

THE FIRST CASE REPORT OF MAJOR RIGHT-SIDED HEPATECTOMY IN INFANT PATIENT IN NATIONAL CHILDREN'S MEDICAL CENTER

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ABSTRACT

Introduction. Liver resection is a surgical method of treatment of benign and malignant tumors including in infant patients.

Materials and methods. We want to demonstrate a case of major right-sided hepatectomy in infant patient due to rare giant anastomosing hemangioma tumor firstly performed in our center.

Results. Right hepatectomy in 5-month-old child was performed. Operative time was 175 minutes. Estimated blood loss was 50 milliliters. In the early postoperative period, the patient developed moderate post-resection liver failure, which was treated conservatively. No surgical complications occurred. Patient was discharged on 7-th postoperative day with normal liver function.

Conclusion. The results of the case demonstrated the feasibility and safety of the major liver resection procedure for infant patients in our center.

Key words: liver resection, major hepatectomy, pediatric surgery.

INTRODUCTION

Radical treatment of patients with various types of liver tumors or certain liver diseases frequently demands major liver resection, which remains a clinical challenge especially in children [1]. Anatomical resections seem to be more challenging for surgeons [2]. Although the feasibility and safety of major liver

resections in adults has long been investigated, our knowledge about the approach in children remains quite limited [2-4]. The aim of this report is to show our experience in surgical management of liver tumor and performance of first right-sided hepatectomy in infant patient in our center.

Materials and methods

A 5-month-old boy, 6.6 kg weight, was admitted for a consultation in our center. According to patient's history, child was treated for a viral infection in a hospital at his place of residence, where the child's mother noticed a mass that was protruding from under the child's right costal arch. There was no history of liver disease in the child. The child was admitted in our hospital. Doppler ultrasound and contrast enhanced computed tomography revealed 7.5 by 6 by 4.5 cm lesion, located in the 5-8 segments of the right liver (figure 1). The lesion was heterogeneous, hyper-vascular, and well-circumscribed, progressively filling in during the arterial and portal venous phase. There was no washout. The liver parenchyma appeared normal with no infiltration or evidence of fibrosis or cirrhosis. No additional lesions were seen within the liver or in other locations, and no lymph nodes were involved. Patients' platelet count, prothrombin time, international normalized ratio, and liver function tests were normal. His alpha-feto-protein level was 35 IU/mL. It was decided to perform a radical surgery for this patient - anatomical right-sided hepatectomy.



Figure 1. Representative initial CT image, venous contrast phase

Results.

Surgery. Right major hepatectomy was performed using conventional approach. We used bilateral subcostal incision to access the liver. Firstly, cholecystectomy was performed to access the Rex-Cantle line, right hepatic artery (RHA) and right portal vein (RPV). After the mobilization of hepatoduodenal ligament, RPA and RPV were ligated, clipped and cut. Then, mobilization of the inferior vena cava from the right lobe was performed. Makuuchi ligament was ligated and cut for right hepatic vein (RHV) approach. After circular mobilization of RHV, hanging maneuver performed. Transection plane was determined according to demarcation line. Parenchymal transection was performed using Misonix SonaStar ultrasonic cavitation destructor (Misonix, USA) and bipolar forceps with a continuous irrigation. No Pringle maneuver used. All the vessels feeding the left lobe were left intact with minimal dissection. After parenchymal transection right bile duct was cut. RHV was ligated, clipped and cut. After right lobe removal, bile duct stump was closed using twisting suture with PDS 5/0 thread. Silicone drainage was placed to the resection area after hemostasis and biliostasis assessment. Operation time was 175 minutes. Estimated blood loss was 50 ml. Surgery stages are shown at figure 2.

