

Laparoscopic Excision of a Mesenteric Cyst During Pregnancy

Abdulmohsen A. Al-Mulhim, MD

ABSTRACT

Background: Laparoscopic management of mesenteric cysts during pregnancy has not been reported before.

Case Report: A young woman with a mesenteric cyst associated with a crossed ectopic kidney, underwent laparoscopic excision of the cyst in the second trimester of pregnancy. The procedure was completed without complications, and the patient was discharged on the third postoperative day. Thereafter, the pregnancy progressed uneventfully, and she delivered a healthy baby at term.

Conclusion: Laparoscopic management of mesenteric cysts during pregnancy is feasible, safe, and less invasive than laparotomy when performed in select patients by experienced surgeons.

Key Words: Laparoscopy, Mesenteric cyst, Pregnancy, Crossed renal ectopia.

INTRODUCTION

Mesenteric cysts are rare abdominal tumors.¹ Since the first autopsy description by Benivieni in 1507,¹ approximately 1,000 cases have been reported in the literature.² Of these, only 5 were managed during pregnancy.³⁻⁷ These cysts vary in size, being uni- or multilocular, and most often involve the small bowel mesentery.^{5,8} The conventional treatment involves laparotomy and surgical excision,¹ but recently the laparoscopic approach has been described in the nonpregnant.^{2,8-12}

To the best of the author's knowledge, this is the first report of laparoscopic excision of a mesenteric cyst during pregnancy. The relevant literature is reviewed.

CASE REPORT

A 23-year-old Saudi woman, gravida 1, para 0, was admitted at 20-week's gestation for the management of an abdominal mass. She was otherwise well with an uneventful antenatal course. Two weeks prior to admission, an asymptomatic 17.2 x 12 x 10.6-cm echo-free cystic mass in the left hypochondrial region was discovered during routine abdominal ultrasound examination at another hospital, where magnetic resonance imaging (MRI) confirmed the ultrasound finding. It also revealed crossed ectopia of the left kidney (**Figures 1 and 2**).

On abdominal examination, the uterus size was appropriate for a gestational age of 20 weeks, but the left hypochondrial mass was impalpable. Systemic examination was unremarkable. Laboratory tests were all within normal limits.

Repeat ultrasound examination in our hospital showed an intrauterine pregnancy with a single viable fetus, and the cyst was separate from the uterus, ovaries, spleen, and kidneys. The diagnosis of a mesenteric cyst was entertained.

An ultrasound-guided aspiration of the cyst yielded 1 L of clear fluid, and cytology showed no malignant cells. Postaspiration ultrasound the day after showed no change in the size of the cyst. Because of its large size, and fear of interference with the pregnancy, a decision was made, after consultation with the attending obstetri-

Department of Surgery, King Fahd Hospital of the University, King Faisal University, Dammam, Saudi Arabia.

Address reprint request to: Abdulmohsen A. Al-Mulhim, MD, PO Box 1917, Al-Khobar 31952, Saudi Arabia. Telephone: 00 966 3 895 3032, Fax: 00 966 3 864 2965, E-mail: ammulhim@yahoo.com

© 2003 by JSLS, Journal of the Society of Laparoendoscopic Surgeons. Published by the Society of Laparoendoscopic Surgeons, Inc.



Figure 1. Coronal MRI of the abdomen showing a large circumscribed homogenous cyst occupying the left hypochondrium (A). Note the crossed ectopia of the left kidney (B) and the upper pole of the right kidney (C).



Figure 2. Saggital MRI showing the cyst (A) and the gravid uterus with intrauterine fetus (B).

cian, to excise the cyst. On September 16, 2001, the patient underwent a laparoscopic excision of the cyst while under general anesthesia with endotracheal intubation.

Laparoscopic Technique

The patient was initially placed in the supine position. The surgeon stood on the patient's right side with the first assistant on the surgeon's right. A Veress needle was inserted in the right hypochondrium; the initial intraabdominal pressure was 8 mm Hg. Pneumoperitoneum was created with 2.9 liters of CO₂ to a pressure of 14 mm Hg. A 45-degree laparoscope was inserted via a 10-mm port in the right hypochondrium. Diagnostic laparoscopy revealed a large cyst in the left hypochondrium extending to the left iliac fossa. The cyst was close to the spleen and covered with omentum. The gravid uterus was in the midline. The left ovary and uterine tube, liver, spleen, and small and large intestines appeared normal. The right ovary and uterine tube were not visualized.

