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Case Report

Smooth Muscle Tumor of Uncertain Malignant Potential (STUMP) in Pregnancy: A Case Report from Omar Al Mukhtar General Hospital, Libya

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Abstract:

Background: Smooth Muscle Tumors of Uncertain Malignant Potential (STUMP) are rare uterine neoplasms that occupy a diagnostic space between benign leiomyomas and malignant leiomyosarcomas. Their unpredictable biological behavior and ambiguous histopathologic features pose challenges in both diagnosis and management. STUMP tumors discovered during pregnancy are exceedingly rare, with limited documentation in the literature.

Case Presentation: We report the case of a 24-year-old Sudanese primigravida who presented at term with no symptoms. Routine third-trimester ultrasound revealed a large adnexal mass, initially presumed to be ovarian. An elective cesarean section was performed at Um al-Razam General Hospital, Libya. Intraoperatively, a pedunculated, vascular mass was found attached to the posterior uterine surface, partially obscured by omental adhesions. The tumor was excised following fetal delivery. Histopathologic analysis confirmed the diagnosis of STUMP, based on moderate cytologic atypia, low mitotic index, and absence of coagulative tumor cell necrosis. The patient's postoperative course was uneventful, and structured follow-up was initiated.

Conclusion: This case highlights the importance of intraoperative reassessment when unexpected pelvic masses are encountered during pregnancy. It underscores the diagnostic limitations of antenatal imaging and the critical role of histopathology in confirming STUMP. Given the tumor's uncertain malignant potential, long-term surveillance is essential. This report contributes to the scarce literature on STUMP in pregnancy and supports a multidisciplinary approach to management and fertility preservation.

Keywords: stump; uterine tumor; pregnancy; cesarean section; histopathology; fertility preservation

1.Introduction

Smooth Muscle Tumors of Uncertain Malignant Potential (STUMP) represent a diagnostically ambiguous subset of uterine neoplasms that defy clear classification as either benign leiomyomas or malignant leiomyosarcomas. First defined by Kempson in 1973, STUMP tumors have since evolved into a recognized category within the World Health Organization's classification of uterine smooth muscle tumors, characterized by intermediate histopathological features such as atypia, mitotic activity, and tumor cell necrosis that fall short of definitive malignancy [1,2]. These tumors are rare, accounting for less than 0.01% of uterine smooth muscle lesions, and are typically diagnosed postoperatively following histologic evaluation of excised masses [3,4]. The clinical presentation is often nonspecific, with most cases discovered incidentally during imaging or surgery for unrelated gynecologic conditions [5]. STUMP tumors may exhibit unpredictable behavior, including local recurrence or distant metastasis, despite their initial benign appearance [6,7]. Recent literature emphasizes the genomic heterogeneity of STUMP, with molecular profiles overlapping those of leiomyosarcoma, suggesting a potential for malignant transformation in select cases [8]. Immunohistochemical markers such as p16, p53, and Ki-67 have been explored to aid in risk stratification, though no consensus guidelines exist for management or follow-up [9,10]. The

incidental discovery of STUMP during pregnancy, particularly at term, is exceedingly rare and poses unique diagnostic and surgical challenges. This case report contributes to the limited body of evidence by documenting a Sudanese primigravida with an intraoperatively identified STUMP tumor at cesarean delivery in Libya, highlighting the importance of intraoperative vigilance and histopathologic confirmation [11].

