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Unexpected intraoperative discovery of multiple metallic screw-fixed anterior abdominal wall mesh during open myomectomy: A case report

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Ethics
The Institutional Review Board of Al Emadi Hospital, Doha, Qatar approved the procedure (IRB No. PAT0268548).

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

Conflict of Interest
No conflict of interest was declared by the authors.

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Abstract

Mesh repair is the standard approach for anterior abdominal wall hernias because it provides durable reinforcement and low recurrence rates. Over time, fixation techniques have evolved toward safer and less invasive methods, and metallic screw fixation has largely become obsolete. Nevertheless, older fixation techniques may still be encountered and may complicate subsequent abdominal or pelvic surgery. We report the case of a 37-year-old woman with a history of two prior cesarean sections and hernia repair with mesh fixation 11 years earlier. She presented with pelvic pain, pelvic heaviness, and abnormal uterine bleeding. Ultrasonography revealed a large posterior cervical wall leiomyoma. During open myomectomy, multiple metallic screws securing the anterior abdominal wall mesh were unexpectedly identified, requiring careful dissection, adhesiolysis, and modification of the abdominal entry technique to safely access the peritoneal cavity. The procedure was completed without complications, and the patient recovered uneventfully. This case highlights the importance of obtaining a detailed surgical history, recognizing outdated fixation techniques, using preoperative imaging when appropriate, and performing meticulous intraoperative planning to minimize risk during reoperative abdominal and gynecologic surgery.

Keywords: abdominal wall mesh, screw fixation, hernia repair, metallic screw, myomectomy, reoperative surgery

Introduction

Mesh reinforcement is widely accepted as the standard technique for anterior abdominal wall hernia repair because it provides strong and durable support [1]. Over time, several fixation methods have been developed to improve mesh stability and reduce complications. Currently, absorbable or non-absorbable sutures, tacks, and self-gripping meshes are preferred because of their safety and effectiveness [2]. In contrast, metallic screw fixation has largely become obsolete, as it may lead to chronic pain, infection, or technical difficulties during reoperation [3]. We report a rare case of incidentally encountered screw-fixed anterior abdominal wall mesh during open myomectomy in a woman with prior hernia repair, highlighting the surgical implications of outdated fixation techniques in reoperative pelvic surgery.

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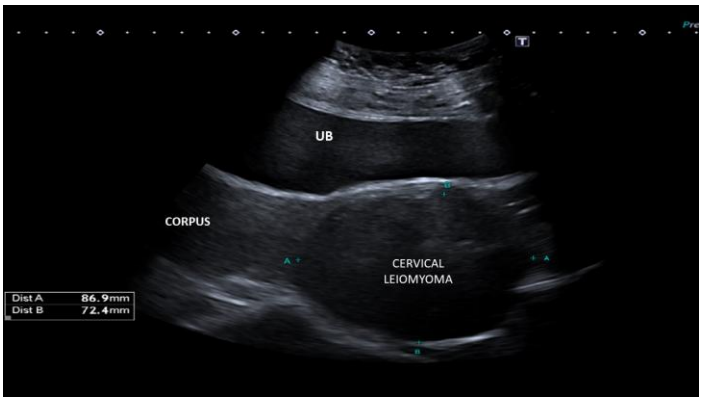
Case presentation

A 37-year-old woman with a history of two prior cesarean sections had undergone anterior abdominal wall hernia repair with mesh fixation 11 years earlier. Several years later, she developed progressive pelvic pain, constipation, dyschezia, persistent pelvic heaviness, severe congestive dysmenorrhea, and menorrhagia associated with iron deficiency anemia. As shown in Figure 1, pelvic ultrasonography confirmed a large posterior cervical wall leiomyoma measuring 7.2 x 8.6 cm, supporting the decision to proceed with posterior uterine wall access during cervical myomectomy.

Figure 1. Ultrasonographic image of a cervical leiomyoma.



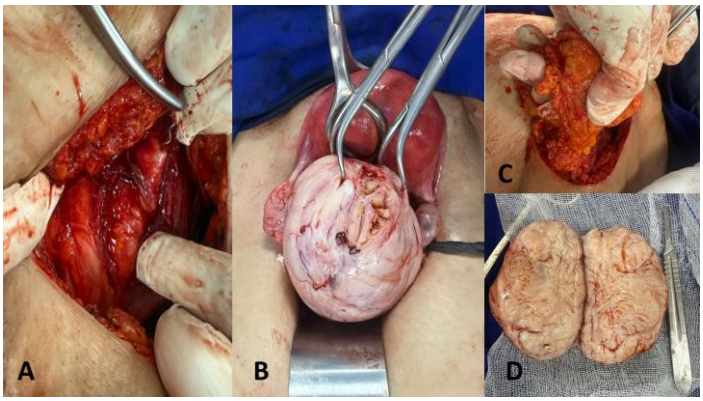
After informed consent and Institutional Review Board approval (PAT0268548) were obtained, the patient was scheduled for open myomectomy with possible hysterectomy. During dissection of the skin and subcutaneous tissue, multiple metallic screws embedded in the anterior rectus sheath were palpated (Figure 2A), securing the previously placed mesh. Contact with these screws repeatedly damaged the double-layered surgical gloves, necessitating multiple changes. With careful dissection, the lower portion of the mesh was incised, and the peritoneal cavity was entered. As anticipated preoperatively, dense omental adhesions to the parietal peritoneum (Figure 2C) and uterovesical adhesions at the prior repeat cesarean section site were identified. Extensive adhesiolysis and meticulous hemostasis were performed. The uterus was elevated using a uterine manipulator.