Three additional 5-mm trocars were inserted under vision, one just above the umbilicus, another in the right iliac fossa, and the last in the left hypochondrium, in that sequence. The omentum was readily freed from the cyst. The thin-walled, unilocular cyst was arising from the small bowel mesentery. At this stage, it became necessary to tilt the table head up with a slight downward rotation to the right (left side up). The cyst was dissected with

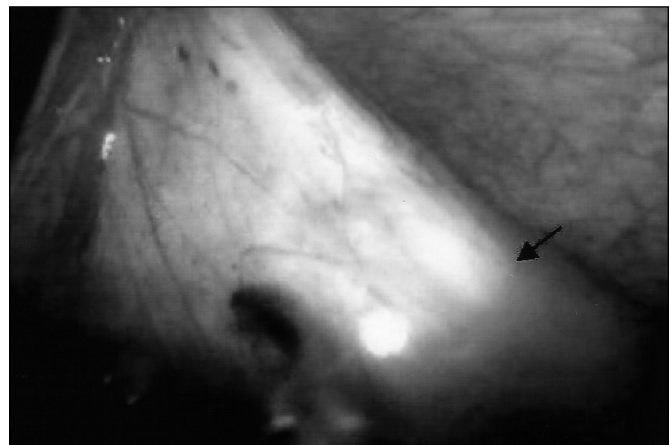


Figure 3. Laparoscopic view of the mesenteric cyst. Note its extremely thin wall through which the contained fluid can be seen.

endoscissors and a Harmonic scalpel. Being thin walled, the cyst was inadvertently punctured, and about 1 L of clear fluid was aspirated (**Figure 3**). This, indeed, facilitated the dissection. The entire cyst was excised (**Figure 4**) and removed through the left hypochondrial port. A Hemovac drain was inserted via the left hypochondrial port and placed in the cyst bed. The operation lasted 100 minutes.

No intraoperative monitoring of the fetus or uterus was performed, although Doppler assessment of the fetal

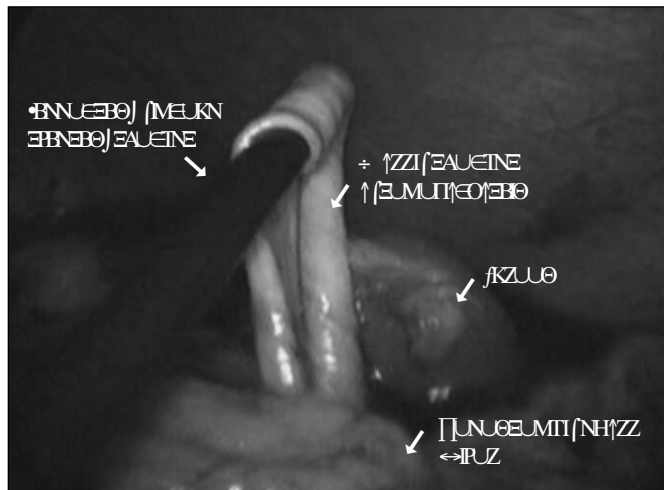


Figure 4. The fully dissected cyst prior to excision.

heart rate before and regularly afterward was entirely normal.

Postoperative Course and Progress of Pregnancy

Recovery was uneventful. The patient received oral fluids the same evening, and resumed a regular diet the next day when the drain was also removed. She required 2 injections of narcotic analgesic and was discharged on the third postoperative day. The patient completed a normal pregnancy. She had a spontaneous vaginal delivery at term, giving birth to a 3,500g, male infant with Apgar scores of 7 and 9.

Histologically, the cyst had an attenuated epithelial lining and a fibrous wall with smooth muscle bundles. The pathological diagnosis was a mesenteric cyst.

DISCUSSION

The incidence of mesenteric cysts is 1/102,500 to 1/250,000 hospital admissions.¹ In our hospital, only 1 case was operated on out of 317,677 admissions between 1981 and 2001. These cysts arise during embryologic development because of ectopic lymphatic tissue, obstruction of lymphatic vessels, or incomplete fusion of the leaves of the mesentery.¹¹

Mesenteric cysts are usually asymptomatic,^{4,10} and approximately half are found incidentally.² The clinical

presentation is related to the size and location of the cyst, with abdominal pain and distention being the most common symptoms.^{1,4,10} Rarely, serious complications, such as torsion, infection, hemorrhage into the cyst, intestinal obstruction, obstructive uropathy, compression of the inferior vena cava, and malignant transformation, have been reported.^{1,4,7,10}

Modern imaging, including ultrasonography and MRI, can give a precise diagnosis of the cyst, as in our patient. MRI is superior to CT scan because of its multiplanar capability.¹² In our case, MRI also showed crossed ectopia of the left kidney. This finding may support the hypothesis that the mesenteric cyst was congenital in origin. To the best of the author's knowledge, a mesenteric cyst associated with crossed ectopia of the kidney has not been reported before.

