

Outcome of Major Liver Resection in Gastroenterology & Hepatology Teaching Hospital Review of Nine Cases

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ABSTRACT:

BACKGROUND:

Major hepatectomies consider one of the most challenging procedure and did not become commonplace until the dramatic improvement in perioperative care in the 1980s.

OBJECTIVE:

Review the outcome of liver resection performed recently in Gastroenterology & Hepatology Teaching Hospital.

PATIENTS AND METHOD:

From June 2008 to March 2011, nine major anatomic hepatic resection was performed. Enucleation, Non-anatomic or wedge resection was excluded from this study.

RESULTS:

There were 4 men, 4 women and one child. Age range between 5-43 years median age 40 years. Nine major resection was done this include; extended right hepatectomy 1 patient, right hepatectomy 2 patients, left hepatectomy 3 patients, left lateral lobectomy 2 patients, right anterior sectionectomy one patient. The inflow pedicle was controlled either by extrahepatic approach in 6 patients or intrahepatic pedicle ligation by vascular stapler in 3 patients. Post-operative hospitalization was 3-16 days, median 8 days. There were no mortality. Two patients developed bile leak in form of biloma which was treated by percutaneous drainage under ultrasound for 2 weeks. Two patients develop intra-operative hypothermia that led to stop the operation for one hour until warming of the patient.

CONCLUSION:

Major liver resection can be performed in our hospital with acceptable morbidity rate.

KEYWORDS: liver resection, hepatocellular carcinoma, hydatid cyst

INTRODUCTION:

Hepatic resection had been developed in the second half of the 20th century, when the description of right hepatectomy in 1952 by Lortat-Jacob gave birth to modern liver surgery⁽¹⁾. However, major liver resection did not become common until improvement in surgical technique, anesthetic drugs and intensive care in 1980s where it was possible to perform complex liver resections with low morbidity and mortality. Anatomical liver resection was based on concept of functional division of the liver which initiated by Couinaud in 1957 who divide the liver into two lobes, four sectors and eight segments⁽²⁾ (figure1). Major hepatectomy is defined as resection of three or more liver segments, It usually refers to right hepatectomy, left hepatectomy, left lateral lobectomy, extended right hepatectomy or extended left hepatectomy⁽³⁾ (Fig. 2). Other less known liver resection

include:, Right posterior sectionectomy (segments VI&VII), Right anterior sectionectomy (segments V&VIII), and central liver resection (segments IV,V& VIII).

Normally, the liver can tolerate a resection which results in a reduction of up to 80% of its volume⁽⁴⁾. Conversely, cirrhotic livers cannot tolerate even small hepatic resections. Good selection of patients is the largest contributor to improved survival after hepatectomies. Careful identification of each patient's overall risk factors, hepatic functional reserve and the volume of the remaining parenchyma is essential for prevention of post-hepatectomy liver failure and improvement in morbidity and mortality.

The aim of this article is to review the cases of liver resection done in our hospital, the technique, the original pathology and their outcome.

PATIENTS:

From June 2008 to March 2011, nine patients with solitary lesion involving one lobe of the liver were referred to gastroenterology and Hepatology teaching hospital. Major anatomic

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hepatic resection was done to those patient either to relieve symptoms for benign conditions or to potentially eradicate malignant condition. Enucleation, Non- anatomic or wedge resection was excluded from this review.

Surgical technique:

The patients explored through either midline incision in 4 patients, bilateral subcostal with midline extension (Mercedes incision) in 4 patients or J-shaped incision in one patient. After exploration of the abdomen the liver is fully mobilized by division of falciform and right and left triangular and coronaries ligaments. The gastro hepatic omentum encircled by vascular tape and prepared for Pringle's maneuver if need it. Cholecystectomy done with exploration of porta-hepatis . The inflow pedicle was controlled by 2 methods; either by extrahepatic control of inflow vessels by division and suturing of right

or left portal vein and hepatic artery(the hepatic duct divided intrahepatically during parenchymal transection), this was performed in 6 patients, or by intrahepatic mass pedicle ligation by division of Glisson sheath that enclose the all inflow pedicle using vascular stapler or suturing, this was performed in 3 patients. Control of the outflow vasculature by division of the small hepatic veins which passed from the posterior aspect of the right liver directly to the vena cava, main hepatic veins will be controlled at the end of parenchymal transection. We used many methods for parenchymal transection in same liver; crush clamp technique, uni- and bi-polar diathermy, in addition to ligation of vascular and biliary structures. Single tube drain placed in the developed cavity, and abdominal wall is closed in one layer.

