

Case Report

Diagnosis of accessory liver lobe torsion on diagnostic laparoscopy: an important differential in the absence of imaging findings

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ABSTRACT

Accessory liver lobe (ALL) torsion is a rare differential for the acute abdomen that is usually first considered with positive imaging findings. We present a case of accessory liver torsion as a cause for an acute abdomen without findings on ultrasound. A 9-year-old female presented with 3 days of right sided abdominal pain. Her vitals were within normal limits, and the patient demonstrated voluntary guarding over the right lower quadrant and right flank on exam. Bloods showed a C-reactive protein of 25.6, however other bloods including a full blood count, kidney and liver function tests were unremarkable. An abdominal ultrasound was performed which showed reactive right iliac fossa lymph nodes and probe tenderness. The patient's pain escalated and became generalised prompting a diagnostic laparoscopy which revealed a pedunculated dark red 5×6×1 cm mass on the posterior surface of the liver. This was resected via diathermy. Histology showed haemorrhagic necrosis with associated granulation tissue consistent with infarction. Post operatively, the patient developed a port site wound infection that was drained and treated with oral antibiotics. The patient is pain-free 2 months post operatively. It is important to consider torsion of the ALL as a differential diagnosis for the acute abdomen, even in the absence of definitive imaging findings.

Keywords: Case report, Accessory liver lobe torsion, ALL torsion, Diagnostic laparoscopy, Paediatric

INTRODUCTION

Accessory liver lobes (ALLs) are a rare anatomical variant, which can be either sessile or pedunculated.¹ Pedunculated liver lesions can present as a cause for an acute abdomen if they undergo torsion. The embryological developmental process of ALL is unclear, however it has been associated with abdominal wall defects such as umbilical cord hernias and omphalocele.²

Depending on the size and location of the ALL, compression of nearby anatomical structures can cause symptoms to help localise pathology. Right sided abdominal pain, projectile vomiting and even biliary obstruction has been previously reported.^{3,4} Occasionally, a right upper quadrant mass can be palpated if the ALL is large enough.³ However, ALL torsion most frequently

becomes a primary differential when a circumferential mass is detected next to the liver on ultrasound. Afterwards, further imaging via CT or MRI can help with peri operative planning.

We present a case of ALL torsion in a 9-year-old female with only right lower abdominal pain and no imaging findings, discovered via diagnostic laparoscopy. This manuscript was prepared following the CARE guidelines (<https://www.care-statement.org>).

CASE REPORT

A young 9-year-old female of Chinese descent with no significant past medical history or gestational complications presented to the emergency department with 3 days of abdominal pain. The pain was right-sided,

sudden onset and colicky in nature with associated anorexia. There was no obvious precipitating event or trigger. There was no vomiting, bowel, or urinary symptoms. The family recorded one febrile episode of 38.5 degrees celsius at home, however vitals were within normal limits during the entire hospital admission. Abdominal examination demonstrated voluntary guarding over the right lower quadrant and right flank. Nil abdominal mass could be palpated.

On admission, the C-reactive protein was 25.6. White cell count, liver and renal function tests were within normal limits. An abdominal ultrasound was performed which showed reactive right iliac fossa lymph nodes and probe tenderness. No abnormal pathology was identified reviewing the appendix, liver, gallbladder, or kidney. The patient was admitted for a period of monitoring and analgesia.

Over the course of 24 hours, the patient's pain escalated and became generalised. The patient began to demonstrate right hypochondriac and lumbar peritonism with percussion tenderness. The patient was taken for diagnostic laparoscopy.

On diagnostic laparoscopy, a healthy appendix was visualised. It was not subhepatic. The appendix was resected to prevent future occurrences of appendicitis. Approximately 1 meter of bowel was run, a Meckel's diverticulum was not identified. Nil free fluid was identified. The uterus, fallopian tubes, and ovaries appeared to be healthy. In the upper abdomen, a dark red 5×6×1 cm mass was visualised on the posterior surface of the liver, in between lobe III and IV (Figure 1).

After serosal dissection, the mass demonstrated a pedunculated morphology and the liver attachment site appeared to be mildly inflamed. The gallbladder was non adherent and separate. Given the necrotic appearance of the mass and escalating symptoms, a decision was made to resect. Minimal bleeding occurred as the lesion was pulled away from the liver to facilitate careful resection of the hilum with diathermy.

This patient recovered well post operatively and was discharged in 48 hours after tolerating a full ward diet. Two weeks later, this patient re-presented to the emergency department with cellulitic changes over infraumbilical port site.

