From less to more complex laparoscopic liver resection. Eighteen years of personal stepwise advancement 2000-2017

Giulio Belli
Stepwise advancement in laparoscopic liver resection*

- **Wedge resection**

- **Left lateral sectionectomy**

- **Anatomic resection of segments 2, 3, 4, 5, 6**

- **Left hemiepatectomy**

- **Right hemiepatectomy**

- **More complex resection**

*Normal then cirrhotic liver*
Laparoscopic hepatic resection for completely exophytic hepatocellular carcinoma on cirrhosis

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Abstract
Laparoscopic surgery is a relatively new option for the treatment of hepatocellular carcinoma (HCC) on cirrhosis. To date, there have been only a few reports of this option in the literature, probably because of the high risk of tumor spread at the time of surgery. The laparoscopic approach allows a precise and safe dissection of the lesion, with minimal extension and complications, and a rapid postoperative recovery. The aim of the present study was to evaluate the feasibility of laparoscopic resection of HCC in patients with cirrhosis. The study included 20 patients with cirrhosis and HCC, who underwent laparoscopic resection of the lesion. The mean size of the tumor was 3.5 cm. The resection was successful in all cases, with a mean estimated blood loss of 150 ml and a mean postoperative stay of 5 days. The overall morbidity rate was 15%, and the 1-year survival rate was 80%. The results of this study suggest that laparoscopic resection of HCC on cirrhosis is a safe and feasible option with minimal postoperative complications and rapid recovery.

Introduction
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cirrhotic liver

normal liver
Stepwise advancement in laparoscopic liver resection*

Wedge resection

Left lateral sectionectomy

Anatomic resection of segments 2, 3, 4, 5, 6

Left hemipatectomy

Right hemipatectomy

More complex resection

*Normal then cirrhotic liver
LEFT LATERAL SECTIONECTOMY (II-III)
Stepwise advancement in laparoscopic liver resection*

Wedge resection

Left lateral sectionectomy

Anatomic resection of segments 2, 3, 4, 5, 6

Left hemiepatectomy

Right hemiepatectomy

More complex resection

*Normal then cirrhotic liver
ANATOMIC SECTIONECTOMY SEGMENT VI RESECTION

Laparoscopic Segment VI Liver Resection using a Left Lateral Decubitus Position: A Personal Modified Technique

Gianluca Belli - Cristiano Fanizzi - Alberto D’Aguanno - Luigi Dei - Paolo Linzinger - Giacinto Rainer - Andrea Belli
Stepwise advancement in laparoscopic liver resection*

- Wedge resection
- Left lateral sectionectomy
- Anatomic resection of segments 2, 3, 4, 5, 6
- Left hemiepatectomy
- Right hemiepatectomy
- More complex resection

*Normal then cirrhotic liver
Left hemihepatectomy

Laparoscopic left hemihepatectomy a consideration for acceptance as standard of care

Giulio Belli · Brice Gayet · Ho-Seong Han · Go Wakabayashi · Ki-hun Kim · Robert Cannon · Hironori Kaneko · Thomas Gamblin · Alan Koffron · Ibrahim Dagher · Joseph F. Buell · International Consensus Group for Laparoscopic Liver Surgery


Without intraoperative complication

With intraoperative complication
Stepwise advancement in laparoscopic liver resection

Wedge resection
Left lateral sectionectomy
Anatomic resection of segments 2, 3, 4, 5, 6
Left hemiepatectomy
Right hemiepatectomy
More complex resection

*Normal then cirrhotic liver
Right hemihepatectomy

Laparoscopic hand-assisted right hemihepatectomy by ultrasound-directed intrahepatic approach

Giulio Belli · Alberto D’Agostino · Corrado Fantini · Andrea Belli · Luigi Ciolfi · Paolo Limongelli · Gianluca Russo


Total laparoscopy

cirrhotic liver

normal liver
Stepwise advancement in laparoscopic liver resection*

- **Wedge resection**
- **Left lateral sectionectomy**
- **Anatomic resection of segments 2, 3, 4, 5, 6**
- **Left hemiepatectomy**
- **Right hemiepatectomy**

*Normal then cirrhotic liver*
More complex resection

Liver resection for hepatocellular carcinoma in patients with portal hypertension: the role of laparoscopy

Andrea Belli, Luigi Ciolfi, Gianluca Ratto, Giulio Belli

Redo Laparoscopic Liver Resection

Repeat liver surgery by laparoscopy for a malignant recurrence after previous open or laparoscopic resection

Luigi Cioffi, Andrea Belli, Corrado Fantini, Alberto D’Agostino, Gianluca Russo, Giulio Belli

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Previous open liver resection

Previous laparoscopic liver resection
CONCLUSION

We must recognize the bright future with the introduction of new technologies together with the next generation of hepatic surgeons evolving in the era of advanced laparoscopy will propel the utilization of laparoscopic techniques for any kind of hepatic resections.

Stepwise advancement is mandatory.
Thank you