

# Laparoscopic Surgery in Infants with Intra-Abdominal Cysts: Two Case Reports

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## ABSTRACT

**Objectives:** We report two cases of infants found to have congenital omental cystic lesion with torsion and ovarian cyst treated by laparoscopy-assisted surgery (LAS).

**Methods:** A laparoscope was inserted by an open method. The intra-abdominal pressure was maintained at 8 mm Hg. We diagnosed the cystic lesions with torsion. An aspirator was used to aspirate the cystic content and remove the cyst.

**Results:** No intra- or postoperative complications were encountered. Oral intake was commenced on postoperative day 2 in both patients. The cosmetic results following LAS were excellent.

**Conclusions:** We conclude that LAS is suitable for the management of omental cystic lesions with torsion and ovarian cyst in nursing infants. An aspirator is useful in preventing spillage of cystic contents in patients with intra-abdominal cystic lesion.

**Key Words:** Laparoscopic surgery, Omental cyst, Aspirator, Infant.

## INTRODUCTION

Recent developments and modern technology have improved vastly the safety and efficacy of laparoscopic surgery, and the availability of smaller instruments has expanded the application of this modality to the treatment of children and infants.<sup>1,2</sup> Moreover, antenatal ultrasonography has also developed, and the incidence of neonatal intra-abdominal cystic lesions has increased.<sup>3</sup> Ovarian cysts are frequent, whereas mesenteric or omental cysts and duplications are rare.<sup>4,5</sup> We employed laparoscopy-assisted surgery (LAS) to treat two female infants in whom intra-abdominal cystic lesions had been diagnosed by antenatal ultrasonography, with excellent results.

## PATIENTS AND METHODS

Two female infants with congenital intra-abdominal cystic lesions that had been diagnosed by antenatal ultrasonography underwent LAS at 47-51 days of age (**Table 1**). Ultrasounds performed on the fetuses at 32 and 28 weeks gestation revealed abdominal cystic masses, respectively. The babies were delivered at 39 weeks gestation at Yamaguchi University Hospital. They were followed up by ultrasound examination and magnetic resonance imaging. The cystic lesions of both patients were 4 to 5 cm in diameter and contained some solid matter, hemorrhage, or mucinous fluid and had the indications for surgery. The preoperative diagnoses were ovarian cysts in both patients. Postoperative examination confirmed that one of the two patients had an omental cystic lesion with torsion, and the other one had the same lesion and a left ovarian cyst. Histologically, both omental cystic lesions were supernumerary ovaries.<sup>6</sup>

## SURGICAL TECHNIQUE

With the patient under general anesthesia, a nasogastric tube and a Foley's bladder catheter were inserted. The patient was placed in the supine position, and a laparoscope was inserted through a 10-mm trocar immediately below the umbilicus by an open method. The intra-abdominal pressure with carbon dioxide was maintained at 8 mm Hg. We examined the peritoneal cavity and diagnosed that the cystic lesions with torsion had no

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**Table 1.**  
An overview of the two patients.

Case No.	Age (day)	Preoperative Diagnosis	Postoperative Diagnosis	Therapy	Operative time (min)	Oral intake (day)
1	47	Ovarian cyst	Omental cyst	LAS (extirpation)	87	2 POD
2	51	Ovarian cyst	Omental cyst Ovarian cyst	LAS (extirpation, cystostomy)	140	2 POD

LAS: laparoscopy-assisted surgery

POD: postoperative day

connection with the normal reproductive organs and was attached to the greater omentum with pedicle (**Figure 1**). An additional 10-mm skin incision was made over the cystic lesion. A soft-cup aspirator® set (Hakko Co., Tokyo, Japan) was inserted, and the cyst was pulled out while its contents were aspirated (**Figure 2**). We studied the aspirated fluid with cytologic and bacterial examinations. The cystic lesion was pulled up to the umbilical wound and completely resected with a pedicle. In the patient with a left ovarian cyst, a cystostomy and a closure were carried out simultaneously (Case 2).

LAS was carried out successfully for both patients. The cystic lesions in both patients were accurately diagnosed by laparoscopy, and no intraoperative complications were encountered. The operating time of LAS was 87 minutes in one patient and 140 minutes in the other patient with left ovarian cyst. No wound infection was encountered, and the postoperative course was uneventful for both patients. Oral intake was recommenced on postoperative day 2 in the patients who had undergone LAS (**Table 1**). The cosmetic results of the wound following LAS were excellent in the opinion of the parents of both patients (**Figure 3**).

