Laparoscopic Excision of Retroperitoneal Tumors: Report of Three Cases

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Abstract
Retroperitoneal neural tumors are rarely excised laparoscopically, with fewer than ten cases reported in the literature. Between February 2005 and December 2007, we performed successful planned laparoscopic excision of retroperitoneal tumors using the four-trocar technique in three patients. All three patients were women, with a mean age of 40.7 years. The mean tumor size was 4.8 cm. The mean operative time was 126 min and the mean blood loss 14.3 ml. The postoperative pathological diagnosis was schwannoma in one patient and ganglioneuromas in two. There was no morbidity or mortality. Although difficult to diagnose preoperatively, neural tumors in the retroperitoneal space are most often benign, with a good prognosis. Laparoscopic surgical techniques for retroperitoneal tumors are safe, and their use is encouraged when an appropriate diagnosis is made, after exclusion of malignant subtypes.

Key words Laparoscopy · Retroperitoneal tumor · Schwannoma · Ganglioneuroma

Introduction
Retroperitoneal tumors usually enlarge silently, until compression of the surrounding organs produces symptoms. Retroperitoneal tumors have traditionally been excised using a standard open technique: even malignant tumors with large vessel invasion can sometimes be removed completely.1 However, fewer than ten cases of laparoscopic excision of retroperitoneal neural tumors such as schwannoma and neurofibroma have been reported in the world literature to date.2–7

Histopathologic examination after laparotomy is often necessary to make a final diagnosis because the lack of imaging features of retroperitoneal tumors makes preoperative diagnosis difficult. We report three cases of laparoscopic excision of retroperitoneal tumors—one schwannoma and two ganglioneuromas—which resulted in excellent clinical outcomes.

Case Reports
Between February 2005 and December 2007, three patients with retroperitoneal tumors underwent laparoscopic excision. The patients’ characteristics and postoperative diagnoses are summarized in Table 1. All three patients were women, with a mean age of 40.7 years. The mean tumor size was 4.8 cm. Laparoscopic excisions of the retroperitoneal tumors were completed successfully in all three patients. The operative data and clinical outcomes are summarized in Table 2. The mean operative time was 126 min and the mean blood loss 14.3 ml. There was no morbidity or mortality.

Case 1
A 69-year-old woman presented to our hospital for investigation of diarrhea and general fatigue. The patient’s medical history was remarkable in that she had undergone laparoscopic cholecystectomy for cholecystitis and open colectomy for colonic cancer. Laboratory data and the levels of tumor markers were all within normal limits, and a functional endocrine tumor test was negative. Abdominal ultrasonography (US) and computed tomography (CT) showed a 5.5 × 3.8-cm, solid, well-circumscribed mass located anterior to the left psoas muscle (Fig. 1A). Operative excision was planned via laparoscopy, using an approach similar to that for left-sided colectomy, using the four-trocar technique. Adhesiolysis of the abdominal wall was done and the descending colon was freed from the lateral gutter.
After opening the peritoneal membrane, a smooth whitish-yellow tumor was identified, which was also adhered to the left ureter (Fig. 1B). We performed a complete laparoscopic excision. Histopathologic examination revealed spindle cells distributed in a palisade with a degenerative pattern, representing hemorrhage, interstitial fibrosis, and cystic areas. Some atypical nuclei with very limited mitotic activity were observed. The tumor cells stained positively for S-100 protein and negatively for desmin and muscle-specific actin, which is consistent with a benign schwannoma. After 17 months of follow up, the patient was well with no signs of local recurrence.

**Case 2**

A 22-year-old woman presented to our hospital for investigation of epigastralgia. Physical examination was unremarkable. Laboratory data and the tumor markers were all within normal limits, and a functional endocrine tumor test was negative. Abdominal US showed a predominantly cystic mass located behind the lesser omental sac. Enhanced CT showed a 4 × 4-cm, well-circumscribed, low-density mass with a central high-density spot (Fig. 2A). Magnetic resonance imaging (MRI) showed hypointensity on T1-weighted images and hyperintensity on T2-weighted images. Laparoscopy was performed via an approach similar to that for gastrectomy, using the four-trocar technique. Intraoperatively, a soft elastic tumor was identified in the retroperitoneal space adjacent to the roof of the left gastric artery. The tumor appeared to be encapsulated and was easily dissected free from adjacent structures using laparoscopic coagulating shears. A complete laparoscopic excision was performed (Fig. 2B). Histopathologic examination revealed proliferation of well-differentiated ganglion cells and nerve fibers. No mitosis or atypia was observed. The tumor cells stained positively for S-100 protein, but were negative for desmin and muscle-specific actin, which is consistent with a benign ganglioneuroma.