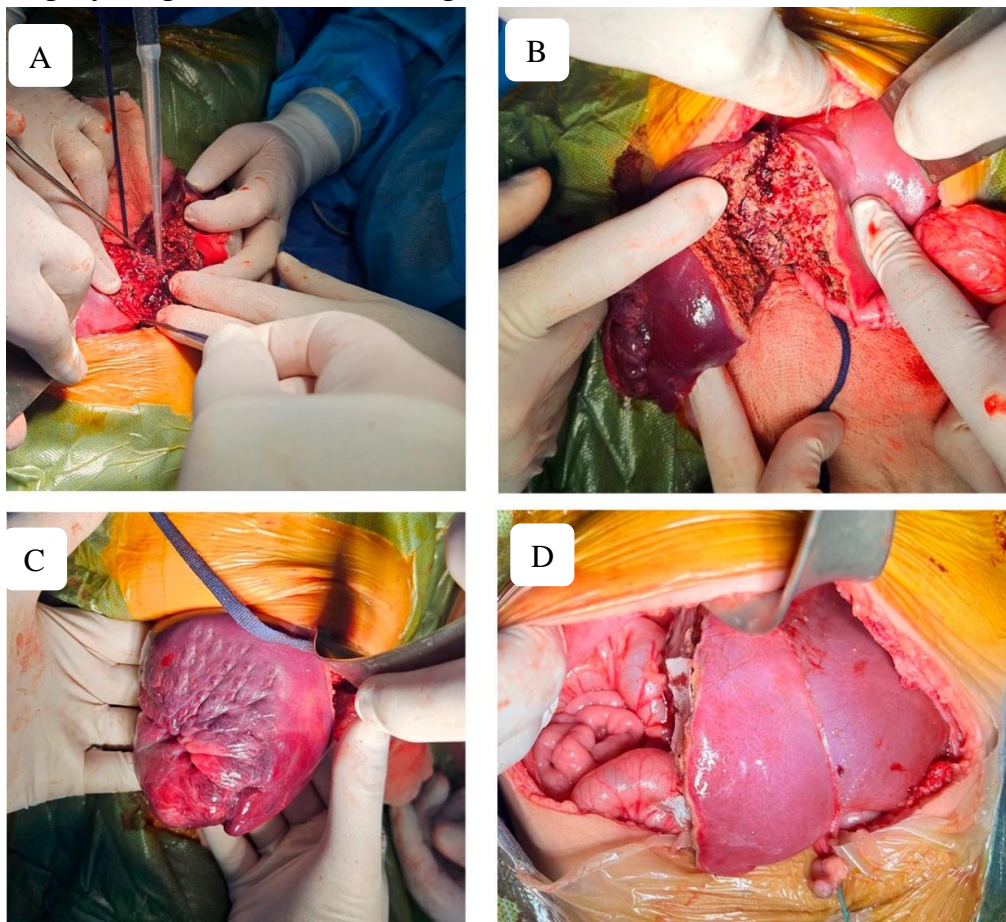


Figure 2. Surgery stages. A – parenchymal dissecting process. B – resection plane. C – right lobe of the liver with tumor after parenchymal division. D – final view after resection.

After surgery patient was transferred to intensive care unit. Planned extubating was performed 6 hours after surgery. On the second day after surgery, the patient had moderate post-resection liver failure, which was manifested by bilirubinemia, an increase in INR and a decrease in albumin level (figure 3). The patient received a transfusion of albumin and freshly frozen plasma. Over the next two days, liver tests returned to normal. The drainage tube was removed on the third day after surgery. The patient was able to eat a regular diet on the second post operative day. No further complications were observed. The patient was discharged 7 days after surgery. Next follow up was performed 1 month after surgery. No evidence of recurrence of the tumor was observed according to ultrasonography examination.

According to histological and immunohistochemical examination of removed neoplasm, a benign rare tumor was diagnosed - anastomosing hemangioma. According to the literature, no more than 30 cases have been described in the entire history of observations [5].