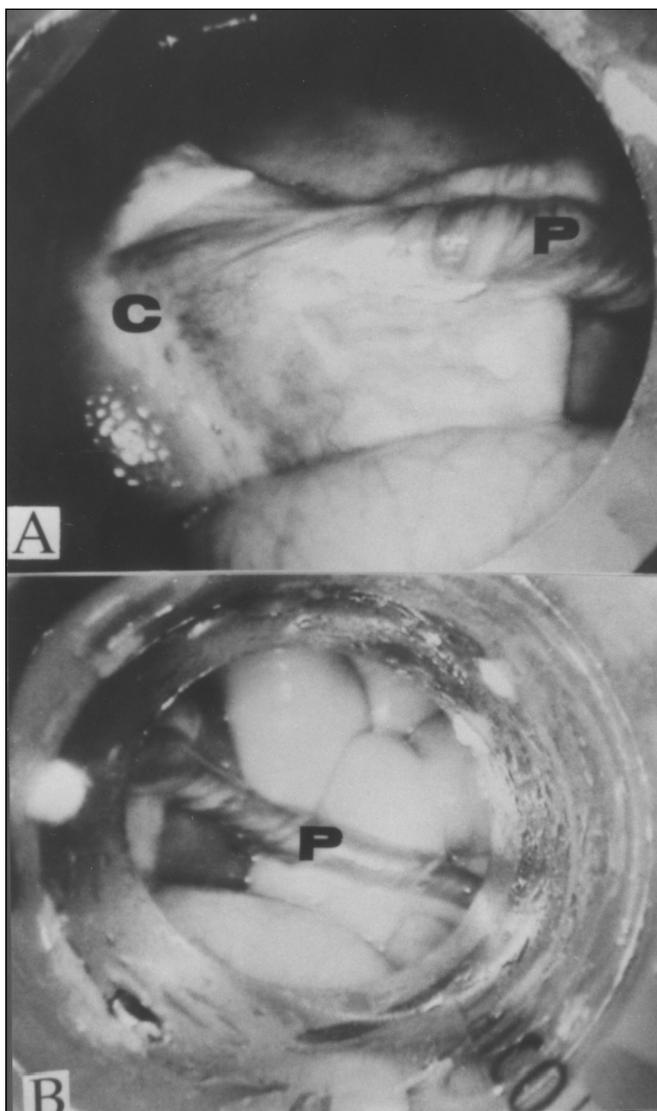
## DISCUSSION

Laparoscopic surgery has become widely employed throughout the world and is performed in pediatric patients.<sup>1,2</sup> Higashimoto et al<sup>7</sup> reported that the merits of LAS were that it provided an accurate diagnosis and treatment, it was minimally invasive, it required short hospitalization, and normal activities were able to be resumed rapidly. Cohen et al<sup>8</sup> reported that video-assisted, minimally invasive surgery is suitable for the treatment of adnexal pathology in children. Waldschmidt et al<sup>1</sup> reported that laparoscopy will find more general application in

pediatrics and pediatric surgery for both diagnostic and operative purposes. Van der Zee et al<sup>9</sup> reported that using a laparoscopic approach for ovarian cysts avoids the disadvantages of large scars, adhesion formations, and even gonadal loss in cases of infant surgery. Saw et al<sup>10</sup> reported that laparoscopic resection of a giant mesenteric cyst has some theoretical advantages, including less postoperative pain and shorter convalescence. We employed LAS to treat two infants in whom intra-abdominal cystic lesions had been diagnosed by antenatal ultrasonography. In fact, we diagnosed omental cystic lesions with torsion and ovarian cyst accurately and performed accurate operative procedures in both infants, with excellent results.

On the other hand, a number of complications of pediatric laparoscopic surgery have been reported.<sup>11,12</sup> According to Chen et al,<sup>12</sup> these complications included hemorrhage, umbilical hernia, cellulitis, pelvic abscess and small bowel obstruction. Higashimoto et al<sup>7</sup> reported the cases of two neonates who developed temporary decreased percutaneous saturation of the oxygen concentration following LAS for intra-abdominal cysts. Esposito et al<sup>11</sup> recommended that the open approach with a blunt trocar should be used to prevent the complications of pediatric laparoscopy. Our experience of adult patients who have suffered endoabdominal organ perforation or vascular injury with the Veress needle leads us to agree with his comments. Thus, we performed the open approach method of trocar insertion in both infants, and both our patients encountered no complication.

