

*Research Article***Assessment of Laparoscopic Resection of Hepatic Central Injuries, Brief Term Result****Nasser M. Zaghloul; Motassem M. Ali; Ahmed S. Hafez; Abdelfattah S. Abdelfattah and Ashraf M. Ali Metwally.**

Department of Surgery, Faculty of Medicine, Minia University, Minia, Egypt.

Abstract

Aim of the study: Even though laparoscopic hepatectomy (LH) has proved to be both safe and effective in specialized centers; the restricted indications for resection in the case of benign liver lesions has resulted in poorly reported outcomes. Our aim was to describe the short and long-term results of LH to treat benign hepatic lesions, including quality of life (QoL) evaluation. **Patients and Methods:** Thirty-one LHs were performed between 2016 and 2018 in 30 patients. We evaluated QoL with the SF-36 test and a body image satisfaction questionnaire by personal interview before surgical treatment and at 1 month, 3 months, 6 months and 1 year after surgery. **Results:** Median age was 38 years (range 21-71) and the majority were females (68%). The most frequent etiology was hepatic adenoma in 16 patients (52%), followed by focal nodular hyperplasia (n = 4), cavernous hemangioma (n = 3), hepatic abscess (n = 3), cystadenoma (n = 5) and hepatolithiasis (n = 1). The majority of resections were minor (66%) and the conversion rate was 6.2%. Pathological examination confirmed negative margins in all patients. Postoperative mortality was nil, while morbidity was 6.2%. Median hospital stay was 4 days (range 1-32 days). In a median follow-up of 48 months (range 2-120), 2 patients experienced recurrence. QoL variables were similar between the preoperative and postoperative periods. **Conclusion:** LH should be considered the main therapeutic approach for treating selected patients with benign liver lesions who require surgical resection because it presented both null mortality and low morbidity, along with rare recurrence, a good quality of life and high esthetic satisfaction.

Keywords: Laparoscopic liver surgery, liver neoplasms, adenoma, liver cell, focal nodular hyperplasia, hemangioma, cavernous, quality of life.

Introduction

Since the early 90s, when the first laparoscopic anatomical resection of the liver was reported, laparoscopic hepatectomy (LH) has gained increasing importance for treating hepatic tumors^[1]. Several advances in laparoscopic instruments such as parenchymal transection devices, staplers and hand-assisted equipment, together with improved expertise in laparoscopic surgery, have led to increasing use of LH, especially in referral centers.

Given its many advantages over open hepatectomy, including less postoperative pain, less use of opiate analgesia, better cosmetic results, decreased blood loss, decreased postoperative complications (both hepatic-specific and pulmonary) and shorter hospital stay, LH has become the preferred approach for treating benign hepatic tumors^[2-7]. Even though LH has been shown to be both safe and effective; the

restricted indications for resection in the case of benign liver lesions have resulted in poorly reported long-term outcomes. In addition, there is a need to know whether LH might improve the overall postoperative quality of life (QoL) of patients with benign lesions^[8-15].

Methods

Between June 2016 and March 2018, 31(38%) LHs performed in 30 patients bearing benign hepatic lesions formed the study population.

The indications for resection of benign liver lesions were as follows: symptomatic patients, presence of cystadenoma, presence of hepatolithiasis and uncertain diagnosis based either on imaging or on biopsy findings (when it was not possible to rule out malignant hepatic neoplasm). Hepatic adenoma (HA) was also resected in the following circumstances: larger than 4-5 cm, female gender with intention to

conceive, presence of beta-catenin mutation or male gender. Resection of pyogenic liver abscess (PLA) was indicated after failure of percutaneous drainage. All patients were studied with serum tumor markers (CEA, AFP and Ca 19.9), abdominal ultrasonography, computed tomography and magnetic resonance imaging (MRI). For the last seven cases, MRI with hepatobiliary contrast (Primovist; Bayer-Schering, Berlin, Germany) was also carried out. Since 2007, our team has considered the laparoscopic approach as the first choice for all hepatectomies except in the following situations: very large lesions (> 10 cm) in the right lobe, tumors close to major vascular structures, or central locations. All liver resections were defined in accordance with the

