Laparoscopic Ablation of a Pelvic Retroperitoneal Epidermoid Cyst

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ABSTRACT

Experience with minimally invasive approaches, such as laparoscopic ablation and transanal endoscopic microsurgery, to resection pelvic retroperitoneal and presacral tumors is limited. Masses arising from this anatomic position are usually removed using a transsacral approach or laparotomy. We report a detailed description of the laparoscopic procedure performed in a 32-year-old woman to remove a mass, which was detected with both ultrasonography and magnetic resonance imaging, that was closely adherent to the left sacrospinous ligament and compressing the rectum. Histopathologic findings were consistent with a rare case of pelvic retroperitoneal epidermoid cyst. This tumor, which usually occurs in the face, the scalp, the trunk, or the neck, has been described in the pelvic retroperitoneal space in only a few cases.

Key Words: Epidermoid cyst, Laparoscopy, Magnetic resonance imaging, Retroperitoneal cysts.

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All authors accept full responsibility for the conduct of the study, had full access to all the data, and controlled the decision to publish.

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INTRODUCTION

An epidermoid cyst is a benign cutaneous tumor characterized by a stratified epithelial capsule and laminated keratin debris contents.[1] Common sites of involvement include the face, the scalp, the neck, and the trunk, although it can occur anywhere on the body. Pelvic retroperitoneal location of this tumor, outside the major organs within this compartment, is a rare condition and reported in only a few cases.[1–3] Although histopathologic examination is necessary for the final analysis of this tumor, diagnostic imaging is useful to suggest the benign nature of the mass, and magnetic resonance imaging (MRI) is the most specific imaging technique.[2–7] A complete surgical ablation, after appropriate specialized imaging, is essential for the treatment of these neoplasms. The most common surgical procedures are abdominal, transsacral, or a combined abdominosacral approach.[8] We report here a detailed description of the laparoscopic procedure performed in a 32-year-old woman to remove a pelvic retroperitoneal epidermoid cyst. This laparoscopic procedure was chosen instead of a combined laparoscopic-perineal or a more traditional perineal approach or laparotomy.

CASE DESCRIPTION

A 32-year-old nulligravid woman was referred to our hospital because of an 11-month-long deep dyspareunia and left lower quadrant abdominal pain with radiation to the coccyx and anus. Her menses occurred at regular 28-day intervals. She had never used any form of contraception and denied a history of previous dysmenorrhea or pelvic inflammatory disease. One month earlier, at another institution, she had undergone diagnostic laparoscopic exploration because of suspected left ovarian endometriotic cyst detected on transvaginal ultrasonographic scan. Laparoscopy had not shown any ovarian endometrioma, and

the patient had been discharged the day after the intervention. Three weeks later, because of persistence of the symptoms, she underwent another transvaginal ultrasonographic scan, which confirmed the presence of an endometriotic cyst. Our gynecologic and rectal examinations revealed normal external genitalia; a normal-sized anteverted uterus; no abdominal masses, tenderness, or hernias; and ultrasonographic finding of a well-circumscribed hypoechoic cystic pelvic mass, resembling an endometrioma of ~8 cm in diameter on the left side at the level of the rectovaginal septum **(Figure 1)**. The cyst was adjacent to but apparently cleavable from the rectal mucosa without signs of infiltration, although it was not movable with the vaginal probe. Laboratory tests revealed no abnormalities, and serum tumor markers (CA 125, CA 19–9, carcinoembryonic antigen, and α-fetoprotein) were negative.

