GLISSONEAN PEDICLE APPROACH USING TAKASAKI METHOD IN LIVER RESECTION AT HUE CENTRAL HOSPITAL

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ABSTRACT

***Objective**: To apply hepatectomy using Takasaki procedure to control Glissonean pedicle.*

***Methods**: A prospective, descriptive study on 31 patients undergoing hepatectomy using Takasaki Glissonean pedicle approach.*

***Results**: The mean age was 55 ± 11.7 (39 – 73 years), male/female ratio was 7.3. The mean operative time was 115 ± 37 minutes. The mean blood loss was 271 ± 119 ml. There was one case of common hepatic duct injury (3.6%). Postoperative complications occurred in 7(22.4%) patients. There was no postoperative mortality.*

***Conclusions**: Hepatectomy using Takasaki Glissonean pedicle approach was safe and effective technique.*

***Keywords**: Glissonean pedicle approach, hepatectomy*

I. INTRODUCTION

Among many treatments for liver cancer such as RFA, TOCE, and surgery, hepatectomy still remains the most curative treatment with the most favorable survival rates. Two most commonly used inflow control techniques in hepatectomy were Lortat - Jacob and Ton That Tung's techniques. Blood loss in hepatectomy is a major obstacle during surgery and also adversely affects the postoperative outcomes of patients. Many inflow control methods were introduced in including techniques of Pringle (1908), Henry Bismuth (1982) and Makuuchi (1987).

Takasaki (1986) proposed the technique of approaching the Glissonean pedicles without liver parenchymal dissection. This technique helped minimize the ischemia time of the remnant liver parenchyma and also clearly define demarcation line, facilitating anatomic liver resections.

This technique has been widely applied in Japan and around the world.

We conducted this study to apply Takasaki technique in hepatectomy at Hue Central Hospital.

II. SUBJECTS AND METHODS

2.1. Subjects: 31 patients underwent hepatectomy using Takasaki approach at Hue Central Hospital from 05/2017 – 05/2019.

2.2. Methods: A prospective, descriptive, uncontrolled study.

2.3. Surgical procedure

Approach to the right and left Glissonean pedicles

The gallbladder was removed to facilitate porta hepatis dissection. Dissecting in the plane between the Glissonean and Laennec's capsule above the bifurcation can easily expose the right and left Glissonean pedicles which will be encircled and taped. Ligating small branches running directly from the Glissonean pedicles into the liver helps limit bleeding.

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Received: 10/5/2019; Revised: 17/5/2019
Accepted: 14/6/2019

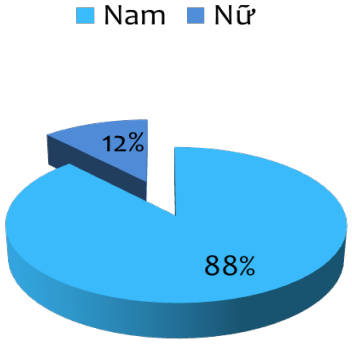
Approach the right anterior and posterior Glissonean pedicles

The connective tissue along the right anterior pedicle is dissected deep into the parenchyma to expose the front of the right anterior pedicle. Then dissection continues into the gap between the anterior and posterior pedicles. The anterior pedicle is then encircled and taped. The posterior pedicle can be dissected in a similar fashion. The demarcation line for parenchymal transaction can be clearly defined after selective clamping of these three pedicles. Segmental Glissonean pedicle can also be approached using Takasaki method in segmentectomy. Hepatic parenchyma is transected with Kelly crushing technique. Small blood vessels and bile ducts in the liver are ligated with Silk 3.0 or clipped. The transected surface can be oversewn with Vicryl 1.0 suture if necessary.

III. RESULTS

Male accounted for the majority of patients

The mean age was 55 ± 11.7. The oldest patient was 73 years old and the youngest patient was 39 years old.



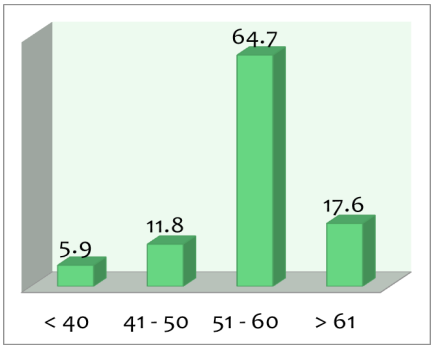


Table 1. Child – Pugh classification of liver function before surgery

Child – Pugh classification	n	%
Child – Pugh A	24	77.4
Child – Pugh B	7	22.6
Child – Pugh C	0	0

Preoperative liver function was assessed by Child – Pugh classification. Among them, Child - Pugh A accounted for the majority of patients - 24/31 (77.4%).

