

Case Presentation

Small Bowel Obstruction after Abdominal Myomectomy Involving Barbed Suture: A Case Report and Preventive Measures for Risk Reduction

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Abstract

In this report, we describe a case of a small bowel obstruction in the immediate postoperative period following an abdominal myomectomy. After failing conservative management, the patient underwent diagnostic laparoscopy, and the exposed tail of an absorbable barbed V-loc™ (Covidien™, Mansfield, MA, USA) suture used during the myomectomy was identified as the nidus of the small bowel obstruction. While barbed-suture-related bowel obstruction is a known rare complication that is well described in the general surgery literature, it is less documented in gynecological surgery literature. We anticipate the risk to be higher after multiple myomectomy, as postoperative contracture of the uterus can cause protrusion and exposure of the barbed suture tail. Though barbed suture can be safely used for hysterotomy closure during myomectomy, surgeons who opt to use barbed suture during myomectomy should be aware of this potential complication, take intra-operative measures to reduce the risk of postoperative tail protrusion and maintain a high index of suspicion for bowel obstruction in the immediate postoperative period.

Introduction

A barbed suture is a surgical suture that features unidirectional barbs oriented in the opposite direction of the needle, which holds the suture in the tissue and prevents backsliding and loosening. The suture was first patented in 1964 and is now widely used in abdominal and gynecologic surgery [1,2]. One of its main advantages is that it avoids the need for laparoscopic knot tying, which requires a high level of skill and can present a barrier to minimally invasive approaches to surgery [2-4]. In gynecologic surgery, one of the common applications of barbed suture is the closure of hysterotomy incisions during myomectomies. When compared to conventional sutures, it has been shown to shorten the time it takes to close a uterine incision, as well as reduce blood loss and subsequent need for postoperative transfusion [5,6].

However, using a barbed suture is not without risk, as exposed barbed suture tails can cause bowel obstruction via mechanical obstruction and inflammation in the postoperative period. This complication is rare but well documented in

abdominal and pelvic surgery literature, with cases reported after gastrectomy [7], gastric bypass [8], small and large bowel surgery [9], hernia repair [10], hysterectomy [11], pelvic organ prolapse surgery [12], and myomectomy [13]. Here, we present a case of barbed-suture-related small bowel obstruction after abdominal myomectomy, followed by some suggestions to mitigate this risk.

Case report

The patient is a 37-year-old G2P1102 female with a history of abdominal myomectomy via midline vertical incision sixteen years prior who presented with a recurrence of abnormal uterine bleeding. Pre-operative imaging demonstrated a recurrence of uterine leiomyomas. She underwent a repeat abdominal myomectomy via Pfannenstiel incision, and sixty uterine leiomyomas were removed. Absorbable 2 - 0 and 0 V-loc™ sutures were used for hysterotomy closure during the procedure. She developed nausea and failed to pass flatus by postoperative day two, and an imaging workup was initiated. CT scan demonstrated dilation of the small bowel with a transition point in the right lower quadrant, indicative of

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small bowel obstruction, and a nasogastric tube was placed on postoperative day three. She subsequently underwent a gastrografin challenge [14] on postoperative day five, in which contrast did not progress past the obstruction, representing a failure of conservative management. The decision was made to return to the operating room on postoperative day six for a diagnostic laparoscopy with General Surgery and Minimally Invasive Gynecologic Surgery. Given the multidisciplinary approach, the patient was placed in a dorsal lithotomy position and the abdomen and vagina were prepped in standard fashion. A uterine manipulator was placed to assist with the manipulation and identification of the obstruction.

Intraoperatively, numerous adhesions were visualized. Most notably, there was small bowel adherence to the tail of the V-loc™ suture that was used for hysterotomy closure on the posterior right cornua; this was assumed to be the obstruction point as the distal bowel loops appeared decompressed compared to the proximal loops. There was also adherence of the small bowel to the uterus in several additional locations on the posterior uterine corpus, which was suspected to be secondary to inflammation. Adhesions were taken down both bluntly and sharply, and the suture tail was trimmed. Seprafilm® slurry (Baxter International, Deerfield, IL, USA), a sterile hydrophilic adhesion barrier mixed with saline for laparoscopic application, was placed at the end of the case in an attempt to prevent future adhesions.

Images show the pre-operative uterus with multiple large leiomyomas on MRI (Figure 1), the bowel adhered to the V-loc™ suture on the posterior uterus at the lateral aspect of the hysterotomy closure (Figure 2), additional points of bowel adherence to the uterus (Figure 3), as well as the tail of the V-loc™ suture that was cut prior to the completion of the case (Figure 4).