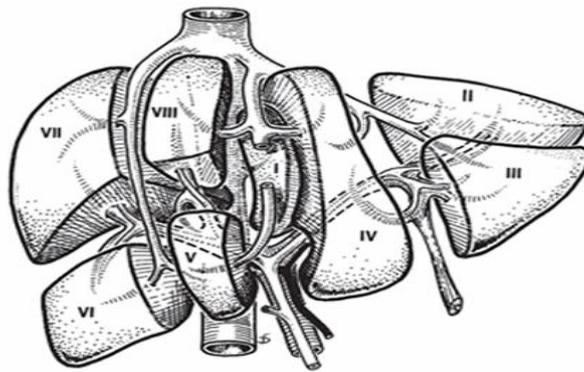


Figure 1 Functional division of the liver by Couinaud

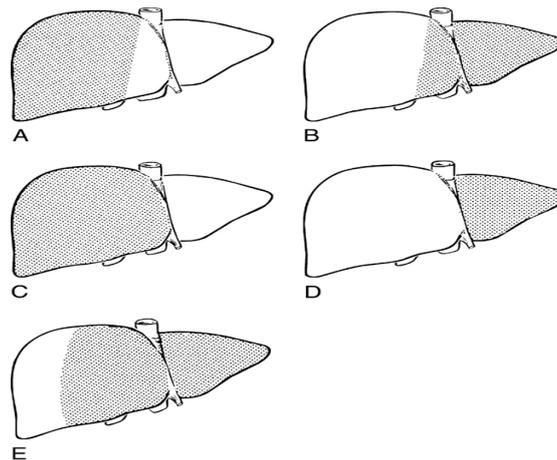


Figure 2: major liver resection; A right hepatectomy, B left hepatectomy, C extended right hepatectomy, D left lateral lobectomy, E extended left hepatectomy

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RESULTS:

There were 4 men, 4 women and one child underwent major liver resection, age range between 5-43 years median age 40 years. The type of liver resection done for those patients were; extended right hepatectomy 1 patient, right hepatectomy 2 patients, left hepatectomy 3 patients, left lateral lobectomy 2 patients, right anterior sectionectomy one patient (segments V&VIII). The histology results of those nine patients were; Hepatocellular carcinoma (HCC) in 2 patients, Complicated hydatid cyst in 2 patients, Symptomatic hemangioma in 2 patients, Intrahepatic cholangiocarcinoma (ICC) in 1 patient (figure 3), Colorectal hepatic metastases in 1 patient (figure 4), and Hepatoblastoma in 1

patient. The Post-operative hospitalization was 3-16 days, median 8 days. There were no mortality. two patient developed bile leak which was treated by percutaneous drainage under ultrasound. Two patients develop intra-operative hypothermia that managed by instillation of hot normal saline inside peritoneal cavity. The median of 3 units blood transfusion was given to 4 patients who underwent right hepatic resection, one of them who had huge right lobe hepatocellular carcinoma with inferior vena cava invasion needs nine units of blood intra-operatively (figure 5).

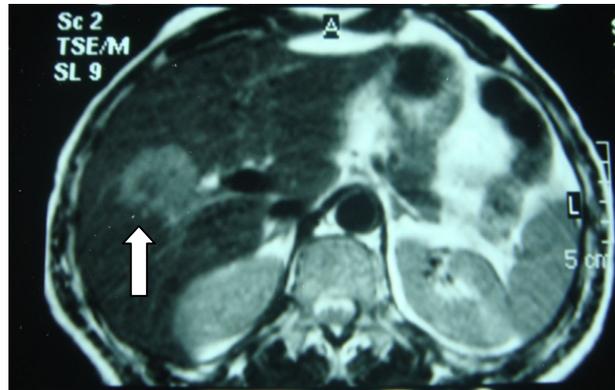


Figure 3: MRI of 43 years old male with intrahepatic cholangiocarcinoma (arrow) who underwent anterior sectionectomy.