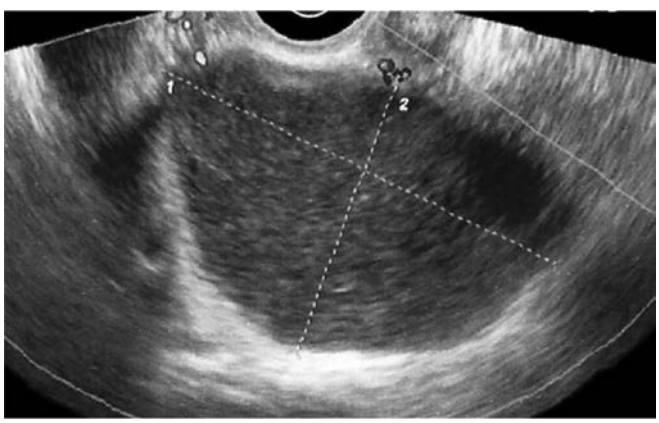

Figure 1. Transvaginal ultrasonographic image shows a hypoechoic cystic pelvic mass of ~8 cm in diameter.

A pelvic MRI examination without administration of gadolinium was performed to further characterize the lesion. Axial, coronal, sagittal high-resolution T1- and T2-weighted images were acquired. The examination showed a well-encapsulated, round, cystic mass in left mesorectum, over the levator ani muscle. The cyst was filled with heterogeneous material and was characterized by mixed signal intensity on both T1- and T2-weighted images **(Figure 2)**. The maximum total size was ~5.5 cm along the laterolateral and 7.5 cm along the anteroposterior diameter. The lesion was closely adherent to the left sacrospinous ligament and compressed the rectum and the left fornix of the vagina. The mass did not arise from the ovaries or the fallopian tubes, both of which were normal. All these findings were highly suggestive of a retroperitoneal epidermoid cyst. Surgical exploration was recommended.

Operative Technique

The risks and the benefits of the procedure were explained, and after careful, informed consent, a laparoscopy was planned with the presence of a general surgeon in case a rectal resection was necessary during the intervention. Under anesthesia, a uterine manipulator was inserted; carbon dioxide was used to create a pneumoperitoneum; and an optic trocar plus 3 ancillary ports were inserted. Laparoscopic examination of the peritoneal cavity showed no lesions, and the uterus and both ovaries

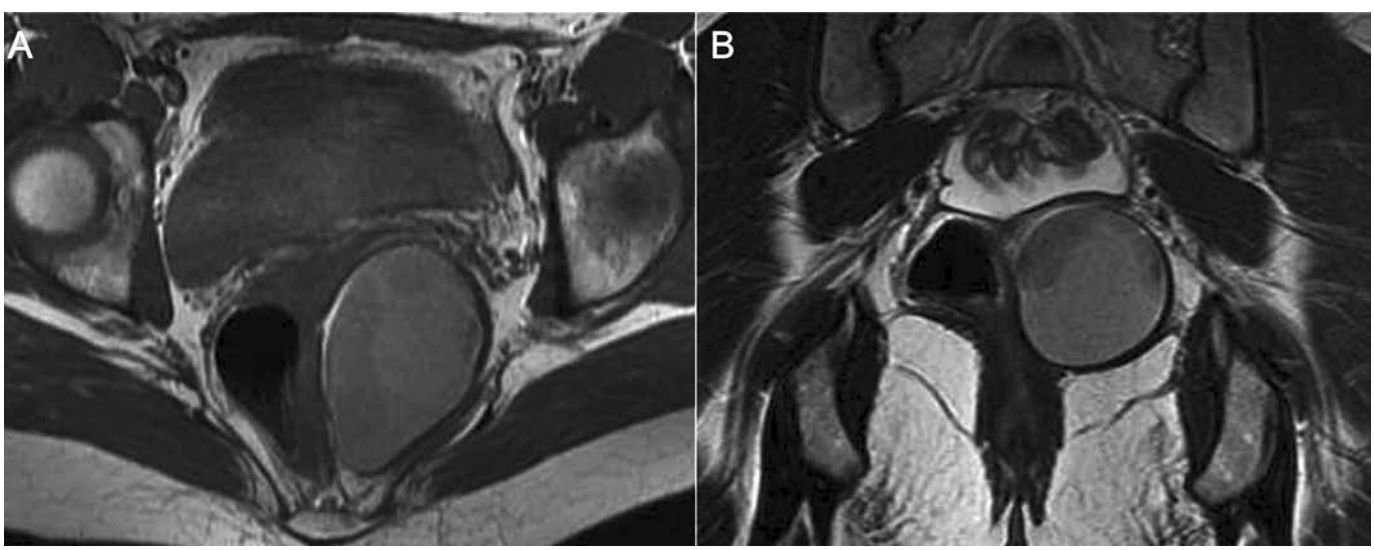

Figure 2. Axial T1-weighted (A) and coronal T2- weighted (B) MRI images show a cystic mass in left mesorectum with mixed signal intensity.