Table 2. Types of hepatectomy

Types of hepatectomy	n	%
Right hepatectomy	5	16.1
Left hepatectomy	3	9.7
Left lobectomy	8	25.8
Right posterior sectionectomy	7	22.4
Segmentectomy V, VI	7	22.4
Segmentectomy V, VI, VII	1	3.6

The proportions of different types of major and minor hepatectomies were similar.

Types 3. Intraoperative characteristics

Intraoperative characteristics	Results
Mean operative time (phút)	115 ± 37
Mean estimated blood loss (ml)	271 ± 119
Mean volume of blood transfusion (ml)	150 ± 56
Intraoperative complications (n, %)	1(3.6%)

The mean operative time was 115 ± 37 (97 - 155 minutes). The mean estimated blood loss was 271 ± 119 (150-400 ml). The mean volume of blood transfusion was 250 ± 56 (200 - 400 ml).

There was one case of common hepatic duct injury undiscovered during surgery. The patient presented with increasing bilirubin and clinically apparent jaundice on postoperative day 5. Re-exploratory laparotomy was performed on postoperative day 11 during which a complete transaction of the common hepatic duct was discovered. The lesion was repaired by Roux-en-Y biliodigestive anastomosis. The patient finally recovered and was discharged afterward.

Table 4. Postoperative complications

Complication	n	%
Liver failure	3	9.7
Biliary obstruction	1*	3.6
Pleural effusion	1	3.6
Residual abscess	4	12.9
Hemorrhage	0	0
Bile leakage	0	0

(*) Patients with biliary obstruction due to common hepatic duct injury was discovered during re-laparotomy.

Postoperative complication rate was 7/31 (22.4%). Liver failure 3/31 (9.7%) usually occurred after day 3. Patients were often stabilized and recovered completely after 2 weeks. Residual abscess occurred in 4/31 (12.9%) patients and pleural effusion occurred in 1/31 (3.6%) patients. There was no death after surgery.

IV. DISCUSSION

Hepatocellular carcinoma is a common disease in Asian countries, including Vietnam, accounting for 75% - 80% of liver cancer worldwide, and ranking fifth in the cause of cancer deaths in Asia [1]. Hepatectomy remains the most radical treatment. However, it is a major surgery with many complications including bleeding, liver failure, pleural effusion, biliary obstruction and residual abscess and the the mortality rate up to 5% [2], [3].

Our study consisted of 31 patients successfully treated with hepatectomy using Takasaki's Glissonean pedicle approach. The overall complication rate was 7/31 (22.4%). There was no postoperative mortality. There was one case of bile duct injury after a right hepatectomy. This patient was diagnosed later with increasing jaundice and biliary obstruction on CT scanner. The injury was confirmed during re-laparotomy on day 11 and was repaired by Roux-en-Y biliodigestive anastomosis. She recovered and was discharged 27 days from the first operation. Liver failure was common for patients undergoing major hepatectomies (right or left hepatectomy). Liver failure was usually transient. Conservative treatment with plasma, albumin and diuretics was usually sufficient and complete recovery was documented on postoperative day 15 to 20.

Takasaki's Glissonean approach in anatomic hepatectomy helped determine the exact boundary between segments, limit ischemia time of the remnant liver and avoid spreading cancer cells to the adjacent segments during surgery [6]. Many studies showed that vascular invasion and intrahepatic metastasis through portal vein were independent predictors of cancer recurrence and survival time. Better long-term survival and less recurrence compared to non-anatomic hepatectomy were also demonstrated in several studies. The benefits of anatomic hepatectomy is to completely remove the part of liver fed by one portal venous branch and the portal vein itself. Therefore, it helps to completely eliminate small metastases in the liver[4].

V. CONCLUSION

Takasaki's Glissonean pedicle approach is a relatively simple technique, allowing accurate determination transaction plane, limiting ischemia time of remnant liver parenchyma, reducing blood loss and more curative cancer treatment.

However, further studies are needed to improve the techniques and better evaluate the effectiveness of this approach.

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