Case Presentation

A 24-year-old Sudanese primigravida presented at term with no complaints and an unremarkable antenatal course. Routine third-trimester ultrasound revealed a large, bizarre adnexal mass occupying the left pelvic quadrant, initially presumed to be ovarian in origin due to its location and heterogeneous echotexture. The patient remained asymptomatic, with no pain, bleeding, or pressure symptoms. An elective cesarean section was scheduled at Um al-Razam General Hospital, Libya, for obstetric indications. Upon entry into the peritoneal cavity, a large, pedunculated mass was unexpectedly visualized, occupying the posterior uterine surface and partially obscured by omental adhesions. Delivery of the fetus proceeded uneventfully (Figure 1), after which attention was turned to the mass. The tumor was found to arise from the posterior wall of the uterus, with a broad vascular pedicle and dense omental coverage (Figure 2). The momentum was carefully dissected off the tumor surface (Figure 4), revealing a lobulated, firm mass with prominent vascular channels (Figure 3). The pedicle was clamped, ligated, and excised with minimal blood loss. The excised specimen measured approximately 12 cm in diameter and was sent for histopathological evaluation (Figure 5). Gross examination revealed a whorled, tan-white cut surface with focal areas of hemorrhage. Microscopic analysis demonstrated moderate cytologic atypia, low mitotic activity (<10 mitoses/10 HPFs), and absence of coagulative tumor cell necrosis. These findings were consistent with a diagnosis of Smooth Muscle Tumor of Uncertain Malignant Potential (STUMP). The patient's postoperative course was uneventful. She was discharged on postoperative day three with instructions for long-term follow-up, including pelvic imaging and clinical surveillance every six months. Given the unpredictable biological behavior of STUMP tumors, a multidisciplinary plan was initiated involving gynecologic oncology and pathology teams. This case underscores the importance of intraoperative vigilance and histopathologic confirmation in managing unexpected pelvic masses during pregnancy. The incidental discovery of STUMP at term in an asymptomatic primigravida is exceedingly rare and highlights the need for tailored surgical decision-making and structured follow-up. (Figure 6).

Figure 1: Cesarean Delivery in the Presence of a Posterior Uterine Mass Shows fetal extraction with visible tumor adjacent to the uterine surface.

Figure 2: Posterior Uterine STUMP Tumor Partially Covered by Omentum Demonstrates tumor origin and anatomical relationship to surrounding structures.

Figure 3: Vascular Pedicle of the STUMP Tumor Prior to Excision Highlights the tumor's blood supply and surgical approach.

Figure 4: Omental Adhesion Released from Tumor Surface Depicts careful dissection of momentum from the mass.

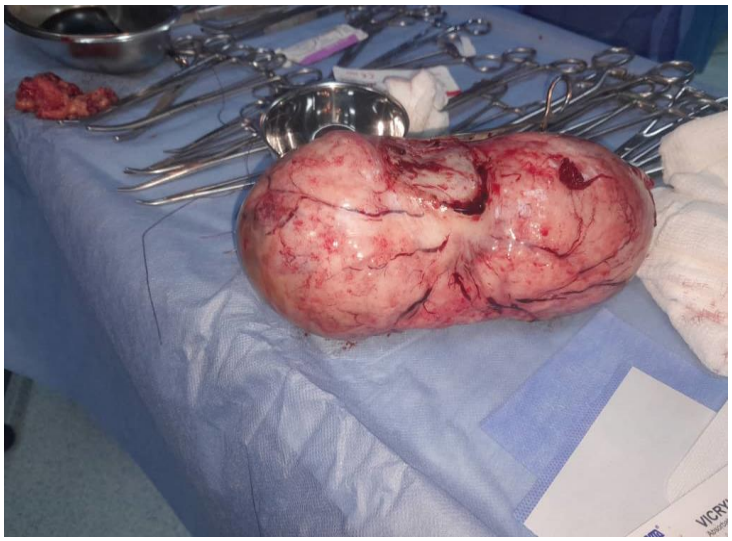

Figure 5: Macroscopic Appearance of Excised STUMP Tumor Displays the lobulated, firm mass with whorled cut surface.

