Laparoscopic Right Hepatectomy with Hemi-Pringle Method

- Introduction of the TICGL method & inferior approach -

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Methods of right hepatectomy

- **Controlled hepatectomy**
  - Anatomical right hepatectomy with dissection of the hepatic artery, portal vein and bile duct
  - Lortat-Jacob and Robert & Honjo and Araki around 1950’s

- **Parenchymal dissection first**
  - Dissected the liver parenchyma and then approached and ligated the portal pedicles intrahepatically
  - Lin & Tung and Quang in 1960’s

**INFLOW CONTROL**
Methods of right hepatectomy

• Glissonean pedicle approach

• Glisson’s capsule
  – Wraps the portal vein, hepatic artery and bile duct forming one morphological system
  – any variation in the arteries and bile ducts occurs under the hilar plate

→ Provided in-depth knowledge of the surgical anatomy of the liver
→ Has made different types of hepatectomy possible & easy
Glissonean approach in laparoscopic right hepatectomy

- Restriction of angle
  - Hard to encircle!
  - Golden finger®, 10mm right angle forceps
  
  ➔ Bleeding from hilar plate
  ➔ Time consuming

“Inferior approach” in laparoscopic hepatectomy
Glissonean approach in laparoscopic right hepatectomy

- Staple first
- Staple 2/3 of Glisson and clip the other 1/3
- Incision is made perpendicular to the hepatic hilum → Watch out for injury to MHV

Machado MA, AJS 2008
Temporary Inflow Control of the Glisson the “TICGL” Method

- Temporary inflow control of the Glissonean pedicle using bulldog clamp
- Parenchymal dissection after inflow control
- Stapling of whole Glisson under full exposure of pedicle after dissection

WHY?

- Inflow control during parenchymal dissection
- Affords full view of glisson pedicle during stapling
- Allows safe stapling without injury to MHV
Anterior approach

- Inflow and outflow control before liver mobilization
- Conventional approach
  - Anterior approach

   Similar oncologic benefit can be achieved using TICGL and “inferior approach” in laparoscopic liver resection

- Decreases possibility of cancer spread during mobilization specially in large tumors

TICGL method in colon liver metastasis
Stapling during TICGL method
TICGL method in HCC with cirrhosis
M/49

HBsAg (+) HBeAg (-) HCV Ab (-)

Laboratory exams
- CBC 6760-15.8-119k
- Alb 5.1 t.bil 0.9 AST/ALT 20/25
- AFP 2.5 PIVKA-II 28
- R15 = 12.4%

Preop MRI/CT
- 1. A 2.9 cm single HCC in liver S8.
“Inferior approach” using temporary glissonean inflow control for laparoscopic right hepatectomy

- Division of cystic artery and duct
- Exploration of hepatic hilum and identification of right glissonean pedicle
- Temporary clamping of whole right glissonean pedicle using vascular bulldog clamp
- Identification of resection plane
- Resection of superficial layer using harmonic scalpel
- Resection of deep layer using CUSA and bipolar electrocautery
- Stapling of right glissonean pedicle after good exposure
- Finalization of parenchymal resection
- Stapling of right hepatic vein and caval ligament
- Mobilization of right coronary and triangular ligament
- Extraction of specimen through Pfannentiel incision
"Inferior approach" using glissonean approach and temporary vascular clamp for right hepatectomy for patient with hepatocellular carcinoma

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Postop recovery

- EBL 400mL
- Operation time 4hr 05min
- Oral intake POD#1
- Diet intake POD#2
- JP removed POD#4
- Discharged POD#8
- Lab at discharge

<table>
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<tr>
<th>Test</th>
<th>Value</th>
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<td>WBC Count, Blood</td>
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<tr>
<td>Hemoglobin, Blood</td>
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<td>Platelet Count, Blood</td>
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<td>Albumin</td>
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<td>Bilirubin, Total</td>
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<td>AST</td>
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<tr>
<td>ALT</td>
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<td>CRP, Quantitative (High Sensitivity):</td>
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<tr>
<td>PT(INR)</td>
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Summary

- The TICGL method is quick and easy to apply without the necessity of the difficult encircling procedure of the right pedicle.

- Stapling of the right pedicle after parenchymal dissection under full exposure of the right pedicle offers a safe and secure stapling.

- Theoretically “inferior approach” offers as good oncologic benefit as anterior approach in open right hepatectomy.
The TICGL method can be applied to almost all types of anatomical liver resections and though it was improvised for laparoscopic approach, its use can be extended to open liver resection.
• Samsung Medical Center
• 11th of May 2013

• Hands-on workshop  12 persons

• Morning session
  – Right hepatectomy live surgery
  – Concurrent session – great video clips!
• Afternoon
  – hands on workshop

Everybody is welcome!!