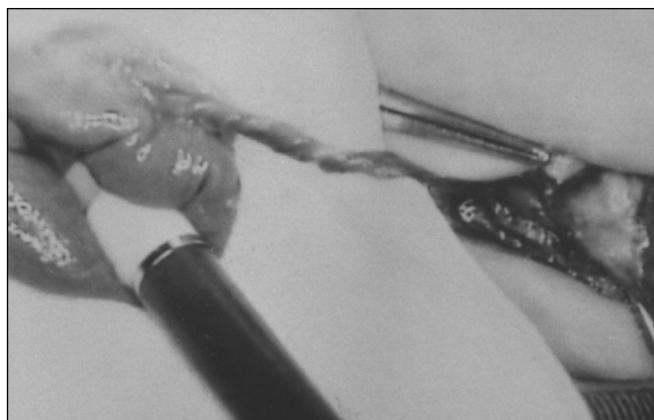
Moreover, Nezhat et al<sup>13</sup> reported that the benefits of laparoscopy for the surgical removal of dermoid cysts in adults were the video augmentation and the minimal cyst content spillage. Van der Zee et al<sup>9</sup> reported that the



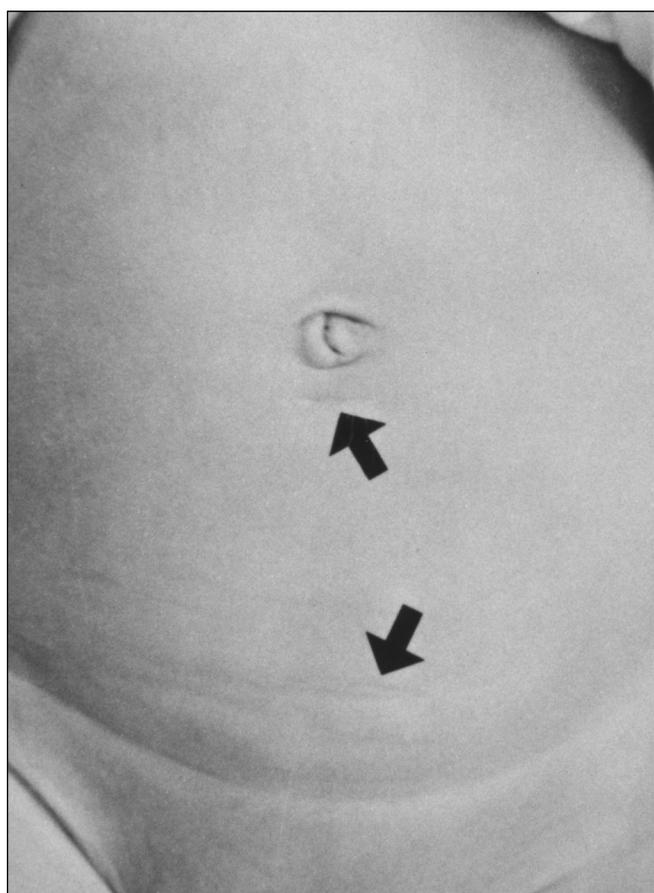
**Figure 1.** Laparoscopic view of an omental cyst with torsion (Case 1). C=cyst, P=pedicle.

transabdominal puncture and percutaneous gastrostomy introduction set are used for the aspiration of cyst contents.

We used the aspirator kit known as the soft cup aspirator set®, which was very easy to use and proved useful for preventing spillage of the cystic contents. We recommend that this aspirator kit be used when intra-abdominal cystic lesions are removed by LAS. Furthermore, LAS could remove completely the cystic



**Figure 2.** Through a minimal incision, the cyst was extracted while aspirating the contents using an aspirator.



**Figure 3.** Photograph of the patient's abdomen eight months after surgery (Case 1). Arrows: operation scar

lesion with pedicle. It leads to preventing the risk of bowel obstruction secondary to remnant pedicle as an adhesive band.<sup>14</sup>

The number of cases of neonatal and infantile intra-abdominal cystic lesions being diagnosed antenatally has increased in accordance with the prevalence of antenatal ultrasonography.<sup>3</sup> In neonates, ovarian cysts are frequent, whereas mesenteric or omental, lymphatic and duplication cysts are few and splenic, hepatic and pancreatic cysts are extremely rare.<sup>4,5,15</sup> The surgical indications for neonatal intra-abdominal cystic lesions are the presence of symptoms, such as vomiting and abdominal pain; the possibility of torsion; and a lesion greater than 5 cm in diameter without any reduction, especially ovarian cysts.<sup>16,17</sup> Both patients had indications for surgery because of lesions that measured 4 to 5 cm in diameter and because of the possibility of torsion. Regarding the operative procedure for intra-abdominal cystic lesions, extirpation of cystic lesions with a pedicle is easily performed laparoscopically. The further development of miniaturized laparoscopic apparatus for pediatric use and improvements in surgical techniques might result in better laparoscopic procedures for neonates and infants with all intra-abdominal cystic lesions.

## CONCLUSIONS

We conclude that LAS is suitable for the management of omental cystic lesions with torsion and ovarian cysts in infants. An aspirator is useful for preventing the spillage of cystic contents in patients with intra-abdominal cystic lesions.

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