CASE REPORT

Laparoscopic Excision of a Large Hepatic Cyst

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ABSTRACT

Benign congenital liver cysts are rare in the pediatric population and often present a challenge in the diagnosis. Therefore, with recent advances in the field of minimally invasive surgery, this technique may be ideal in achieving both diagnosis and curative resection. We describe the case of a 2-month-old female initially referred for an antenatal ultrasound in the third trimester revealing a 7-cm intraabdominal cystic lesion of unknown origin. She was found to have a 10-cm hepatic cyst successfully treated by laparoscopic surgery. Our approach consisted of complete cyst excision along with its attached hepatic parenchyma. We recommend this technique as safe and feasible.

Key Words: Liver cyst, Surgery, Pediatric, Laparoscopy.

INTRODUCTION

Minimally invasive surgery has advanced greatly and represents a safe, effective alternative to traditional open procedures in the pediatric population.[1] Benign congenital liver cysts are rare in the pediatric population.[2-3] Laparoscopic hepatic cyst excision was first described in 1991.[4] However, only a few cases have been reported in the pediatric population.[5,6]

CASE REPORT

Patient

We report on the case of a 2-month-old, 3-kg full-term female who was initially referred for an antenatal ultrasound in the third trimester, which revealed a 7-cm intraabdominal cystic lesion of unknown origin. The infant was asymptomatic at birth, tolerating feedings without difficulty. Her medical history was significant for ventricular septal defect, right choanal atresia, and hemi/butterfly vertebrae. Examination revealed the abdomen to be soft, distended with no discrete mass. Routine blood work was normal. An abdominal film on the first day of life revealed a large soft tissue mass in the right abdomen depressing the hepatic flexure inferiorly with no evidence of dilated loops of bowel. Postnatal ultrasound at 2 months revealed an enlarging mass up to 10 cm **(Figure 1)**. The cystic structure had thin walls with no vascularity. The patient underwent diagnostic laparoscopy and complete excision of the mass.

METHODS

A total of 3 trocars were used. Two 5-mm ports were placed in the umbilicus and left mid abdomen as well as a 3-mm trocar in the left lower quadrant. Pneumoperitoneum was created with abdominal pressures of 12 mm Hg and a flow rate of 5 L/min. Upon examination, the cyst was noted to originate from the anterior surface of the left lobe of the liver with a broad pedicle **(Figure 2)**. No attachments were appreciated in the lower abdomen or retroperitoneum. To increase working space and manipulate the cyst, it was decompressed and approximately 70 mL of yellow serous fluid was aspirated. By

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DOI: 10.4293/108680810X12785289144638

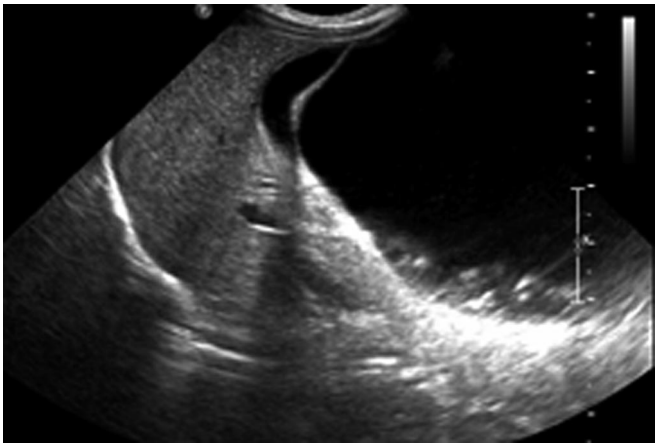

Figure 1. Postnatal Ultrasound (2 months): enlarged intraabdominal cystic lesion of unknown origin measuring 10cm.