The large cervical myoma bulged posteriorly, away from the dense uterovesical adhesions. A longitudinal posterior uterine wall incision was made, and the leiomyoma was successfully enucleated (Figures 2B and 2D). The intraoperative images (Figure 2) demonstrate the rigid screw fixation of the mesh to the anterior rectus sheath and the dense omental and uterovesical adhesions encountered at peritoneal entry, underscoring the technical difficulty and increased risk associated with abdominal entry.

Hemostasis was achieved, and the hysterotomy site was securely closed in two layers using 0 Vicryl sutures. The myoma bed was carefully sutured to reduce the risk of postoperative hematoma. After thorough peritoneal lavage, an intraperitoneal suction drain was inserted. The rectus sheath was closed with a No. 1 Vicryl suture, with reinforcement at the mesh incision site. The subcutaneous adipose layer was closed with interrupted sutures, followed by skin closure using 3-0 Monocryl.

The postoperative course was uneventful, and the patient was discharged in good condition after drain removal on postoperative day 2. Written informed consent was obtained from the patient for publication of this case report and the accompanying images.

Figure 2. Intraoperative findings: (A) metallic screw embedded in the anterior rectus sheath, removed with long artery forceps; (B) cervical myoma protruding through a longitudinal posterior uterine wall incision; (C) dense omental adhesions at peritoneal entry; and (D) bisected leiomyoma following myomectomy.



Discussion

In this case, the unexpected presence of metallic screws securing the anterior abdominal wall mesh created significant technical challenges during abdominal entry and adhesiolysis. This finding underscores the risks associated with older mesh fixation techniques that are rarely encountered in contemporary surgical practice.

Modern mesh fixation typically relies on sutures, tacks, or self-gripping materials, which provide adequate stability while minimizing postoperative pain and tissue trauma [4]. In contrast, metallic screw fixation in soft tissue is mechanically inappropriate and clinically suboptimal. It is associated with complications, including chronic pain from rigid anchorage, foreign-body reaction, infection, and difficulty during re-entry laparotomy [5], as observed in the present case.

Although metallic screws may be used selectively in reconstructive procedures requiring fixation to bone, their use in standard soft-tissue hernia repair has largely been abandoned [6]. In a previous study, we used screws to anchor mesh to the anterior longitudinal ligament of the sacrum, with the opposite end fixed to the cervix and uterosacral ligaments in cases of apical pelvic organ prolapse repair [7]. This approach clearly demonstrates the distinction between fixation to bony structures and fixation to soft tissues, highlighting that metallic screws may be appropriate in selected procedures requiring osseous anchorage but are generally unsuitable for routine soft-tissue hernia repair.

In the present case, the metallic screws were firmly embedded in the anterior rectus sheath and caused multiple perforations of the surgical gloves, necessitating careful dissection to safely access the peritoneal cavity. Difficult entry also carried the risk of dislodging metallic fragments into the peritoneal cavity. The presence of rigid foreign material may have contributed to adhesion formation, as evidenced by the extensive omental adhesions observed after peritoneal entry.

This case emphasizes the importance of thorough documentation of previous abdominal wall reconstruction techniques, particularly in women of reproductive age who may require future pelvic or gynecologic surgery. No operative report from the previous hernia repair was available, which contributed to the unexpected discovery of metallic screws. From a technical standpoint, prior mesh repairs involving metallic hardware may

prolong operative time, obscure tissue planes, and increase the risk of visceral injury due to dense adhesions. In addition, hand injuries among surgical staff and the potential transmission of blood-borne infections represent additional risks.

When metallic hardware is suspected, surgical teams should rely on appropriate metal instruments rather than manual palpation to minimize contact with sharp objects. Careful review of surgical history and appropriate use of preoperative imaging are therefore essential for safe surgical planning. This rare case contributes to the limited literature on screw fixation of abdominal wall mesh and reinforces the importance of recognizing older surgical techniques that may influence future operative outcomes.

This report highlights the need to anticipate unexpected intraoperative findings in patients with a history of abdominal wall reconstruction. The incidental discovery of screw-fixed mesh, an outdated fixation method, illustrates how earlier surgical practices can complicate modern procedures. Surgeons and healthcare institutions share responsibility for providing detailed operative notes to patients undergoing surgical interventions. Comprehensive preoperative assessment and cautious surgical maneuvers are essential to ensure surgeon and patient safety and to optimize outcomes in reoperative abdominal and gynecologic surgery.

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