International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Hasabe R et al. Int J Reprod Contracept Obstet Gynecol. 2022 Mar;11(3):973-975
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20220591

Case Report

Management of an unexpected laparoscopic complication in a low-resource setting

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Received: 22 January 2022
Revised: 13 February 2022
Accepted: 14 February 2022

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ABSTRACT

Objective of this study is to describe the management of a rare and unexpected complication due to the breakage of a surgical blade tip during vaginal coring in a case of total laparoscopic hysterectomy in a low-resource setting. In this case report we are describing an unexpected complication which arose when a No. 11 surgical blade tip broke and got displaced during vaginal coring in a case of total laparoscopic hysterectomy with bilateral salpingectomy. When it was not possible to locate the blade tip in the abdominopelvic cavity, its location was triangulated using thorough manual examination followed by live imaging, and the blade tip was retrieved without damage to surrounding structures. The details of the loss and retrieval of the blade tip emphasize the need for a systematic approach to instrument upkeep, personnel training, and judicious use of available imaging in low-resource settings to manage unexpected and rare complications quickly and effectively during laparoscopic surgeries.

Keywords: Complication, Hysterectomy, Laparoscopy, Low resource, Vaginal coring

INTRODUCTION

Although laparoscopy has revolutionized surgical accuracy and patient recovery due to its ability to minimize surgical trauma, size of incision scars, blood loss, and post-surgical pain, iatrogenic injuries to vascular structures, bladder, bowel, or ureter still occur.[1] However, the challenges associated with laparoscopic procedures in low-resource settings extend beyond these commonly-reported complications. This article describes a case study that discusses the rare and unexpected complication that occurred with the use of the vaginal coring technique in a case of total laparoscopic hysterectomy (TLH) with bilateral salpingectomy and its successful management using the available resources in a rural, low-resource healthcare setting in Maharashtra, India.

CASE REPORT

A 43-year-old-female presented with complaints of severe pain in abdomen, heavy bleeding during menses, and difficulty passing stools. She was a known case of poorly-controlled diabetes mellitus and hypertension, on oral prescription drugs over the preceding 10 years. A 14 to 16-week size uterine mass was palpated with no other significant finding. The uterus was bulky, anteverted, and presented with a large mass arising from the fundus that could not be separated from the uterus. Bilateral fornices were free and non-tender. USG abdo-pelvis was suggestive of bulky, anteverted uterus with multiple uterine fibroids, the largest measuring about 7.3 x 7 cm in the fundic wall of the uterus causing indentation over the endometrium. Due to the long-standing, poorly-responsive, and severe nature of her symptoms over 2-3 years, the patient was posted for a TLH and bilateral

salpingectomy. This surgery was performed in a rural tertiary care center that provides essential services to poor patient populations in the region. The hospital functions with basic skeletal resources, because of which necessary laparoscopic instruments and devices such as morcellators are unavailable.

Figure 1: Morcellated specimen of uterus and large myoma.

Figure 2: C-arm image showing lost blade tip lodged in pelvic cavity prior to removal (left) and clear pelvic cavity after complete recovery of lost blade tip (right).