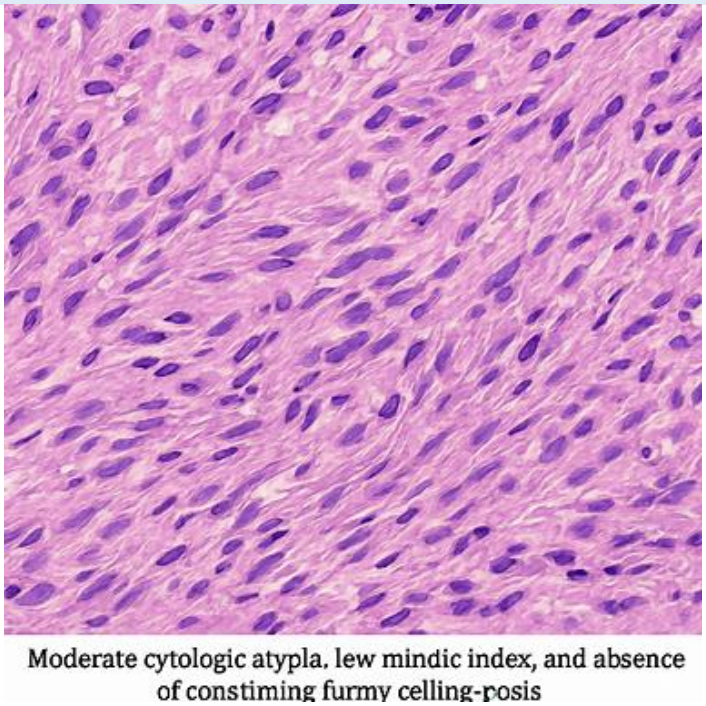

Figure 6: Histopathologic Features of STUMP Tumor Showing Moderate Cytologic Atypia, Low Mitotic Index, and Absence of Coagulative Tumor Cell Necrosis

Discussion

Adnexal masses in pregnancy present a diagnostic challenge due to overlapping sonographic features and altered anatomy. The differential diagnosis includes functional ovarian cysts, dermoid, endometriomas, and fibroids with atypical presentations [12]. In rare cases, uterine-origin tumors such as STUMP may mimic adnexal pathology, especially when pedunculated or adherent to surrounding structures [13]. STUMP (Smooth Muscle Tumor of Uncertain Malignant Potential) occupies a histologic gray zone between benign leiomyomas and malignant leiomyosarcomas. Diagnostic criteria rely on three key features: moderate to severe cytologic atypia, mitotic index near or above 10 per 10 high-power fields, and the presence or absence of coagulative tumor cell necrosis [14,15]. However, variability in interpretation and sampling can lead to underdiagnosis or misclassification [16]. Recurrence rates for STUMP range from 7% to 28%, with higher risk associated with epithelioid and myxoid variants [17]. Long-term follow-up is essential, as some tumors recur as leiomyosarcoma years after initial excision [18]. Immunohistochemical markers such as p16, p53, and Ki-67 have been explored for prognostication, though none are definitive [19]. STUMP tumors discovered during pregnancy are exceedingly rare, with only isolated case reports in the literature [20]. Their incidental identification during cesarean delivery, as in this case, underscores the importance of intraoperative vigilance and adaptability. The presence of omental adhesion and vascular pedicle further complicates surgical decision-making. Fertility preservation is a key consideration in reproductive-age women. While hysterectomy offers definitive management, myomectomy may be appropriate in select cases, provided close surveillance is maintained [21]. In this case, tumor excision was achieved without compromising uterine integrity, allowing for future fertility. This report adds to the limited body of evidence on STUMP in pregnancy and highlights the need for standardized diagnostic protocols and multidisciplinary management. It also reinforces the importance of histopathologic confirmation and structured follow-up to mitigate recurrence risk [22,23].

Conclusion

Smooth Muscle Tumors of Uncertain Malignant Potential (STUMP) remain diagnostically elusive and clinically unpredictable. This case highlights the silent nature of STUMP tumors, which may be discovered incidentally during routine obstetric procedures. The intraoperative identification of a pedunculated uterine mass with omental adhesion underscores the importance of surgical vigilance and adaptability. Histopathologic confirmation is essential, as imaging alone may misclassify such lesions. Given the potential for recurrence or malignant transformation, long-term follow-up with structured imaging and clinical surveillance is imperative. This report contributes to the limited literature on STUMP in pregnancy and reinforces the need for multidisciplinary management and fertility-preserving strategies when appropriate.

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Declarations

Ethical Approval

Ethical clearance was obtained from the Um al-Razam General Hospital Ethics Committee prior to case documentation and publication.

Consent

Written informed consent was secured from the patient for the use of clinical details and intraoperative images in this publication.

Conflict of Interest

The authors declare no conflicts of interest related to this case.

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Authors' Contributions

All authors contributed to manuscript drafting. Each author reviewed and approved the final version and accepts responsibility for the integrity of the work.

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