Laparoscopic and open hepatectomy for marginal liver neoplasms: analysis of short-term results

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Objective: To analyze the short-term effect of laparoscopic and open hepatectomy on marginal liver tumors. Methods: The data of 24 patients with hepatectomy who underwent hepatectomy from January, 2014 to December, 2016 were retrospectively analyzed. Results: Laparoscopic hepatectomy group of 11 cases, the operation was successful. Including 8 cases of primary liver cancer, liver metastasis of intestinal cancer in 1 case, 1 case of hepatic hemangioma, 1 case of liver adenoma. Partial hepatectomy (II–VI) in 8 cases, left lateral lobe resection (II+III) in 2 cases, two resection (III+VI) in 1 case. 13 cases of open surgery group, including 9 cases of primary liver cancer, liver metastasis of intestinal cancer in 2 cases, 1 case of hepatic hemangioma, 1 case of liver adenoma. The operative procedures were: partial hepatectomy (8 cases), left lateral lobe resection (II+III segment) in 4 cases and partial resection (IVB +VI segment) in 1 case. The operative time of laparoscopic group was significantly longer than that of laparotomy group (127.7±31.2) min vs (103.4±26.7) min, laparoscopic group was significantly less than that of laparotomy group (140.6±21.4) vs (268.3±33.7) mL were significantly shorter than those in the laparotomy group (2.9±0.3) vs (3.7±0.8) ten thousand yuan in the laparotomy group, the hospitalization time was significantly shorter than the open group (8.52±1.06) vs (13.5±2.7) d (P<0.05). There was no significant difference in complication between the two groups (P>0.05). Conclusion: Laparoscopic hepatectomy in the marginal segment resection (II, III, IV, V, VI) in the use of safe and effective, and less intraoperative bleeding, rapid postoperative recovery, eating early, shorter hospital stay, hospitalization. The cost of complications was lower than that of the open group. The curative effect was better than that of the laparotomy group.

1. Introduction

The world's first laparoscopic hepatectomy in 1991 by the United States doctor Reich completed. Domestic Zhou Weiping completed in 1994 the first case of laparoscopic hepatectomy. Laparoscopic hepatectomy due to the objective existence of technical difficulties, resulting in a very long period of laparoscopic hepatectomy has not been widely carried out until recent years, with the technology and equipment progress, have a rapid development, the current domestic Outside the total number of cases up to 10 000 cases. However, due to intraoperative bleeding and other technical difficulties are not completely resolved, laparoscopic hepatectomy is still controversial. In this paper, combined with the past two years, Affiliated Liuzhou Iron Central Hospital of Guangxi Medical University, Department of Hepatectomy 24 cases of clinical data, analysis of marginal liver tumors undergoing laparoscopic surgery and laparotomy short-term effect comparison, the initial laparoscopic The Value of Hepatectomy in the Treatment of Marginal.

2. Materials and methods

2.1. Selection criteria and exclusion criteria

Selection criteria: (1) imaging of liver tumors (2) liver function grading Child A or B (3) liver tumors in the marginal liver segment
(Couinaud II, III, IVb, V, VI) Confined to two liver segments. (4) tumor diameter less than 5 cm and did not violate the first and second hilar.

Exclusion criteria: (1) tumor diameter greater than 5 cm (2) tumor with tumor thrombus and hepatic metastasis or intrahepatic metastasis or distant metastasis (3) tumor is located in the central segment (Couinaud I, IV A, VII, VIII).

2.2. General information

General information from January 2014 to December 2016 period of Guangxi Medical University Affiliated Liu Tie Central Hospital, Department of General Surgery, 24 cases of liver tumor patients underwent hepatectomy. The mean age of the patients was (51±9.2) years old. Pathological primary hepatocellular carcinoma was found in 8 patients, liver metastasis in 13 patients, liver metastasis in intestinal cancer was found in 1 patient, hepatic hemangioma 1 For example, 1 case of liver adenoma. Laparoscopic operation: 9 cases of partial hepatectomy (II–VI), 1 case of left lateral lobe resection (II+III), 1 case of segmental resection (III+IV); 13 cases of open surgery (8 cases) and female (5 cases). The average age was (52±10.0) years. Pathological primary hepatocellular carcinoma was found in 9 cases, hepatic metastasis in 2 cases, hepatic hemangioma in 1 case. The operative procedures were: partial hepatectomy (8 cases), left lateral lobe resection (II+III segment) in 4 cases and partial resection (IVB + VI segment) in 1 case. There was no significant difference between the two groups in general data (sex ratio, age group, etc) ($P > 0.05$). Before the completion of relevant inspection, such as B-ultrasound, CT, MRI and biochemical tests, regular follow-up after discharge.