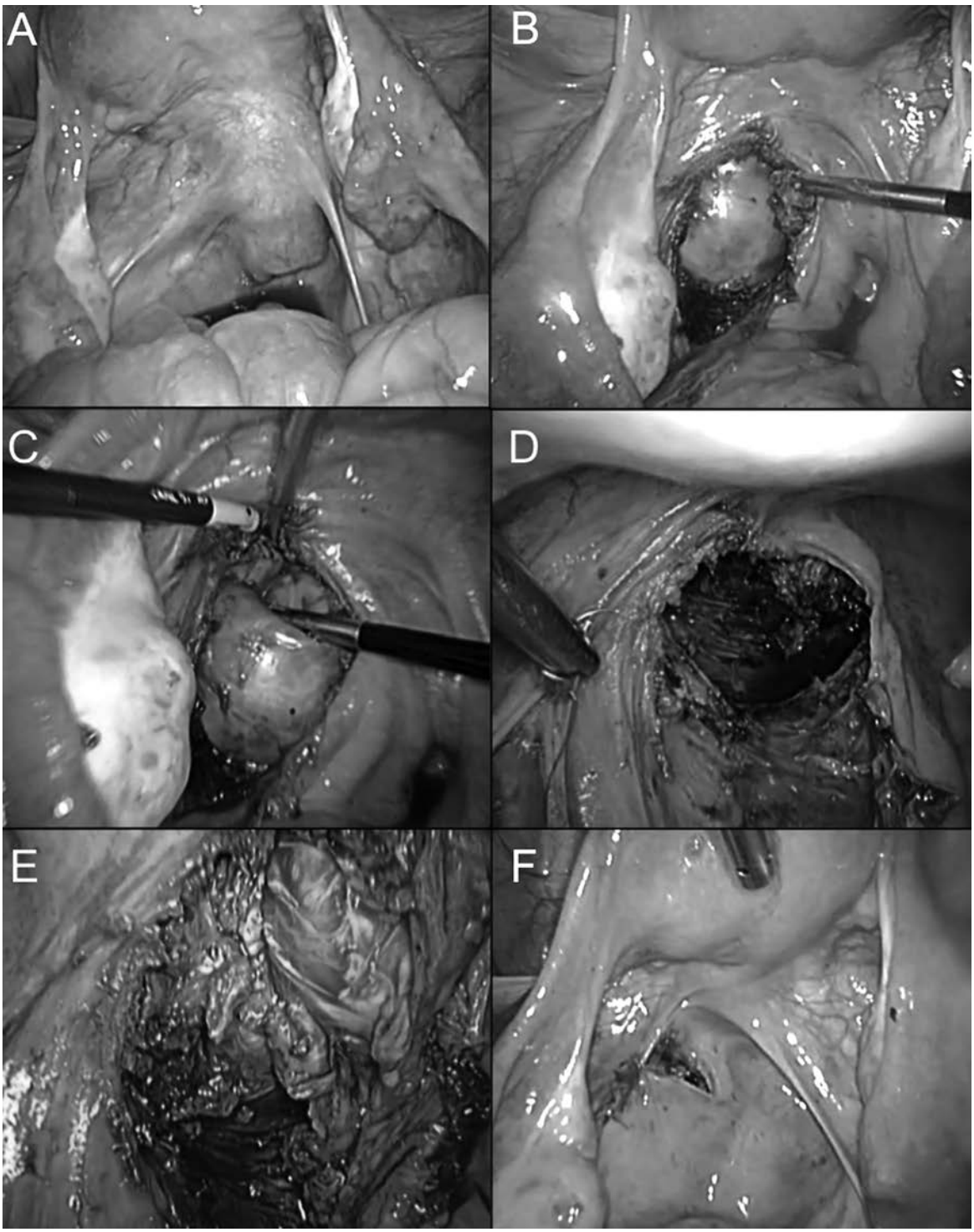

Figure 3. A. Protrusion at the level of the left uterosacral ligament. B. Visualization of the cyst after peritoneal incision. C. Accurate dissection of the lesion. D. Pelvic floor muscle visualization after cyst enucleation. E. Small lesion of the lateral rectal wall. F. Final look after peritoneal closure.

were normal. Taking into account the MRI findings, we performed a more thorough laparoscopic inspection of the vagina and rectum. We found a softness and increased thickness at the level of the left pubococcygeal and puborectalis muscles and a slight protrusion at the level of the left uterosacral ligament next to the rectum **(Figure 3A)**. At this point, the left ureter was mobilized starting from the pelvic brim, and the peritoneum was incised between the left uterosacral ligament and the rectum. Through a sharp and blunt dissection, the underneath connective and fat tissue was removed and the visualization of the cyst was possible **(Figure 3B)**. The mass appeared to be tenaciously adherent to the pelvic floor muscles inferiorly and to the rectum medially. We proceeded with an accurate dissection of the lesion and with its progressive isolation **(Figure 3C)**. At the end of the dissection, the cyst was accidentally opened and an amorphous material spilled out. The thick fluid contents of the cyst were removed by suction, and after several washings, the wall of the cyst was inspected. The internal lining was void of vegetation or atypical blood vessels.