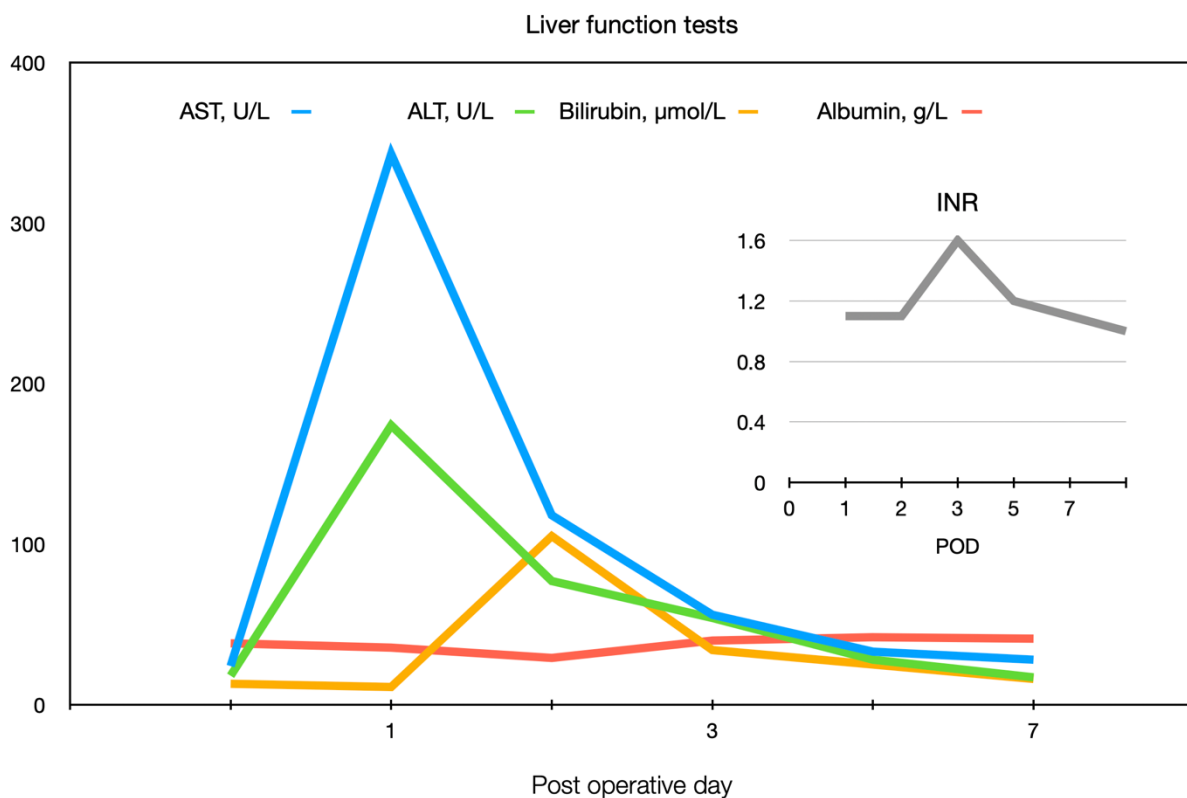


Figure 3. Liver function test in patient during hospital follow-up

Discussion

Diagnosis of liver neoplasms in infants is a rather labor-intensive process. The obligatory primary method for detecting pathology is ultrasound [6]. An important role is played by CT with intravenous contrast, which in all cases allows one to

assess the extent of the lesion, clear localization and predict the nature and extent of surgical intervention. Magnetic resonance imaging and angiography are necessary as methods of differential diagnosis, especially when identifying solid formations [7]. The experience of using extensive liver resections in children is small due to the rather rare occurrence of pathologies for which this type of surgical treatment is indicated [8].

Our operating time was 2 h and 55 min, which was excellent comparing to other researcher's time [8-10]. There was no need for blood transfusion during and after surgery. The postoperative course was without complications. The results of this case in our center demonstrated the feasibility and safety of the major liver resection procedure for infant patients, as long as the surgeons are equipped with modern surgical instruments and trained in liver surgery. The application of parenchymal dissection using ultrasound cavitation destructor to less bleeding and clearly defined the hepatic pedicles.

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