2.3. Treatment

2.3.1. Laparoscopic group

(I) anesthesia, position and puncture point distribution. All patients underwent general anesthesia with tracheal intubation. II, III lesions using the right side of the head tilt 30. Position, IVB, V, VI segment of the lesion using the first 30 high-left tilt. Position. Trocar distribution around the resection of liver segment fan-shaped distribution, the general five-hole method, pneumoperitoneum pressure maintained at between 13–15 mmHg, Winslow hole pre-made by the first hilar block (using suction tube, catheter, coarse And underwent liver resection after regional hepatic vascular occlusion using Glisson sheath ligation and Glisson sheath dissection. Laparoscopic hepatectomy with reference to expert consensus and surgical procedures and other literature[1].

(II) The anatomy of the first hepatic portal Glisson sheath. As this group of patients mainly in the marginal liver segment of the tumor, so the first hepatic portal Glisson sheath anatomy of the main target for the left hepatic lobectomy patients. After the incision of the small omentum sac, the Winslow hole pre-made homemade first hepatic portal block, longitudinal ultrasonic anatomy of the liver duodenum ligament, anatomy of the hepatic artery, upward separation, to find the left hepatic artery and supply The middle hepatic artery of the fourth paragraph, the use of Hem-o-lok clipped left hepatic artery and off, the left hepatic artery distal to the lower part of the visible separation of the left portal vein, portal vein left hepatic vein to be cut when the resistance Broken blood flow. When the liver was cut, the liver tissue of the left outer leaf diaphragm surface and the dirty surface were separated and separated by Hem-o-lok. The Hem-o-lok was clamped on the surgical path more than 2 mm, Resection of the liver. Specimens from the expansion of the casing incision to remove the abdominal cavity and liver wound, confirmed no active bleeding and bile leakage after abdominal drainage tube.

(III) the first hepatic portal Glisson sheath off. The same group of the first hepatic portal Glisson sheath off the main target for the left hepatic lobectomy patients. The first hepatic portal Glisson sheath off from the technology from Japan Professor Takasaki Kawasaki's cross-sectional liver resection Glisson, Zheng Shu Guo and other domestic earlier promotion and application[2]. In the same way by the Winslow hole in the preset first hepatic portal block, the ultrasonic knife cut off the liver round ligament after lifting the liver round ligament along the left side of the ligamentum hepaticum, stripping the hilar plate tissue in the left side of the umbilicus from deep to deep The Glisson system, which leads to III and II segments, can be sequentially dissected. One Glisson system leads to segment III and one or two Glisson systems lead to segment II. With the line cut after ligation, proximal tubing with Hem-o-lok closed. The remaining off-liver approach was identical to that of the second step.

(IV) partial hepatectomy. In the local resection of the marginal hepatic tumor, we also identified the tumor site by preincubation of the first hepatic portal block with the Winslow aperture. The margin was marked with a galvanic hook at 2 cm from the edge of the tumor. The ultrasound knife from shallow to deep from the liver parenchyma, encountered larger blood vessels or bile duct, using Hem-o-lok clip folder closed. Such as intraoperative bleeding more, you can immediately use the first hepatic portal blocking the hilar blood flow, can be satisfied with the hemostatic effect.

2.3.2. Laparotomy group

Laparotomy group underwent laparotomy under general anesthesia, and the first hepatic portal block was also designed. The first hilar Glisson sheath or the first hilar Glisson Anatomy of intrathecal blood vessels.
2.4. Observation

Observation of two groups of patients were observed time of surgery, intraoperative blood loss, postoperative recovery, hospital stay and the incidence of complications, hospital costs, 1-year survival rate.