Thus, the only way to retrieve the post-operative specimen without an abdominal incision remains through the vaginal route. Due to the large size of this particular specimen, it was not possible to retrieve it through the vaginal route normally. In view of the unavailability of a morcellator and to avoid an abdominal scar, a decision was taken to use the vaginal coring technique to retrieve the mass. The primary author and two trained surgical assistants undertook this procedure using a surgical blade No. 11.The coring procedure was arduous and time-intensive due to the tough consistency of the myoma tissue. Midway through the procedure, the tip of the surgical blade unexpectedly broke. The tip of the blade could not be located even after a thorough screening of the immediate surrounding surgical and extra-surgical area. To avoid delay, the procedure was continued with another similar blade. The entire tissue specimen was retrieved vaginally (Figure 1). The laparoscopic procedure was completed in under 30 minutes while the coring took a total of two hours. Endoscopic vault closure was subsequently done and the ports removed. As the broken tip of the surgical blade still remained untraceable, a C-arm was brought in to radiographically examine the operative field in the abdomino-pelvic cavity. The C-Arm image revealed a sharp foreign object matching the blade description lodged in the pelvis as shown in (Figure 2). Promptly, a pneumoperitoneum was recreated, the laparoscopic ports were re-inserted, and the entire abdominal and pelvic cavities were screened for the tip of the blade. However, the blade tip could not be found even after laparoscopic examination in the indicated location. A thorough manual examination of the pelvic cavity also did not yield the blade tip. At this point, a decision was made to undertake a complete vaginal re-examination under live C-Arm imaging. A metallic object was palpated at the right-most corner of the sutured vault indenting into the lateral pelvic wall. Despite the ability to palpate this object under the sutured vault, it was not possible to directly access and grasps it for removal per vaginum. Hence, a decision was taken to remove the sutures and reopen the vault. On careful laparoscopic examination of the lateral pelvic wall, a glossy reflection indicative of a metallic structure was observed in the right-most corner of the vault. As this was confirmative of the lost tip of the blade, a laparoscopic grasper was used to access this structure. The broken blade was grasped and removed with gentle traction, avoiding injury to the surrounding vital structures. The broken blade tip, measuring approximately 0.7 inch, was successfully retrieved through the vaginal route. Re-imaging was performed using the C-arm to review the pelvic cavity for confirmation of complete recovery of the lost blade tip (Figure 2). The vault was re-sutured laparoscopically, hemostasis was confirmed, and the procedure was completed. The patient was discharged home 24 hours post-surgery and was advised follow-up in the outpatient department 10 days later for removal of port-closure staples. Her post-operative follow-up was uneventful. The patient was recovering well and independent with all functional daily activities at follow-up.

DISCUSSION

In low-resource settings, cost-effectiveness and logistical feasibility play a cardinal role in determining the safest method of tissue extraction during operative procedures. Electromechanical morcellation techniques are commonly restricted to high-resource tertiary care centers. Low-resource centers often need to employ vaginal coring as the technique of maximum effectiveness for tissue extraction during laparoscopic procedures. Even though best practice guidelines point to in-bag or contained morcellation as the safest method of morcellation as it prevents spillage, no singular method of tissue extraction provides a blanket solution in all laparoscopy cases.[2,3] It is worth considering a risk-assessment decision algorithm, such as the one provided by Gunthert et al to determine the most appropriate

method of specimen extraction for laparoscopic cases.[3] In low-resource settings, it is pertinent to use available resources wisely and quickly without compromising patient safety since the lack of proper instrumentation and personnel training can increase the risk and potential for unexpected perioperative complications. In this case, the tough consistency and texture of the tissue required laborious physical effort for extraction with a surgical blade. It is possible that this extended manipulation could have led to torsion of the blade beyond its stress threshold causing breakage. The possibility of a defect in the instrument also cannot be ruled out. Such surgical blade breakage accidents have previously been reported in literature pertaining to knee arthroscopies, discectomy, and other spine surgeries. However, this is the very first time such a complication and its effective management has been reported in the case of a laparoscopic procedure in gynecology.

CONCLUSION

There are no established guidelines in laparoscopic literature that address the preventative or emergent management of this kind of complication. Time, manual dexterity, and a systematic approach to foreign object triangulation and retrieval are of the essence in managing a displaced broken surgical blade tip as it can cause serious damage to surrounding vital viscera and vascular structures, and lead to significantly worse outcomes or long-term sequelae for the patient. This case report emphasizes the need for regular upkeep of surgical equipment, response training for personnel in the handling of emergent situations, and the availability of imaging equipment so that such complications which may be beyond the scope of commonly described complications of specific surgical procedures, can still be managed quickly, safely, and effectively by surgeons even in low-resource settings.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Hasabe R, Tripathi N, Bapat S. Management of an unexpected laparoscopic complication in a low-resource setting. Int J Reprod Contracept Obstet Gynecol 2022;11:973-5.