Discussion

An exposed barbed suture presents a potential adhesion point that could lead to a small bowel obstruction. A 2021 review of all case reports of barbed-suture-related bowel obstruction over a 9-year period found myomectomy to be the second most common surgery associated with this

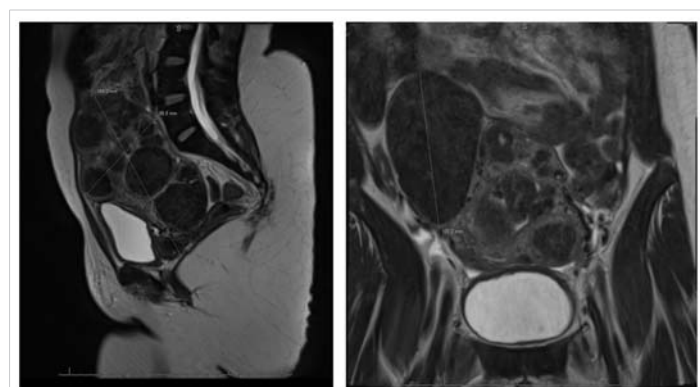


Figure 1: MRI imaging of pre-operative uterus with multiple large leiomyomas.

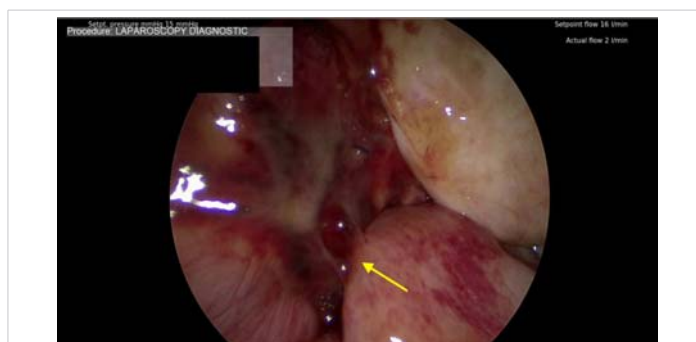


Figure 2: Point of bowel adherence to the V-loc™ suture.

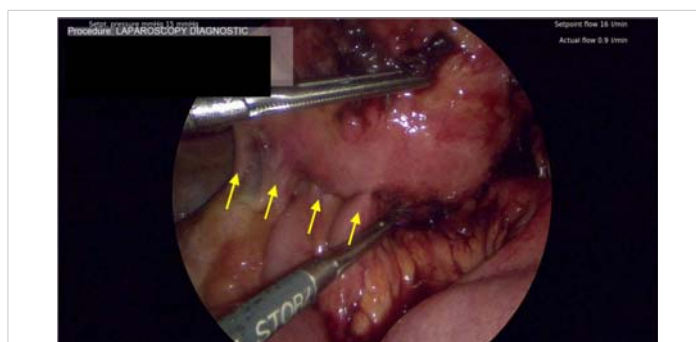


Figure 3: Additional bowel adhesions along the hysterotomy site.

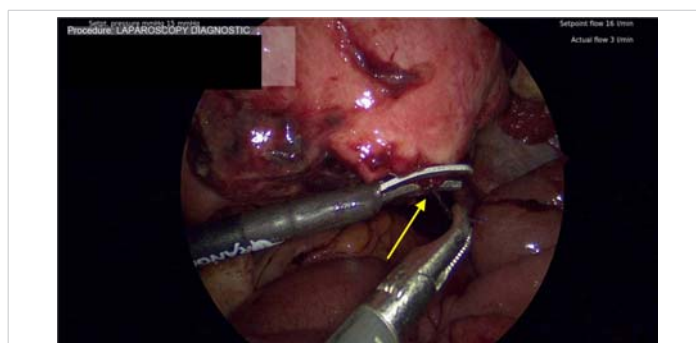


Figure 4: Trimming the exposed tail of the V-loc™ suture.

complication (after hernia repair) [13]. This is likely due to the fact that the uterus undergoes post-myomectomy contracture around the hysterotomy site in the immediate postoperative period [13]; this contracture can cause protrusion of the barbed suture tail, thus conferring an elevated risk of tail exposure after myomectomy. The risk for our patient was high, given that sixty uterine leiomyomas were removed via multiple hysterotomy sites. Special care should be taken to prevent suture tail protrusion by cutting the tail as short as possible against the serosa [4,8,14]. As an additional precaution against tail protrusion, we recommend closing the serosa over the hysterotomy with a running baseball stitch to bury the tail and running the suture back one to two stitches in the opposite direction prior to cutting the suture to prevent suture slippage [13,15]. Finally, placing a physical barrier over the hysterotomy sites (such as oxidized regenerated cellulose sheets) may decrease surrounding inflammation and adhesion formation [4,13,15]. In this case report, given that re-operation occurred several days after the initial myomectomy,



it was assumed that the uterus was fully contracted, and the suture tail was trimmed flush with the uterine wall to prevent further protrusion and obstruction.

Conclusion

Though barbed suture can be safely used for hysterotomy closure during myomectomy, it does carry the risk of postoperative small bowel obstruction. Surgeons who opt to use barbed suture during myomectomy should include this complication in the informed consent process, take intra-operative measures to reduce the risk of postoperative tail protrusion and maintain a high index of suspicion for bowel obstruction in the immediate postoperative period should the patient become symptomatic.

Ethical considerations

Verbal consent was obtained from the patient for this case report.

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