Traditionally, the treatment of choice is laparotomy with complete excision of the cyst and segmental bowel resection, if necessary.¹ Although surgery should be avoided in pregnancy whenever possible, nonobstetric laparotomy is performed in 1.6% to 2.2% of pregnancies.¹³ In most of these, the outcome is satisfactory for both mother and fetus, particularly for planned procedures performed in the second trimester.¹⁴ The previously reported 5 cases of mesenteric cyst during pregnancy were successfully managed at laparotomy (**Table 1**).

Pregnancy used to be a contraindication to laparoscopic surgery, but recent literature has shown that laparoscopic intervention can be performed safely in the pregnant patient.^{13,15} The well-documented advantages of laparoscopic surgery, viz, decreased postoperative pain, shorter hospitalization, good cosmesis, and rapid recovery, have been extended to include the pregnant patient. Furthermore, laparoscopic surgery may offer additional benefits to the pregnant woman as compared with the nonpregnant one. For example, rapid postoperative recovery should minimize the increased risk of thromboembolic disease associated with pregnancy.¹⁶ Also, less postoperative pain results in less medication exposure to the fetus.¹⁶ Minimal or no uterine manipulation during laparoscopic surgery should reduce the potential for preterm labor. Finally, less chance exists of incisional hernia, should the patient need surgery during the latter stages of pregnancy.¹⁶

Encouraged by others' experience with laparoscopic surgery during pregnancy,^{13,15} the satisfactory outcome of laparoscopic excision of mesenteric cysts,^{2,8-12} and, after

Table 1.

Summary of the 6 Reported Cases of Mesenteric Cyst Managed During Pregnancy*

Author(s), yearRef.	Age	Gestational age	Presentation	Approach	Postoperative stay (days)
Hill and Woomer 1965 ³	32	36 weeks	Abdominal distention†	Laparotomy‡	6
Dunn 1967 ⁴	22	18 weeks	Abdominal pain	Laparotomy§	14
O'driscoll et al 1977 ⁵	31	7 weeks	Abdominal mass	Laparotomy	10
Cohen et al 1988 ⁶	36	40 weeks	Abdominal distention	Laparotomy‡	NA
Gast et al 1989 ⁷	24	20 weeks	Abdominal pain	Laparotomy	NA
Al-Mulhim 2002	23	20 weeks	Incidental	Laparoscopy	3

*All had no post-operative complications and delivered healthy infants at term.

†Located in the retroperitoneum; the remaining five cases were in the small bowel mesentery.

‡Performed after delivery.

§Plus concomitant ileal resection.

|| Discovered at routine antenatal ultrasound examination.

gaining adequate experience in laparoscopic management of various abdominal conditions,^{17,18} the author found it possible to manage the present case laparoscopically. Indeed, laparoscopic excision was a reasonable option in our patient because she was in the second trimester, with a well-circumscribed, noninfiltrating benign cyst seen on MRI.

The timing of laparoscopy in pregnancy is controversial. Although successful laparoscopic surgery has been reported for each trimester, the second trimester is the ideal time because organogenesis is complete, the risk of spontaneous abortion is low, the uterus size is not large enough to obscure the operative field, and the chance of uterine contraction is low relative to that in the third trimester.¹⁵

A major concern while performing laparoscopic surgery in pregnancy is to prevent injury to the uterus and the fetus. Opinion remains divided regarding the blind insertion of the Veress needle and the first trocar versus the open (Hasson) technique when performing laparoscopy during pregnancy.^{19,20} Based on our experience with the closed technique particularly in patients with acute small bowel obstruction,¹⁷ we encountered no complications with this technique in the present case. We would, however, like to emphasize that our patient was not obese (body mass index=24kg/m²), had had no previous abdominal surgery, and the uterus was palpable just

below the umbilicus. We feel that the open technique may be safer in other settings, such as in obese patients and those presenting in the third trimester.