International Hepato-Pancreato-Biliary Association terminology through the Brisbane Nomenclature, 2000. Major hepatectomy was defined as resection of three or more hepatic segments. The surgical techniques used for LH were either the intra-hepatic Glissonian approach [Figures 1 and 2] or the extra-hepatic Glissonian approach [Figures 3 and 4], in accordance with previous standardization^[7,11-13]. Intraoperative ultrasonography was performed whenever available. Surgical specimens were preferentially removed in an Endobag [Figure 5], by means of a Pfannenstiel incision [Figure 6] or a small right subcostal incision. On the liver bed, a hemostatic Surgicel was used, along with fibrin glue (Eviscel) when available, to finish the hemostasis.



Figure 1. Intrahepatic Glissonian approach for right posterior sectionectomy. Demarcation of liver surface around right posterior Glissonian pedicle

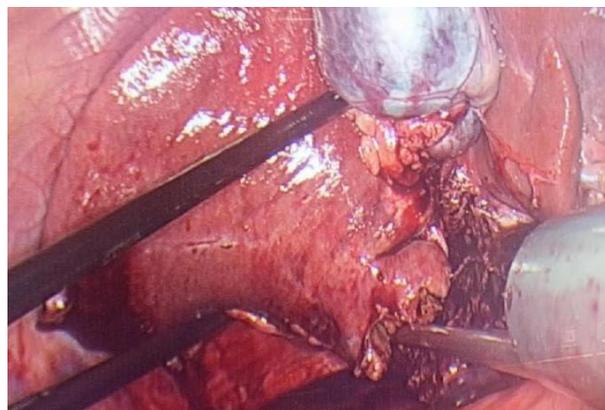


Figure 2. Intrahepatic Glissonian approach for right hepatectomy. En-bloc stapling of right glissonian pedicles by means of vascular stapler (after two hepatotomy procedures)

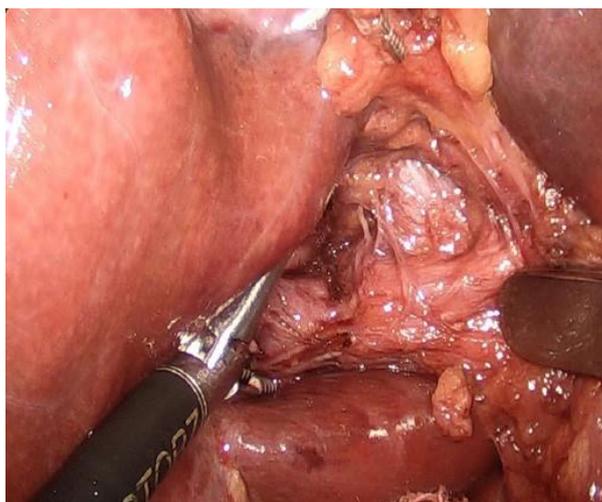


Figure 3. Extra-hepatic approach. En-bloc dissection of the right posterior hepatic pedicle

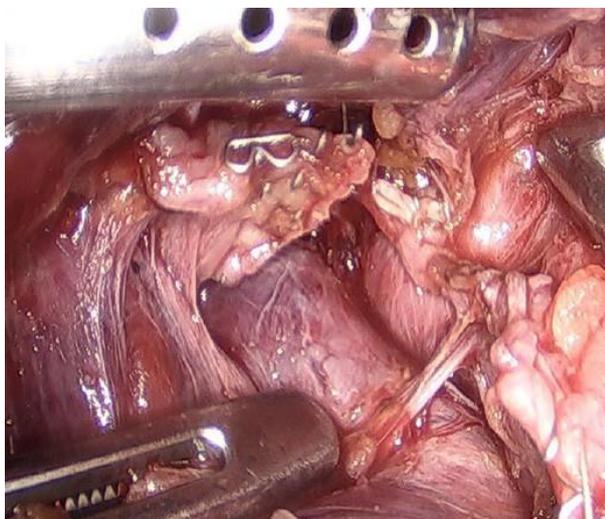


Figure 4. Extra-hepatic approach. Right posterior hepatic pedicle stapled en-bloc



Figure 5. Segmentectomy 3 surgical specimen placed in Endobag before retrieval



Figure 6. Late result after left lateral laparoscopic segmentectomy

Discussion

Since initial experiences, LH has been proven to be a good choice for treating benign hepatic lesions, especially for minor resections of lesions arising in easily accessible hepatic segments at anterolateral positions, so-called “laparoscopic hepatic segments”^[2-6].

