A 25-year-old woman presented to the hospital with omphalitis. A physical examination revealed a poorly defined mass 3 cm in diameter without tenderness under her umbilicus. A contrast-enhanced computed tomography scan revealed an abscess cavity under the anterior abdominal wall and umbilicus. After conservative treatment with antibiotics and drainage, we performed laparoscopic resection of umbilical urachal remnant including some of the indurated surrounding tissues under pneumoperitoneum using a 3-port method. Histological examination revealed an urachal remnant with inflammation. The patient was discharged on postoperative day 7 without any complications.

In this case, the patient was successfully treated with laparoscopic resection of the umbilical urachal remnant, and no evidence of local recurrence was observed during the follow-up period.

Key words: Umbilical urachal remnant, Laparoscopic resection, Omphalitis

Introduction
An embryonic structure, the urachus, is the canal joining the fetal urinary bladder to the allantois. The urachus, when obliterated normally, forms the median umbilical ligament. Persistent remnants are uncommon but may still manifest clinically as a vesicocutaneous fistula, urachal cyst, or umbilical sinus. An umbilical urachal remnant may lead to omphalitis, which may recur if only the patient is treated with conservative therapy. In addition, the presence of urothelium within the persistent urachus has been reported to result in malignant transformation1,2. Therefore, umbilical urachal remnants should be surgically removed.

Case Report
A 25-year-old woman presented to the hospital with omphalitis. A physical examination revealed a poorly defined mass 3 cm in diameter without tenderness under her umbilicus. Her vital signs were as follows: blood pressure, 98/50 mm Hg; pulse rate, 60 beats/min; respiration rate, 14 breaths/min; and temperature, of 36.7°C. Laboratory examination showed a white blood cell count of 3,800 cells/mm³; serum C-reactive protein (CRP) level of 0.4 mg/dL; and normal levels of hemoglobin, electrolytes, creatinine, and amylase. A contrast-enhanced computed tomography (CT) scan revealed an abscess cavity under the anterior abdominal wall and umbilicus (Fig. 1).

After conservative treatment with antibiotics and drainage, the patients underwent a laparoscopic resection using a 3-port method under pneumoperitoneum. The patient was placed in the supine position with an endotracheal tube, under general anesthesia. A 5-mm vertical incision was made in 3 positions on the patient’s left lower abdomen, thereby gaining access to the abdominal cavity (Fig. 2). When in place, this port is used by the operator for additional grasping or to expose the operative field with a retractor when working. The abdomen was insufflated with CO₂ to a pressure of 10mmHg. When the intra-abdominal cavity was explored, an
umbilical urachal remnant was found between the bladder dome and umbilicus (Fig. 3A, B), with the umbilical urachal sinus below the umbilicus (Fig. 3C). The umbilical urachal remnant was resected from the bladder and dissected from the abdominal wall. The confluence of the urachus and the bladder was ligated using absorbable sutures by the intracorporeal knot-tying technique. Excision of the umbilicus including the fistulous track and some of the surrounding indurated tissues was done followed by closure of midline. At the end of the procedure, the ports are removed under vision to check eventual bleeding, and the port of the scope is extracted last. The fascia was re-approximated. After saline irrigation of surgical site, the skin was closed with re-formation of belly-button. The total operative time was 165 minutes. The blood loss was a little. There were no operative complications.

The resected mass was soft and measured 2 cm in diameter. Histological examination revealed an urachal remnant with inflammation. The patient ambulated and resumed oral intake on postoperative day 1. The patient was discharged on postoperative day 7 without any complications.

Discussion
The urachus is an embryonic remnant that results from the involution of the allantoic duct and the ventral cloaca. The obliterated urachus, also known as the median umbilical ligament, extends from the anterior dome of the bladder towards the umbilicus. The urachus varies from 3 to 10 cm in length and from 8 to 10 mm in diameter. It is a 3-layered tubular structure; the innermost layer is lined with transitional epithelium in 70% of cases and with columnar epithelium in 30% of the cases. The urachus is surrounded by connective tissue and an outermost muscular layer in continuity with the detrusor muscle. Between the bladder and the umbilicus, the urachus is flanked by the transverse fascia and the parietal peritoneum, contained in the pyramidal, retropubic, preperitoneal perivesical space that is compartmentalized by the umbilicovesical fascia, along with the medial umbilical ligaments and the bladder. Occasionally, the urachus may merge with one or both of the obliterated umbilical arteries, leading to a slight deviation to the right or left of the midline.
Open surgical removal of the urachal cyst requires a transverse mid-hypogastric or vertical incision. Recently, laparoscopic surgery has become popular as an alternative minimal invasive approach, which is a safe and effective procedure that allows the dissection of the urachus through its entire length, providing optimal postoperative results. Treatment of urachus anomalies requires removing the urachus throughout its entire length including each medial umbilical ligament as well as the associated peritoneum. Traditional surgical treatment of urachus anomalies involves a midline infraumbilical incision. Making a segmentary bladder resection is controversial. In our case, we performed laparoscopic resection of umbilical urachal remnant including some of the indurated surrounding tissues under pneumoperitoneum using a 3-port method, which did not perform segmentary bladder resection because no evidence existed of a communication between the bladder and the urachus. Finally the skin was closed with re-formation of belly-button after saline irrigation of surgical site.

Remnants of the urachus should be considered in cases of recurrent infections or discharge of the umbilicus. In the present case, the patient was successfully treated with resection of the umbilical urachal remnant, and no evidence of local recurrence was observed during the follow-up period. Clinically, cosmetic benefit and less postoperative pain are expected as advantages of laparoscopic surgery originated only three small incisions. In addition, surgical complications such as organ damage, adhesions, bleeding, wound infections and hernias could be decreased. Therefore laparoscopic resection of the umbilical urachal remnant is very useful.

References

Fig. 3 Exploring the intra-abdominal cavity.

The umbilical urachal remnant (A, B) was found between the bladder dome and umbilicus, with an umbilical urachal sinus (C) present below the umbilicus. The umbilicus seen is on the right side.