2.5. Statistical analysis

Statistical methods using SPSS19.0 software analysis, data between groups were compared using t test, count data comparison using chi-square test, \( P <0.05 \) was statistically significant.

3. Results

Of the 11 cases of hepatectomy, 9 cases were partial hepatectomy (II–VI), 1 case of left lateral lobe resection (II + III segment), 1 case of segmental resection (III + VI), (140.6±21.4) mL, mean operative time (127.7±31.2) min, mean postoperative hospital stay (8.52±1.06) d, mean postoperative hospital stay (1.5±0.7), hospitalization costs (2.9±0.3) ten thousand yuan, Postoperative complications (1 case), no serious complications leading to perioperative deaths. In the open group, 13 patients underwent partial hepatectomy (II–VI), 4 patients underwent left lateral lobectomy (II+III) and 1 (IVB +VI) resection. The mean operative time was (103.4±26.7) min, the average time of in-bed movement (3.8±0.8) d and the average postoperative hospital stay (13.5±2.7), hospitalization costs (3.7±0.8) ten thousand yuan. Postoperative complications (2 cases), no serious complications leading to perioperative deaths. There was no significant difference in the postoperative drainage volume and postoperative complication rate between the two groups \((P>0.05)\). But in the operation time, the laparotomy group shorter than the endoscopic group. The rate of postoperative liver function, hospital stay, hospitalization costs were better than those of the open group \((P<0.05)\) (Table 1).

All patients with liver cancer were followed up for 1 year. All the patients were followed up for interventional therapy (postoperative 1, 3, 6, and 12 months). One case had local recurrence in the laparoscopic group (April), and one died of recurrence and metastasis in November. One patient had intrahepatic recurrence and metastasis occurred in the 6th and 8th postoperation. One patient died. No abdominal wall poke hole transfer phenomenon of planting. The 1-year survival rate was 88.8% (8/9). There was no local recurrence in the laparotomy group, and intrahepatic recurrence and metastasis occurred in the 6th and 8th postoperation. One patient died. No abdominal wall poke hole transfer phenomenon of planting. The 1-year survival rate was 90.9% (10/11). There was no significant difference in 1-year survival rate between the two groups (\(P> 0.05\)). With the literature is basically the same[3].

4. Discussion

As the liver location, anatomy, the special physiological structure, surgery prone to difficult to control bleeding and fatal air embolism and other serious complications, laparoscopic hepatectomy has been a surgeon's restricted area. In the breakthrough of technical bottlenecks and surgical instruments have been improved, the number of laparoscopic hepatectomy in recent years in China has been rapid growth, a number of domestic centers have a large number of cases reported. However, due to the special liver tissue anatomical characteristics, leading to laparoscopic hepatectomy is not as laparoscopic gastrointestinal surgery as widely recognized by surgeons, the current main focus of debate is the safety of surgery and clinical efficiccy.

According to Laparoscopic Hepatectomy Expert Consensus and Surgical Guidelines (2013 Edition)[4], Surgical lesion site is recommended in the liver before the lower segment II, III, IV B, V, VI segment of the so-called marginal liver segment, and the tumor size is generally less than 5 cm. For liver located in the upper segment I, IVA, VII, VIII of the so-called central hepatic segment and the tumor is greater than 5 cm of the lesion, the guide is not recommended laparoscopic hepatectomy. The above criteria were used in this study. In terms of safety, the liver surgery bleeding and how to deal with bleeding is the focus of one [5]. It is generally believed that in the open condition, can be skilled in the liver around the tissue free, safe and rapid access to the hilar blood flow block, while in the event of unexpected bleeding, the surgeon's hands on the liver tissue compression hemostasis Very effective measures. And laparoscopic surgery seems to lose the above advantages. However, the control group compared the amount of bleeding in surgery, we found that laparoscopic surgery group than the amount of bleeding less open group. Analysis of the reasons, we believe