Since 2008, two major international expert consensus conferences have been held to review the role of LH. The first of these was held in Louisville, USA, where it was established that LH was best indicated for solitary lesions measuring 5 cm or less that were located in segments 2 to 6^[6]. At this meeting, it was accepted that laparoscopy should be considered the standard approach for left lateral sectionectomy and that indications for surgical treatment of benign hepatic lesions should not be widened simply because laparoscopic approach was feasible. Six years later, a new consensus meeting involving many worldwide experts was held in Morioka, Japan, where hepatic resections of greater complexity became more accepted, including major resections or resections of posterosuperior liver segments, especially at referral centers^[7].

Therefore, LH is nowadays considered a safe and feasible alternative to open operations, even for left or right major hepatectomies and malignant liver lesions.

Given that LH is a complex laparoscopic procedure, laparoscopic left lateral sectionectomy has been considered by many experts the ideal anatomical resection for initial training because of its anatomical accessibility and the

possibility of using the aid of staplers^[14-18]. Therefore, laparoscopic left lateral sectionectomy has been one of the most performed types of LH along the learning curve of many authors^[8,10,12].

Even though laparoscopic left lateral sectionectomy and right posterior sectionectomy were the most frequent LHs performed in the present series, more complex LHs including left hepatectomy, right hepatectomy and even mesohepatectomy were also performed, reflecting the strong trend in the literature towards performing more complex procedures for treating hepatic lesions^[2-13].

Many studies, including meta-analyses, have confirmed the benefits of LH in comparison with open hepatectomy, namely: lower levels of postoperative pain, fewer peritoneal adhesions, shorter hospital stay, earlier return to daily activities, lower blood loss, reduced morbidity, fewer operative complications and less mortality^[2-15]. Among the short-term outcomes from our study, a low blood loss (mean 125 mL), short hospital stay, low morbidity (6.4%) and no mortality are clearly in accordance with the many advantages reported in previous studies. The surgical margin was adequate in all cases, despite the lack of intraoperative palpation that is inherent to this method. Late recurrence in this series was a rare event (only 6%), and given that they occurred distant in liver parenchyma, they could perhaps be attributed to more aggressive biological behavior in those two cases.

Benign lesions of the liver usually occur in young patients, who care not only to achieve an

early return to work and sports practice, but also to maintain a good QoL and a pleasing body image. Giuliani et al.,^[19] have demonstrated that the laparoscopic approach was superior regarding the QoL of patients who underwent operations due to benign liver lesions.

In the present study we observed that there was an excellent QoL among the patients who underwent successful LH without open conversion. Seven out of eight variables measured by the SF 36 questionnaire presented similar results between preoperative period and postoperative period (after three months of surgical procedure). In our view point, this finding may indicate that LH allows QoL maintenance in patients operated from benign diseases.

In the present study, an early return to work and sports practice was observed and, since most of the patients were young and in a productive phase of their lives, a significant socioeconomic gain could be expected from this population group.

The main limitations of this study are its retrospective nature, as well as the heterogeneous and relatively small patient population. However, to our knowledge, no case series in Brazil have evaluated early and late postoperative outcomes along with the QoL of patients after LH performed solely on benign lesions of the liver.

In addition, this report is unique because most of the patients in this sample were young women who live in a tropical country where body image is a very important tool for evaluating the overall QoL. Thus, a simple satisfaction questionnaire was applied in addition to the QoL questionnaire and showed that about 93% of our patients were satisfied in relation to the general esthetic aspects of the laparoscopic approach.

In conclusion, LH presented low morbidity, null mortality and rare recurrence in the present series. Furthermore, LH offered a good QoL and high esthetic satisfaction. Therefore, LH performed by expert liver surgeons should be considered the main therapeutic approach for treating selected patients with benign liver lesions who require surgical resection. Further

prospective studies are needed to confirm our findings.

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