Figure 4: CT scan of 40 years old male with colorectal liver metastases was underwent right hepatectomy.

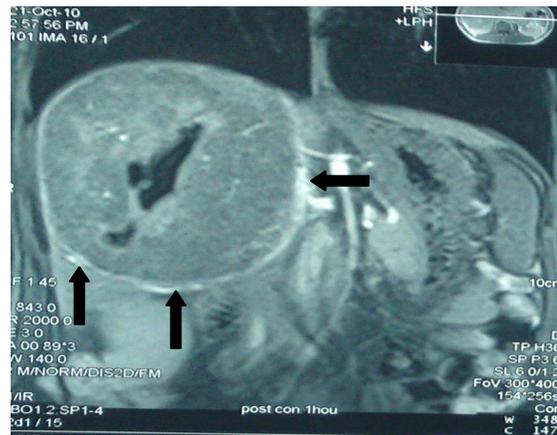


Figure 5 : MRI of 40 years old male had huge hepatocellular carcinoma(arrows) with IVC invasion who underwent right hepatectomy

DISCUSSION:

The list of indications of liver resection are prolonged, but generally it divided into 4 main indications; treatment of symptomatic benign liver lesions, eradication of primary or secondary malignant neoplasm, living donor liver transplantation, and traumatic liver lesion. Regarding HCC, surgical resection has been shown to be the best management of solitary tumors in patients without cirrhosis, with post-resection 5-year survival rates of 41–74% in this of patients⁽⁵⁾. Early detection and accurate staging of HCC are important because they determine surgeons ability to offer appropriately aggressive therapy. While large tumor size is not an absolute contraindication to resection, the risk of vascular invasion and dissemination increases with tumor size; thus, a thorough evaluation is imperative to ensure that the lesion is well circumscribed⁽⁵⁾(figure 5).

The patients with colorectal liver metastases(figure 4) used to have a rather disappointing prognosis in the past. At present there is moderate possibility for cure with liver resection when modern chemotherapy combined with biological agents is used. Although at the time of diagnosis of liver metastases, 10–20% of patients are resectable, the 5-year survival rates after resection have improved remarkably being around 50% in many reports⁽⁶⁾. The definition of resectability was simple, the only goal is to achieve histologically tumor free resection margins (R0 resection) with functionally sufficient remaining liver parenchyma^(5,6). Functionally sufficient remaining liver is commonly considered 30% of the initial liver volume and at least 40% if the patient has

received chemotherapy, or at least two segments^(5,6).

Intrahepatic cholangiocarcinoma(figure 3) is the second most common, but relatively rare, primary liver cancer after hepatocellular carcinoma, accounting for 5%-10% of the primary malignancies of the liver. Surgical resection of the liver is the only curative treatment with a 5-year survival rate of around 30% and a median overall survival of 2-3 years⁽⁷⁾.

Haemangiomas are benign liver lesions of mesenchymal origin. Cavernous haemangiomas may be large and cause symptoms due to stretching of Glisson's capsule. Most authors reserve indications for resection of a cavernous haemangioma of the liver are the development of complications, rapid growth, the presence of persisting symptoms(as in our patients) or the need to establish a confident diagnosis. The potential for complications of a liver haemangioma (mainly rupture)is rare and is not an indication for resection of all liver haemangiomas.^(8,9)

Radical surgery, whenever possible, in the form of hepatic resection, total subtotal or pericystectomy would be considered one of the best option in management of hepatic hydatid cyst to reduce the recurrence rate. Many studies demonstrate that this approach can result in shorter hospital stay, limited post-operative debilitating complications, low recurrence rate and no mortality^(10,11)(this was seen in our patients). But this may be contraindicated when complete resection of a cyst was impossible due to multiplicity, bilaterality or close contact to portal or hepatic veins⁽¹⁰⁾.

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CONCLUSION:

Major hepatic resection could be done in our hospital with rather low morbidity and mortality.

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