After the cyst was emptied, the final enucleation turned out to be almost effortless.

However, there was a fovea where the cyst had adhered to the pelvic floor muscles **(Figure 3D)**. A small lesion in the seromuscular layer of the lateral rectal wall was noted and repaired with 3–0 Vicryl **(Figure 3E)**. The peritoneum was closed applying three 2–0 sutures **(Figure 3F)** and leaving some space where a surgical drain was inserted.

The total operating time was 110 minutes, and there was almost no blood loss. The postoperative course was uneventful, and the patient was discharged in good health on day 2 after surgery.

The histologic examination made a diagnosis of the epidermoid cyst, revealing a cystic cavity containing horny material and cellular debris, lined with stratified squamous and keratinized epithelium **(Figure 4)**. Beneath the epithelium, the wall consisted of loose connective tissue with a mild chronic inflammatory infiltrate (predominantly lymphoid cells) and some dilated blood vessels. No hair, sebaceous glands, or other skin appendages were found on multiple sections.

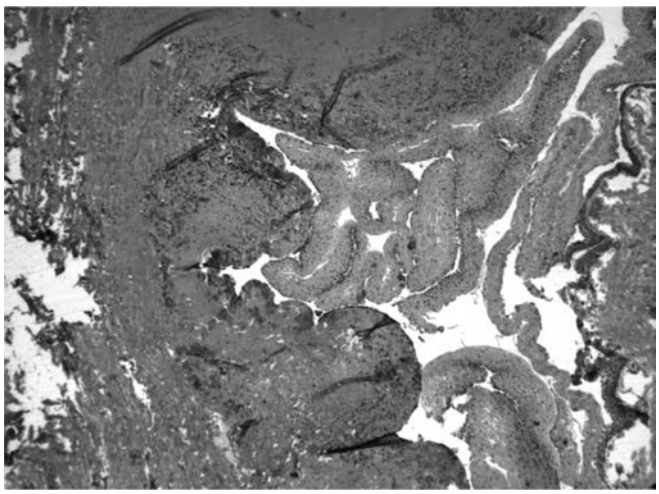

Figure 4. Histologic examination made a diagnosis of epidermoid cyst, revealing a cystic cavity containing horny material and cellular debris, lined with stratified squamous and keratinized epithelium.