<table>
<thead>
<tr>
<th>Group</th>
<th>( n )</th>
<th>Aspartate aminotransferase (U/L)</th>
<th>Alanine aminotransferase (U/L)</th>
<th>Total bilirubin (μmol/L)</th>
<th>Aspartate aminotransferase (U/L)</th>
<th>Alanine aminotransferase (U/L)</th>
<th>Total bilirubin (μmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laparoscopic group</td>
<td>11</td>
<td>30.7±6.1</td>
<td>30.2±5.6</td>
<td>20.3±10.6</td>
<td>185.4±52.0</td>
<td>130.6±28.8</td>
<td>41.1±8.6</td>
</tr>
<tr>
<td>Open group</td>
<td>13</td>
<td>29.7±5.6</td>
<td>31.5±5.8</td>
<td>20.1±9.8</td>
<td>221.0±60.3</td>
<td>116.7±28.4</td>
<td>37.0±9.7</td>
</tr>
</tbody>
</table>

Table 1

Comparison of two groups after liver function changes.
that the following factors (1) We used such as ultrasonic knife, bipolar coagulation, Ligasure, endovascular closure closure Endo-GIA and other advanced hemostatic devices. Such as surgery found in less than 3 mm of the pipe, you can directly use the ultrasonic knife coagulation, very safe[6]. Pipes larger than 3 mm and smaller than 8 mm can be clamped with Hem-o-lok. For ducts larger than 8 mm, Endo-GIA or silk ligation or 5-0 Prolene suture can be considered. (2) before the separation of liver tissue, we usually pre-placed homemade simple hepatic portal block, if necessary, can immediately block the first hilar, similar to the laparotomy Pringle approach, convenient, Break 15 min after the relaxation of 5 min, you can repeatedly use. And skilled operation, place the homemade simple hepatic portal block with only a few minutes. (3) the application of regional hepatic blood flow blocking technique used in laparotomy for laparoscopic surgery, such as the first hepatic portal Glisson sheath or the first hepatic portal Glisson intrathecal anatomic technique. Group and laparoscopic group were used, the same satisfactory hemostatic effect. However, due to the existence of laparoscopic learning curve reasons, the regional liver blood flow blocking operation is completed longer than the laparotomy time, which is laparoscopic surgery than laparotomy longer time a factor[7]. (4) the presence of endoscopic pneumoperitoneum pressure is also a result of laparoscopic hepatectomy less bleeding than laparoscopic hepatectomy less a reason. (5) laparoscopic hepatectomy bleeding mainly from the hepatic vein system of traffic support, endoscopic vascular tissue structure is enlarged, the surgeon has a clearer surgical field of vision, the operation is more precise than open surgery, vascular clamp from More accurate cut, reducing the risk of vascular tear bleeding, bleeding is also less of a reason. (6) by limiting the liquid input, change position, the use of nitroglycerin and other vasodilator drugs, as well as diuretic and other measures to achieve low central venous pressure (LCVP) is also conducive to reducing intraoperative bleeding. In this study, laparoscopic hepatectomy hemorrhage is not much, no intraoperative bleeding, air embolism and other serious complications, combined with clinical practice data and above analysis, can be considered marginal liver tumor laparoscopic hepatectomy is safe.

In terms of effectiveness, the clinical concerns are the integrity of the tumor tissue, the time of postoperative recovery, the presence or absence of implant metastasis in the epicardial perforation, and postoperative metastasis. In this study, laparoscopic group after surgery, bedtime, eating time, liver function recovery time were earlier than the open group, and postoperative complications and recurrence and metastasis, 1 year survival rate between the two groups no significant difference. No abdominal wall poke hole transfer cases. At present, the probability of tumor spread and the reasons for planting is still controversial[8]. The operation of endoscopic surgery is meticulous, the amount of bleeding is small, the anatomy is clear, the tissue is light, and the incision is small and the pain is light. The physiology and psychological interference are small. It may be the reason of short recovery time, short hospitalization time. At the same time combined with intraoperative B-ultrasound, tumor resection of the integrity of the organization can be protected. In summary, the marginal liver tumor laparoscopic hepatectomy is safe and effective [9,10].

Due to the small number of clinical cases included in this study and the retrospective study, there is the possibility of information bias. There are some limitations in the results. At the same time postoperative follow-up time is not long, can not determine the long-term effect. Therefore, laparoscopic hepatectomy for the treatment of borderline liver tumors in the near and long-term effect is still looking forward to large-scale medical center can be large-scale, double-blind, randomized prospective study. To further clarify.

References