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Case Report

Broad ligament fibroid-a diagnostic and surgical challenge

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ABSTRACT

Broad ligament fibroids, a rare subset of uterine leiomyomas, present unique diagnostic and surgical challenges due to their extrauterine location and potential to mimic adnexal masses. We present two illustrative cases: a 37-year-old parous woman with early satiety and abdominal pain found to have a 25×20 cm pseudo-broad ligament fibroid extending to the right lumbar region, successfully managed with ureteric catheterization and open enucleation; and a 50-year-old parous woman with abdominal pain from a 27×15×5 cm fibroid, treated via TAH+BSO with preoperative stenting. These cases highlight the diagnostic dilemmas posed by broad ligament fibroids, the indispensable role of MRI in surgical planning, and the importance of tailored approaches ranging from fertility-sparing techniques to definitive surgery. Both instances underscore the necessity of meticulous preoperative preparation, including ureteral protection strategies, and demonstrate how individualized management based on patient age, symptoms, and reproductive goals can lead to successful outcomes despite the anatomical challenges inherent to these rare tumors.

Keywords: Broad ligament fibroid, Pseudo-broad ligament fibroid, Broad ligament leiomyoma

INTRODUCTION

Fibroids, also known as uterine leiomyomas, are benign smooth muscle tumors of the uterus and are the most common pelvic tumors in women of reproductive age. Although they typically arise within the uterine wall, fibroids can sometimes develop in extrauterine locations, including the broad ligament.[1] Broad ligament fibroids are uncommon and account for less than 1% of all leiomyomas. These fibroids originate from the smooth muscle within the broad ligament or as parasitic fibroids that become detached from the uterus and gain an independent blood supply.[2]

The clinical presentation of broad ligament fibroids varies widely. Many are asymptomatic and are incidentally detected during routine imaging or pelvic examinations. When symptomatic, they can present with pressure symptoms on adjacent structures, such as the ureters, bladder, or intestines.[3] Patients may report abdominal pain, increased urinary frequency, constipation, or a palpable abdominal mass. In some cases, they can cause menstrual irregularities or infertility.

Diagnosing broad ligament fibroids can be challenging, as they often mimic ovarian masses, adnexal tumors, or even malignancies. Ultrasonography (USG) is the first-line imaging modality, but it may be inconclusive in differentiating fibroids from ovarian tumors. Magnetic resonance imaging (MRI) is considered the gold standard for characterizing the fibroid's location and vascular supply.[4] Surgical management of broad ligament fibroids requires meticulous planning due to their close proximity to vital structures such as the ureters and pelvic vessels.[5]

Laparotomy or laparoscopic myomectomy is the preferred approach depending on the size and location of the fibroid. In cases of large fibroids, ureteral stenting may be required to prevent inadvertent injury. The primary goal of surgery is complete excision while preserving surrounding structures and minimizing intraoperative complications.[6]

In this two-case series, we present two distinct clinical scenarios of broad ligament fibroids, emphasizing their diagnostic dilemmas, individualized surgical strategies, and anatomic challenges.

CASE REPORT

Case 1

A 37-year-old parous woman presented with complaints of early satiety and intermittent abdominal pain persisting for three to six months. Her menstrual history revealed a regular cycle with normal flow.

Per abdominal examination, revealed a palpable mass equivalent to a 20-week pregnancy size. Pelvic examination- uterus was not separately palpable. The mass occupied the right iliac and hypogastric regions, extending up to the umbilicus.

Investigations

Ultrasound findings

The uterus measured 11.6×3.1×4.5 cm with an endometrial thickness of 8 mm. A hypoechoic area measuring 23.1×8.4×9.3 cm with cystic degeneration and increased vascularity was noted in the right adnexal region, suggestive of a broad ligament fibroid.

MRI findings

MRI confirmed a large broad ligament fibroid extending to the lumbar region, displacing the right ovary and ureter.

Surgical procedure

The patient underwent cystoscopy with right ureteric catheterization followed by right broad ligament fibroid enucleation via laparotomy.

Intraoperative findings

A pseudo-broad ligament fibroid measuring 25×20 cm was found extending from the right lateral uterine cornua to the lumbar region. The right round ligament and fallopian tube were stretched over the fibroid. The right ovary was normal, while the uterus was displaced to the left side. The left adnexa were normal. The right ureter was traced and preserved.

The fibroid was successfully enucleated. Injection vasopressin was used at the right cornual region to minimize blood loss. The myoma was removed in toto, and hemostasis was secured.

Figure 1: Intraoperative image.

Figure 2: Specimen of broad ligament fibroid.