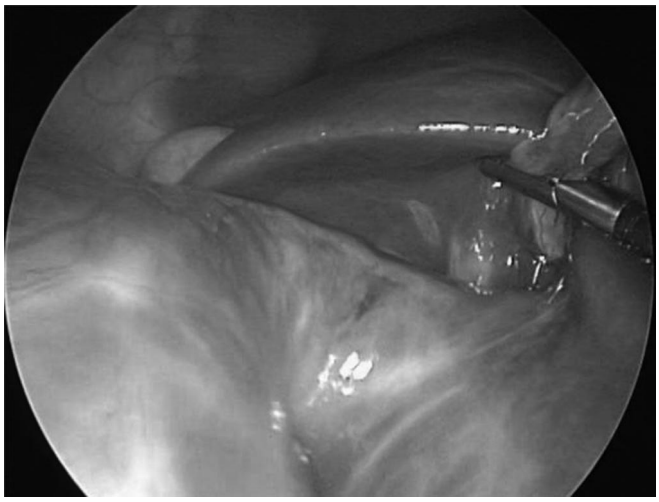

Figure 2. Intraoperative finding: Large hepatic cyst with a broad pedicle.

using the Harmonic scalpel **(Harmonic ACE)**, we were able to excise the cyst en bloc along with the attached hepatic parenchyma. The overall blood loss was minimal.

Postoperative Course

The procedure was completed without any complications, and the postoperative course was uneventful. The patient was discharged on the first postoperative day tolerating feeding. Pathology was consistent with that of a true simple congenital hepatic cyst 10 cm at its greatest dimension and containing simple columnar epithelium and clear serous fluid **(Figure 3)**.

Figure 3. Gross specimen-liver cyst.

DISCUSSION

Congenital liver cysts are benign and result from isolated aberrant biliary ducts. They are typically diagnosed between the fifth and sixth decades and have a female predominance.[7] They account for 10% of benign hepatic lesions in children.[2–8] Few cases of neonatal liver cysts have been reported in the literature.[5,6,9,10] In a large series of 400 cases, only 12 were reported in children under 2 years of age.[7]

Apart from incidental detection in the fetus, these lesions may present as an asymptomatic palpable mass or with abdominal distention. The right lobe of the liver is predominantly involved. Occasionally cysts are symptomatic due to compression of adjacent organs, hemorrhage, torsion or rupture.[11] The cyst may be completely intrahepatic, partially extrahepatic, or pedunculated. Invasion into biliary or vascular structures is rare.

The surgical management and long-term outcome of hepatic cysts in the pediatric population remain unclear. Early intervention is necessary if the patient becomes symptomatic or the cyst enlarges, due to risk of rupture/torsion.[11] Safe resection of solitary congenital liver cysts is considered due to the malignant potential. Complete excision of the hepatic cyst has been described in the literature as the treatment of choice.[12] However, if deep-seated, excision may require partial or total lobectomy.[13] Complete cystectomy has been associated with low morbidity and mortality (0% to 5%) in the pediatric popula-

tion.[11] Other surgical procedures described for treatment of liver cysts include intraoperative aspiration, unroofing (also referred to as fenestration and accomplishes drainage by excision of part of the cyst wall), cystojejunostomy, and liver transplantation.[3,14] Various adjuvant methods, such as ethanol injection, have been described to decrease recurrence rates if the cyst can not be completely excised safely.[3] Aspiration of the cyst, such as in our case, is advised to either facilitate the manipulation of the cyst or to exclude the presence of communication with the biliary tract (bile-stained fluid). Failure of complete excision of the cyst has been associated with a high recurrence rate.

Laparoscopic hepatic cyst excision was first described in 1991 by Paterson-Brown and Garden using a Nd-YAG laser.[4] However, only a few cases have been reported in a neonate.[5,6] The principal laparoscopic technique currently in use is deroofing, which consists of removal of the cyst roof by dividing tissue at the common cyst-liver boundary.[15] However, recurrence of a simple hepatic cyst following laparoscopic deroofing have been attributed to failure in ablating the secreting lining of the cyst wall.

In our case, laparoscopy allowed correct anatomic localization of the cyst and was therefore used as a diagnostic and treatment method. Aspiration and drainage of the cyst prior to excision is recommended for large cysts. To decrease the recurrence rate, we used the Harmonic scalpel (ultrasonic cutting and coagulation surgical device) to completely excise the cyst along with the attached hepatic parenchyma. We achieved excellent hemostasis and avoided any liver injury with our technique.

CONCLUSION

In summary, hepatic cysts are rare in the pediatric population, and their optimum treatment is unclear. Complete cyst excision along with its attached structures should be considered the mainstay of operative therapy. We feel that laparoscopic surgery when lesions are favorably located and approached with proper skill and technology carries no additional risk, and is safe and feasible in the management of pediatric hepatic cysts.

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