LAPAROSCOPIC LIVER RESECTION IN PATIENTS WITH CIRRHOSIS IS ASSOCIATED WITH A LOWER RISK OF POST-HEPATECTOMY LIVER FAILURE

A Propensity Score Analysis.

• Liver resections in the context of cirrhosis
  • Operative mortality: 3-15%
  • HCC is the main indication (85%)  
• Laparoscopic LR for HCC
  • Improves postoperative outcome
  • No impact on oncological results

**HPB ORIGINAL ARTICLE**

Laparoscopic resection of hepatocellular carcinoma: a French survey in 351 patients

**BACKGROUND**

**Sposito, Br J Surg 2016**

2006-2013

- Before matching: 43 vs. 226
- After matching: **43 vs. 43**
- Cirrhosis: 100%
- Segmentectomy: 90%
- Complications grade II-V
  - OR: 0.12
  - P-value: 0.006

**Cheung, Ann Surg 2016**

2002-2015

- Before matching: 1358 pts
- After matching: **110 vs. 330**
- Cirrhosis: 75%
- Wedge: 47%
- Grade III-V
  - no advantage for the lap

No specific focus on PHLF
AIM OF THE STUDY

To compare LAP with OPEN liver resections in patients with cirrhosis

Primary endpoint = PHLF
METHODS

6 French HPB Centers
Villejuif
Lille
Beaujon
Lyon
Marseille
Amiens

4008 Interventions

3377 hepatectomy which no cirrhosis suspected

631 Interventions on suspected liver cirrhosis

20 re-hepatectomy were excluded

611 first hepatectomy

33 incomplete data-collections
36 secondary biliary cirrhosis
199 liver Fibrosis ≠ F4 on surgical sample

343 hepatectomy

301 hepato carcinoma
19 IH cholangio-carcinoma
7 hepato-cholangio carcinoma
6 colo-rectal metastasis
10 others

Observatoire des hépatectomies
## METHODS

<table>
<thead>
<tr>
<th>Patient and tumor characteristics</th>
<th>Liver function</th>
<th>Portal hypertension</th>
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<tbody>
<tr>
<td>Age</td>
<td>Jaundice</td>
<td>Esophageal varices</td>
</tr>
<tr>
<td>Sex</td>
<td>Ascites</td>
<td>Platelet count</td>
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<tr>
<td>BMI</td>
<td>Child-Pugh</td>
<td>HVPG</td>
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<tr>
<td>ASA score</td>
<td>MELD score</td>
<td>Liver stiffness</td>
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<tr>
<td>Aetiology of cirrhosis</td>
<td>ICG</td>
<td>Spleen volume</td>
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<tr>
<td>Neoadjuvant therapy</td>
<td>TGO / TGP</td>
<td>Spleen to liver volume ratio</td>
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<td></td>
<td>GGT / ALAT</td>
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**Intraoperative variables**

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<th>RLV ratio</th>
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**Laparoscopy (per-protocol)**

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**Blood loss**

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**RBC transfusion**

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**Duration of surgery**

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**Clamping time**

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*Missing data = 12%*

*Multiple imputations 20 datasets*
METHODS

Outcome measurement
ISGLS
0 – A vs. B-C

Propensity score
logistic regression
Caliper: 0.2

Matching 1:1
Greedy matching
RESULTS

Before matching

N=343
Male: 84% - Female: 16%
Age: 66.4 yrs
HCC: 88%
Anatomical LR: 57%
Aetiology
OH: 51%
Virus: 39%
NASH: 29%

Laparoscopy: 89 patients (26%)
Blood loss: 537 ml
90-day mortality: 5.25%
Morbidity IIIB-V: 18%

PHLF
18% in LAP
49% in OPEN
OR 0.23; p<0.001

Numerous biases
Type of resection
Portal hypertension
RESULTS

After matching
N = 164
- LAP: 82 (93%)
- OPEN: 82 (37%)

Good balance of covariates

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<tr>
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<th>Matched-LAP</th>
<th>Matched-OPEN</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>65.3</td>
<td>65.3</td>
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<tr>
<td>BMI (kg/m²)</td>
<td>26.9</td>
<td>26.9</td>
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<tr>
<td>MELD</td>
<td>8.6</td>
<td>8.5</td>
</tr>
<tr>
<td>Platelets (x 1000/mm3)</td>
<td>167</td>
<td>167</td>
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<tr>
<td>ICG (15 min)</td>
<td>15.2 %</td>
<td>15.0 %</td>
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<td>HVPG (mmHg)</td>
<td>7.9</td>
<td>8.1</td>
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<tr>
<td>LS (kPa)</td>
<td>21.8</td>
<td>21.9</td>
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<tr>
<td>RLV (%)</td>
<td>88.6</td>
<td>87.6</td>
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PHLF
16% in LAP
32% in OPEN
OR 0.31 [0.12-0.78]; p<0.001
CONCLUSION

LAP liver resection in patients with cirrhosis is associated with a lower risk of PHLF.

Should be systematically regarded in those patients and preferred « whenever possible »

However

Not an intent-to-treat analysis (22% conversion rate)

Not all the patients are eligible for LAP

(PS-matching excluded 63% of the OPEN group)