Case 2

A 50-year-old parous woman presented with: Abdominal pain on and off for 1 month. No urinary/bowel symptoms (no dysuria, hematuria, or constipation). She was on follow up for 2 years for broad ligament fibroid. Menstral history: Irregular menstrual cycles with heavy menstrual bleeding for 3 years.

On abdominal examination, a firm, non-tender mass was palpated arising from the pelvis, corresponding to a 26-week-sized uterus, predominantly occupying the right iliac fossa and extending to the epigastrium. The mass was not freely mobile. Per vaginal examination revealed an enlarged uterus measuring 24–26 weeks in size, deviated to the left, with no adnexal tenderness or palpable ovarian masses.

Investigations

Imaging

Ultrasound: Uterus: 8.3×3.9×3.2 cm.

Right broad ligament fibroid: 27×15×5 cm, arising from the posterior uterine wall, extending to the epigastrium.

No degenerative changes or increased vascularity.

Surgical management

The patient underwent a total abdominal hysterectomy (TAH) with bilateral salpingo-oophorectomy (BSO) due to the large fibroid size and her age. Intraoperative findings revealed a firm, encapsulated fibroid adherent to the right broad ligament, displacing the bladder and right ureter, with bilaterally normal ovaries showing no cystic lesions. The procedure began with a vertical midline incision extending to the epigastrium to accommodate the large mass.

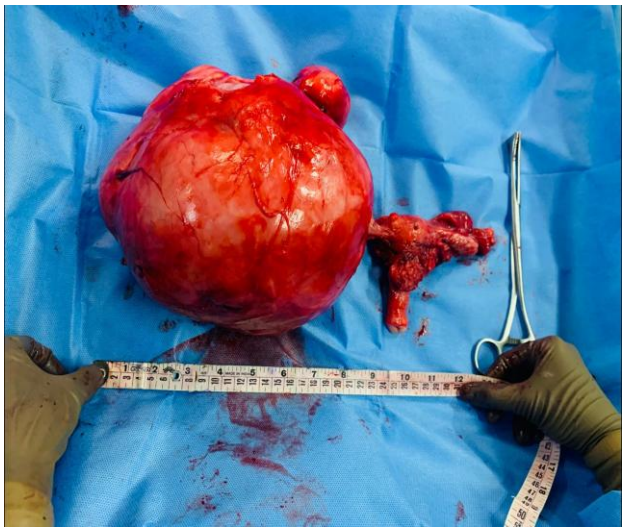

Figure 3: Specimen of uterus with broad ligament fibroid with bilateral tubes and ovaries.

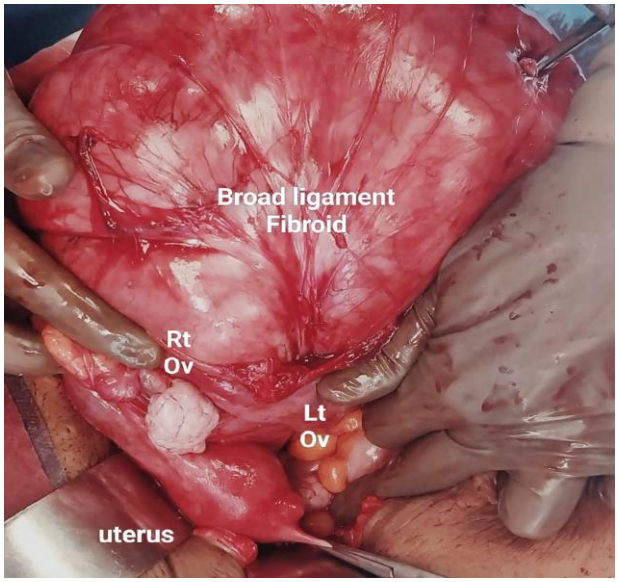

Figure 4: Intraoperative image.

DISCUSSION

Broad ligament fibroids represent a rare and clinically significant subset of leiomyomas, posing unique diagnostic and surgical challenges due to their extrauterine location. Unlike conventional uterine fibroids that arise within the myometrium, broad ligament fibroids develop within the broad ligament, often causing profound anatomical distortion. With an estimated prevalence of less than 1% of all leiomyomas, these tumors are uncommon but must remain a key differential diagnosis when evaluating pelvic masses.[6] Their proximity to critical structures-including the ureters, bladder, fallopian tubes, and pelvic vasculature-demands meticulous surgical planning to avoid complications.[5]