An area of fluctuance was identified. The surgical site was opened under local anaesthetic and 10 ml of pus was expressed. The surgical site was cleaned, and the patient received a 5-day course of antibiotics.

Six weeks post operation, histology showed haemorrhagic necrosis with associated granulation tissue consistent with infarction. The patient was diagnosed with torsion of an ALL. The patient recovered well and was pain-free 2 months post operation.

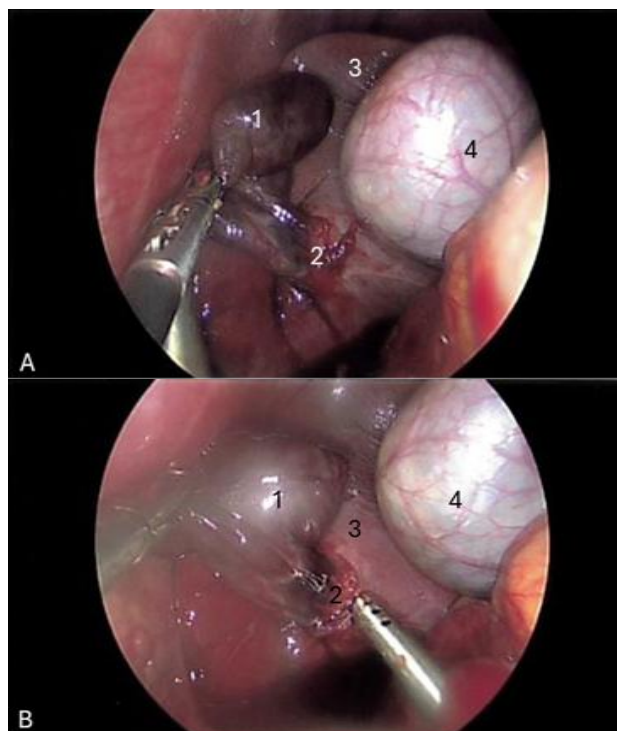


Figure 1 (A and B): Intraoperative laparoscopic findings-A: ALL encased in serosa, B: accessory lobe dissected out with pedunculated appearance. 1-ALL, 2-reactive inflammatory changes over the liver, 3-healthy liver parenchyma and 4-gallbladder.

DISCUSSION

ALL torsion is a rare cause for acute abdominal pain. Liver malformations can be differentiated into multiple types including pedunculated ALL over 30 grams, pedunculated ALL under 30 grams, ectopic accessory liver without attachment, and microscopic ectopic liver.⁵ Pedunculated ALL are susceptible to torsion.

ALL has been found to be associated with ventral abdominal wall defects such as omphalocele and umbilical hernia.^{3,6} There have been reports of ALL as an incidental finding during surgical repair of the abdominal wall.^{2,7} The most common symptoms for ALL torsion are nonspecific including unresolving abdominal pain and vomiting. Other symptoms include lethargy, malaise, projectile vomiting, weight loss, jaundice, cholestasis, hematochezia. The cause of ALL torsion is not known, only one study has reported trauma as a potential cause for ALL torsion.⁸ Larger ALLs can be suspected when abdominal examination reveals a palpable mass in the right upper quadrant.^{5,9,10} Laboratory studies can show raised inflammatory markers and deranged liver functions tests.^{4,11,12}

The most common indication for suspicion of ALL is ultrasound findings.^{3-6,8-15} This can be further characterised with other imaging modalities for peri-operative planning such as CT scans, MRI abdomen, and

MRI cholangiopancreatography. In our case, we report a diagnosis of ALL torsion without clear clinical, laboratory or imaging findings. This diagnosis was made by emergency diagnostic laparoscopy for an acute abdomen. While ultrasound is a well-established first line imaging modalities for surgical pathologies such as appendicitis in paediatric populations, it is important to recognise that it only has a sensitivity of 33.9% to 51.5%.¹⁶ The authors of this paper propose that ultrasound is not a reliable tool for excluding surgical emergencies.

The consequences of a missed diagnosis of ALL torsion are unclear. However, there has been a case of ALL torsion that progressed to hepatic ischemia, requiring hepatic transplantation.¹⁷ As such, ALL torsion is an important differential to be considered for unresolving right sided abdominal pain, even in the absence of imaging findings.

CONCLUSION

We report a case of ALL torsion without significant clinical, laboratory, or imaging findings, that was diagnosed on diagnostic laparoscopy only. ALL torsion is an important differential for unresolving right sided abdominal pain, even in the absence of imaging findings.

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