Another concern about the laparoscopic technique is the physiologic and hemodynamic effect of CO₂ pneumoperitoneum on mother and fetus. Based on 1 animal study,²¹ CO₂ pneumoperitoneum induced a transient maternal hypercapnia and acidosis with similar fetal changes, as well as fetal tachycardia and hypertension. According to Glasgow et al,²² these changes were not observed in pregnant patients monitored during laparoscopic cholecystectomy.

In conclusion, what is believed to be the first successful laparoscopic excision of a mesenteric cyst during pregnancy is presented. The procedure offers pregnant patients the advantages of minimally invasive surgery and, with careful patient selection, may be the treatment of choice.

References:

1. Kurtz RJ, Heimann TM, Beck AR, Holt J. Mesenteric and retroperitoneal cysts. *Ann Surg.* 1986;203:109-112.
2. Brentano L, Faccini FP, de Castro Oderich GS. Laparoscopic resection of a mesenteric cyst. *Surg Laparosc Endosc.* 1998;8:402-403.
3. Hill VL, Woomer DF. Retroperitoneal cyst complicating preg-

- nancy. *Obstet Gynecol.* 1965;25:858-861.
4. Dunn JM. A large mesenteric cyst complicating pregnancy. *JAMA.* 1967;200:205-206.
 5. O'driscoll RG, Salerno JG, Quartrell AC, Fletcher HS. A mesenteric cyst in pregnancy. *Am J Obstet Gynecol.* 1977;129:588-590.
 6. Cohen I, Altaras M, Lew S, Jaffe R, Ben-Aderet N. Huge mesenteric mucinous cystadenoma in normal pregnancy. *Obstet Gynecol.* 1988;71:1030-1032.
 7. Gast MJ, Jacobs AJ, Goforth G, Martin CM. Mesenteric cysts in pregnancy. *J Reprod Med.* 1989;34:179-182.
 8. Mason JE, Soper NJ, Brunt LM. Laparoscopic excision of mesenteric cysts. A report of two cases. *Surg Laparosc Endosc Percutan Tech.* 2001;11:382-384.
 9. Mackenzie DJ, Shapiro SJ, Gordon LA, et al. Laparoscopic excision of a mesenteric cyst. *J Laparoendosc Surg.* 1993;3:295-299.
 10. Saw EC, Ramachandra S. Laparoscopic resection of a giant mesenteric cyst. *Surg Laparosc Endosc.* 1994;4:59-61.
 11. Vu JH, Thomas EL, Spencer DD. Laparoscopic management of mesenteric cyst. *Am Surg.* 1999;65:264-265.
 12. Shamiyeh A, Rieger R, Schrenk P, Wayand W. Role of laparoscopic surgery in treatment of mesenteric cysts. *Surg Endosc.* 1999;13:937-939.
 13. Nezhat FR, Tazuke S, Nezhat CH, Seidman DS, Phillips DR, Nezhat CR. Laparoscopy during pregnancy: a literature review. *JSLs.* 1997;1:17-27.
 14. Kammerer WS. Nonobstetric surgery during pregnancy. *Med Clin North Am.* 1979;63:1157-1164.
 15. Ghumman E, Barry M, Grace PA. Management of gallstones in pregnancy. *Br J Surg.* 1997;84:1646-1650.
 16. Pucci RO, Seed RW. Case report of laparoscopic cholecystectomy in the third trimester of pregnancy. *Am J Obstet Gynecol.* 1991;165:401-402.
 17. Al-Mulhim AA. Laparoscopic management of acute small bowel obstruction. Experience from a Saudi teaching hospital. *Surg Endosc.* 2000;14:157-160.
 18. Al-Mulhim AA. Laparoscopic cholecystectomy is feasible and safe in acute cholecystitis. *Saudi J Gastroenterol.* 1999;5:56-60.
 19. Lemaire BMD, van Erp WFM. Laparoscopic surgery during pregnancy. *Surg Endosc.* 1997;11:15-18.
 20. Morrell DG, Mullins JR, Harrison PU. Laparoscopic cholecystectomy during pregnancy in symptomatic patients. *Surgery.* 1992;112:856-859.
 21. Hunter JG, Swanstrom L, Thornburg K. Carbon dioxide pneumoperitoneum induces fetal acidosis in a pregnant ewe model. *Surg Endosc.* 1995;9:272-279.
 22. Glasgow RE, Visser BC, Harris HW, Patti MG, Kilpatrick SJ, Mulvihill SJ. *Surg Endosc.* 1998;12:241-246.