Broad ligament fibroids frequently mimic other pelvic pathologies, such as ovarian neoplasms, adnexal masses, or even malignancies, leading to diagnostic uncertainty. Clinical presentations range from asymptomatic incidental findings to symptoms like pelvic pain, pressure effects on adjacent organs, urinary dysfunction, and menstrual irregularities. This nonspecific symptomatology can result in misdiagnosis and delayed or inappropriate management.[7] Imaging plays a pivotal role in distinguishing broad ligament fibroids from other pelvic lesions. While ultrasonography (USG) serves as the first-line modality, its limitations in differentiating fibroids from solid ovarian tumors often necessitate advanced imaging. Magnetic resonance imaging (MRI), with its superior soft-tissue resolution, is the gold standard for precisely delineating the fibroid's location, size, and vascular supply.[5] In cases suspicious for malignancy or involving exceptionally large fibroids, computed tomography (CT) aids preoperative planning by clarifying pelvic anatomy and assessing surrounding structures.[8] A study by Bhalerao et al illustrated this diagnostic dilemma, wherein a chronic ectopic pregnancy was initially misdiagnosed as a broad ligament fibroid. Doppler imaging proved instrumental in differentiating the two by evaluating vascular patterns, thereby guiding appropriate surgical intervention.[7]

The surgical management of broad ligament fibroids is dictated by tumor size, location, and relationship to adjacent anatomy. Both laparotomy and laparoscopic myomectomy are viable approaches, with the choice influenced by factors such as fibroid dimensions, adhesions, and surgeon expertise. For large or complex fibroids, laparotomy is often preferred due to enhanced exposure and control over potential vascular complications.[6]

A paramount concern during surgery is ureteral preservation, as the ureters traverse the broad ligament and are vulnerable to displacement or compression by the fibroid. Tomah et al highlighted this challenge in a case requiring extensive ureterolysis to free the ureter from fibroid encasement, underscoring the utility of

preoperative ureteric catheterization to mitigate injury risk.[5] In our case series, preoperative cystoscopy with ureteral stenting was employed to safeguard the ureters, enabling successful fibroid excision without compromise.

The vascular supply of broad ligament fibroids-derived from both uterine and ovarian arteries-poses a significant risk of intraoperative hemorrhage. Techniques such as vasopressin injection at the fibroid's base and sequential ligation of feeding vessels are critical to minimizing blood loss.[8] For younger patients desiring fertility, fertility-sparing approaches are prioritized. Tomah et al demonstrated this principle in a case where a large broad ligament fibroid was resected while preserving reproductive potential, despite the need for meticulous dissection.[5] Similarly, our cases emphasized uterine preservation where feasible, employing careful dissection to avoid reproductive tract injury.

The heterogeneity of broad ligament fibroids is evident in published case reports, which document diverse presentations and surgical hurdles:

Mallik et al reported a giant broad ligament fibroid necessitating extensive dissection due to its encroachment on the ureter and major pelvic vessels. Their findings reinforced the importance of preoperative imaging and intraoperative vigilance.[6] Tomah et al emphasized ureteric involvement, detailing a case where ureterolysis was essential to preserve renal function during fibroid resection.[5]

Bhalerao et al described a diagnostic pitfall wherein a chronic ectopic pregnancy simulated a broad ligament fibroid, highlighting the indispensable role of advanced imaging in differential diagnosis.[7] Garibay et al documented bilateral adnexal torsion in a postmenopausal woman with large fibroids, illustrating how leiomyomas can precipitate adnexal complications.[8] These cases collectively underscore the variability in clinical presentation and the technical complexities inherent to broad ligament fibroid management. Minimally invasive techniques, such as laparoscopic myomectomy, offer advantages like reduced blood loss, quicker recovery, and shorter hospitalization. However, laparotomy remains the gold standard for: Fibroids exceeding 10 cm in diameter, suspicion of malignancy, dense adhesions from prior surgeries, fibroids with significant vascularity requiring direct ligation and multiple fibroids necessitating extensive dissection.[6]

In our case series, open surgery was selected to ensure optimal access, facilitate safe fibroid enucleation, and permit direct visualization of the ureters and pelvic vasculature. Robotic-assisted myomectomy represents a promising advancement, offering enhanced precision and potentially lower complication rates. Additionally, ultrasound-guided radiofrequency ablation is under investigation for fibroid management, though its applicability to broad ligament fibroids remains uncertain.[5] Preoperative hormonal therapies, such as GnRH analogs, have been explored to reduce fibroid size and simplify surgery. However, their efficacy for extrauterine fibroids is variable and debated.[8]

CONCLUSION

Broad ligament fibroids are rare but clinically significant tumors that pose diagnostic and surgical challenges. Their proximity to vital pelvic structures, particularly the ureters and major vessels, necessitates careful surgical planning. Preoperative imaging with MRI, intraoperative ureteric catheterization, and meticulous surgical technique are critical to optimizing patient outcomes. Our cases demonstrated successful surgical excision with preoperative ureteric stenting, minimal blood loss, and an uneventful recovery. Comparison with existing literature reinforces that individualized surgical planning is essential, and that emerging minimally invasive techniques may further improve patient outcomes in the future.

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