgery by Go Wakabayashi

aesthetics: a particular theory of beauty or fine art
Laennec’s capsule covers the liver

Sugioka A, et al.

Six gates and Laennec’s capsule

Sugioka A, et al.

Anatomical Liver Resection

- Inflow occlusion from the hilar plate
  - 2nd bifurcation: individual ligation possible
  - 3rd bifurcation: Glissonian approach from extra-hepatic to intra-hepatic

- Resection of demarcated area

- Main hepatic veins are the borders
  - Exposure of hepatic veins!
  - Usage of energy devices for hemostasis


HCC located in S4/8
MHV involved in HCC
3D Laparoscopic Central Bisectionectomy
One cone

One tertiary branch feeds one cone

Takasaki K, Springer 2007

Courtesy of Dr. Raphael L. C. Araújo
Step 1: Confirm the margin of the cone units after ligature of applicable tertiary branch.
Cone unit resection

Step 2: Transection of the corresponding tertiary branch

Takasaki K, Springer 2007

Courtesy of Dr. Raphael L. C. Araújo
Step 3: Cone unit resection is completed

Courtesy of Dr. Raphael L. C. Araújo
3D Laparoscopic S5/6 Cone Unit Resection
“A good knowledge of the anatomy is a prerequisite for modern surgery of the liver”

H. Bismuth
Limited Anatomical Resection

G5

G8 dor

Future Direction
Laparoscopic Versus Open Resection for Colorectal Liver Metastases: The OSLO-COMET Randomized Controlled Trial.

Primary end point
30-day morbidity ≥ Accordion grade 2

<table>
<thead>
<tr>
<th></th>
<th>Open Liver Resection</th>
<th>Laparoscopic Liver Resection</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>44 (31%)</td>
<td>24 (19%)</td>
<td></td>
<td>0.02*</td>
</tr>
</tbody>
</table>

*Fisher’s mid-p
Conclusion

In the first RCT on lap vs open liver resection:

- 30-day morbidity ≥ grade II was significantly lower after LLR than OLR (19% vs 30%)
- Postop. hospital stay was significantly shorter after LLR than OLR (2 vs 4 days)
- Perioperative results and hospital costs were similar
- Laparoscopic surgery was cost-effective
FOSTER EDUCATION & SKILLS IN LAPAROSCOPIC LIVER SURGERY

AGENDA

Our first "World congress in Laparoscopic Liver Surgery" will be held in Paris from 6 to 8 of July 2017.

https://www.lap-liver.com
Satellite Program

- **Pre-Congress Course**
  May 8 (Wed), 2019
  Nakamura Memorial Hall, Ageo Central General Hospital

- **Hands-On Seminar**
  May 11 (Sat) – 12 (Sun), 2019
  Tokyo Science Center and Medtronic Innovation Center

ILLS 2019
The 2nd World Congress of the International Laparoscopic Liver Society

Dates: May 9 (Thur.) - 11 (Sat.), 2019
Venue: Keio Plaza Hotel Tokyo, Japan
3-2-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo 160-8336, Japan
http://www.keioplace.com

Chairman: Go Wakabayashi
Ageo Central General Hospital

Co-Chairman: Minoru Tanabe
Tokyo Medical and Dental University

Better Outcomes with Quality Improvement

Congress Secretariat

http://www.ills2019.com/
Dear Friends and Colleagues:

It is our great honor and privilege to host the Second World Congress of the International Laparoscopic Liver Society (ILLS) from May 8 to 10, 2019, in Tokyo. We hosted the Second International Consensus Conference on Laparoscopic Liver Resection in Morioka in 2016. Since then, the field of laparoscopic liver resection has expanded exponentially, and evidence has accumulated to show its superiority over open liver resection. The next step should be to safely disseminate this surgery in the sake of our patients.

We believe that ILLS 2019 in Tokyo should focus on “Better Outcomes with Quality Improvement” in laparoscopic liver resection.

ILLS 2019 in Tokyo will take place at the Keio Plaza Hotel Tokyo in Shinjuku, which is one of the most attractive areas of Tokyo and is conveniently located from both Haneda and Narita international airports. Although the pre-congress will be held from May 8 to 10, 2019, the congress will begin on May 7 at Ageo Central General Hospital, which is located only 40 minutes from Shinjuku, and the post-congress hands-on seminar will take place on the evenings of May 10 and May 11 at the Tokyo Science Center and the Medtronic Innovation Center, respectively, near Haneda airport. If you are eager to improve your laparoscopic liver resection skills, please participate in these satellite programs.

We sincerely hope ILLS 2019 in Tokyo will be successful and meaningful. We are sure you will enjoy Tokyo itself, the scientific contents of this congress, as well as the satellite programs. Once again, we would like to welcome you all to the Second World Congress of ILLS in Tokyo.

Warm regards,

Chairman: Go Wakabayashi
Co-Chairman: Minoru Tanabe
Ageo Central General Hospital
Tokyo Medical and Dental University