

Round Ligament Leiomyoma Mimicking a Gastrointestinal Stromal Tumour in a Young Woman: A Diagnostic Challenge

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ABSTRACT

Leiomyomas are common benign smooth muscle tumours of the uterus; however, extra-uterine leiomyomas are rare, particularly those arising from the round ligament. Owing to their atypical location and non-specific radiological appearance, these tumours may mimic gastrointestinal or adnexal malignancies. We report the case of a 29-year-old woman presenting with recurrent right-sided abdominal pain and a pelvic mass initially suspected to be a gastrointestinal stromal tumour (GIST) on imaging. Laparoscopic excision was performed, and histopathological examination confirmed a leiomyoma arising from the right round ligament. This case highlights the diagnostic challenges associated with round ligament leiomyomas and emphasises the importance of considering this rare entity in the differential diagnosis of pelvic masses in reproductive-aged women.

Keywords

Round ligament, Leiomyoma, Extra-uterine fibroid, Gastrointestinal stromal tumor, Pelvic mass, Laparoscopy.

Introduction

Leiomyomas are benign tumours arising from smooth muscle cells and are most commonly encountered in the uterus. Extra-uterine leiomyomas are uncommon and have been reported in sites such as the broad ligament, ovaries, and round ligament [1]. Leiomyomas arising from the round ligament are particularly rare [2]. Because the round ligament extends from the uterus to the inguinal canal and labia majora, these tumours may present with varied clinical manifestations and frequently mimic inguinal hernias, adnexal masses, or other mesenchymal tumours, including gastrointestinal stromal tumours [2-4]. Preoperative diagnosis remains challenging, as imaging findings are often inconclusive and lack specific distinguishing features [5]. Consequently, definitive diagnosis is usually established by histopathological examination following

surgical excision. Recognition of this rare presentation is important to prevent diagnostic confusion and ensure appropriate surgical management.

Case Presentation

A 29-year-old woman presented with intermittent right-sided lower abdominal pain for several months, which worsened during menstruation. Her menstrual cycles were regular, and there was no history of abnormal uterine bleeding, weight loss, or gastrointestinal symptoms. On abdominal examination, a firm, mobile, non-tender mass measuring approximately 7 × 7 cm was palpable in the right lower quadrant. Pelvic examination revealed an anteverted uterus with a palpable right-sided adnexal mass.

Transabdominal ultrasonography demonstrated a hypoechoic mass, raising suspicion of a gastrointestinal stromal tumour. Contrast CT Scan revealed a well-defined solid mass anterior to the uterus, suggestive of a mesenchymal neoplasm (Figure 1).

Serum CA-125 level was within normal limits (27 U/mL).

The patient underwent laparoscopic exploration. Intraoperatively, an 8 × 8 cm solid mass arising from the right round ligament was identified, with the uterus and bilateral adnexa appearing normal (Figure 2). The mass was completely excised laparoscopically and retrieved in an endobag. Gross examination revealed a solid, homogeneous, pearly-white cut surface. Histopathological evaluation confirmed the diagnosis of a leiomyoma arising from the round ligament. The postoperative course was uneventful, and the patient remained asymptomatic at follow-up.

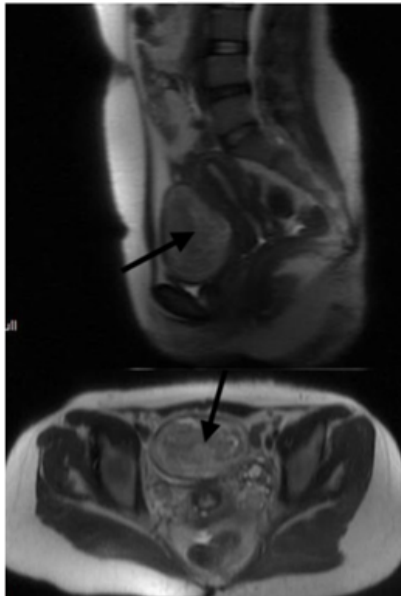


Figure 1: Contrast-enhanced CT scan showing a heterogeneous enhancing mass (8 × 8 cm) abutting the uterine fundus, initially suggestive of a subserosal fibroid.