DISCUSSION

Pelvic retroperitoneal cystic masses, outside the major organs in this space, represent a challenging diagnostic and surgical problem. They are unusual, often asymptomatic, abdominal lesions usually discovered on routine ultrasonographic examination.[1,9] The most common cystic retroperitoneal neoplasms are cystic lymphangioma or mesothelioma, tailgut cyst, mucinous cystadenoma, müllerian cyst, perianal mucinous carcinoma, cystic teratoma, epidermoid cyst, bronchogenic cyst, and pseudomyxoma retroperitonei.[6] Their incidence is 1:40 000 patients referred to hospitals,[10] and they usually originate from an embryologic error during development.

An epidermoid cyst is a benign tumor of ectodermal origin formed by desquamation of epithelial cells.[1] Pelvic retroperitoneal location of this tumor, outside the major organs within this compartment, has been reported in only a few cases.[1–3] Although most patients are asymptomatic, they may present with symptoms resulting from local mass effect such as constipation or lower abdominal, back, or rectal pain.[5] Once detected, radiologic evaluation is invaluable in preoperative surgical planning because clinical implications and therapeutic strategies for retroperitoneal cystic masses vary depending on the cause.

Due to its intrinsic superior soft tissue contrast compared with that of computed tomography and ultrasonography and its multiplanar imaging capabilities, MRI is increasingly used in the characterization of pelvic pathologies.[4] On MRI scans, epidermoid cysts usually appear as well-circumscribed, thin-walled unilocular lesions with heterogeneous signal intensity on both T1- and T2-weighted images due to the variable lipid and protein components.[4] In our case, MRI was useful to suggest the benign nature of the mass although histopathologic examination was

necessary for the final analysis of the lesion. MRI was also crucial to define the extent of the lesion, to help us choose a suitable surgical method, and to guide the operative procedure.

A complete surgical ablation, after appropriate specialized imaging, represents the preferred treatment option, and it is often performed using an abdominal, transsacral, or a combined abdominosacral approach.[8] Surgical resection is indicated to prevent hemorrhage, infection, rupture, or malignant degeneration of the lesion in cases of pain or other compressive symptoms, and it is also curative given the benign nature of these neoplasms. Experience with minimally invasive approaches to resection of these tumors is limited.[10,11] Although a few cases of laparoscopic excision of a pararectal cyst have been reported,[2,10] this is the first case describing a successful laparoscopic enucleation of a pelvic retroperitoneal epidermoid cyst without a combined perineal approach.

Laparoscopy is a safe and efficient procedure of choice for approaching benign pelvic tumors and may also greatly facilitate dissection due to better visualization of anatomic elements in the narrow pelvis.[2,3,11] With laparoscopy, it is also possible to avoid complications such as skin breakdown, abscess, sinus tracts, perineal herniation, and evisceration, which frequently occur using a perineal approach.[12]

Because of the anatomic complexity of this condition, multidisciplinary cooperation among general surgery and gynecologic departments is necessary.[8] Frequently, the rectum is densely adherent to the pararectal lesion, and it can be difficult to differentiate the fibers of the levator ani from rectal wall. Great care must be taken to avoid injury to the rectum, particularly because it can significantly increase the incidence of postoperative fistula.

In our patient, although preoperative MRI did not show any signs of infiltration of the rectum wall, the general surgeon was consulted in case a rectal resection occurred during the intervention. However, only a small lesion in the seromuscular layer of the lateral rectal wall was noted and appropriately repaired.

In conclusion, surgical excision represents the cornerstone in the diagnosis and treatment of pelvic retroperitoneal epidermoid cysts. MRI is useful to define the extent of the lesion and to guide operative therapy. Due to magnification of the anatomic elements in the narrow pelvis, laparoscopy may lead to a successful minimally invasive surgical ablation without using an additional perineal approach or laparotomy. It allows minimal resection of adjacent organs without damage and helps to avoid complications that could, on the contrary, occur in case of an additional perineal approach.

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