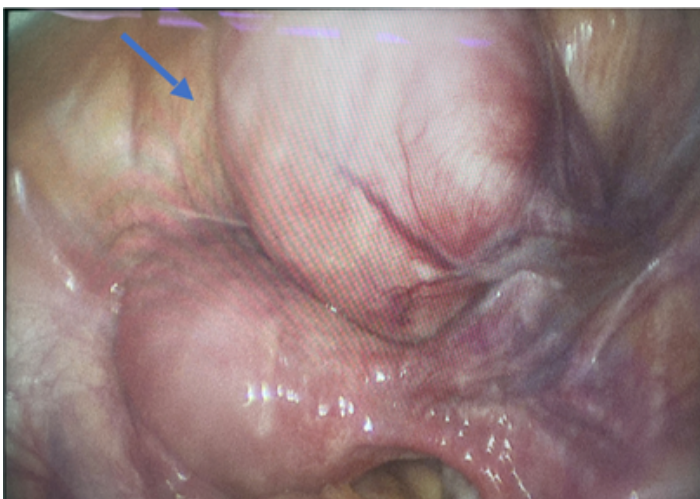


Figure 2: Intraoperative laparoscopic view demonstrating a solid mass arising from the right round ligament.

Discussion

Round ligament leiomyomas are uncommon benign tumours that arise from the smooth muscle fibres of the round ligament and constitute a rare subset of extra-uterine fibroids. Depending on their location, intrapelvic lesions typically present with pelvic pain or pressure symptoms, whereas extrapelvic lesions may present as inguinal or vulvar swellings, often mimicking inguinal hernias or other groin masses [4-6]. Approximately two-thirds of round ligament leiomyomas arise from the extraperitoneal segment of the ligament, particularly in the inguinal canal and vulvar region, where they commonly present as labial or inguinal masses [6]. In contrast, intraperitoneal or intra-abdominal round ligament leiomyomas, as observed in the present case, are relatively uncommon and may pose a diagnostic challenge because of their proximity to adnexal and uterine structures.

Several studies have reported a higher incidence of leiomyomas arising from the right round ligament, as observed in the present case; however, no clear anatomical or physiological explanation for this predominance has been established [7-10].

Similar to uterine leiomyomas, round ligament leiomyomas are believed to be monoclonal tumours derived from a single smooth muscle progenitor cell and to be hormone-responsive. Oestrogen and progesterone are considered to play important roles in tumour growth and proliferation, particularly during the reproductive years and in hyperoestrogenic states. Progesterone has been shown to contribute to cellular proliferation, while oestrogen enhances tumour growth by up-regulating progesterone receptor expression. The presence of steroid hormone receptors in round ligament tissue further supports the hormone-dependent behaviour of these tumours [8,9].

Preoperative diagnosis of round ligament leiomyoma remains difficult because of nonspecific imaging characteristics. Ultrasonography is usually the initial imaging modality but may not reliably identify the exact site of tumour origin. Magnetic resonance imaging provides superior soft-tissue contrast and better anatomical delineation, which may aid in distinguishing these lesions from other pelvic or mesenchymal tumours. However, differentiation from gastrointestinal stromal tumours, ovarian neoplasms, or pedunculated subserosal fibroids may still be challenging, as seen in the present case [4].

Surgical excision remains the treatment of choice for both definitive diagnosis and symptomatic relief. Minimally invasive approaches, including laparoscopic excision, are considered safe and effective, enabling complete tumour removal with reduced postoperative morbidity and faster recovery [10]. Histopathological examination is essential to confirm the diagnosis and exclude malignant transformation, including leiomyosarcoma.

Conclusion

Although rare, round ligament leiomyoma should be considered in the differential diagnosis of pelvic or abdominal masses in

reproductive-aged women. Their ability to mimic gastrointestinal mesenchymal tumours on imaging can cause diagnostic confusion. Timely surgical intervention and histopathological confirmation ensure accurate diagnosis and optimal management.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Ethical declaration

All the authors declare that this work has not been published before; that it is not under consideration for publication anywhere else; that its publication has been approved by all co-authors, as well as by the responsible authorities – explicitly – at the institute where the work has been carried out. The publisher will not be held legally responsible should there be any claims for compensation.

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