


# “It just wasn’t right down there”: Surgical treatment of small bowel evisceration after hysterectomy with indocyanine green angiography, a case report

SAGE Open Medical Case Reports  
Volume 12: 1–4  
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DOI: 10.1177/2050313X23122211  
journals.sagepub.com/home/sco



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## Abstract

This is a case of a 70-year-old female with small bowel evisceration through vaginal cuff dehiscence 14 months after hysterectomy. She presented with a loop of ileum herniated through the vagina. The bowel was irreducible and she was taken to the operating room for exploratory laparotomy, reduction of herniated bowel contents, and repair of vaginal cuff. During surgery, the eviscerated bowel had questionable viability and indocyanine green angiography was used to assess perfusion. After the repair of the vaginal cuff, indocyanine green angiography was performed and the bowel was saved from resection. In the discussion, light is shed upon the rarity of vaginal cuff dehiscence and the few cases of small bowel evisceration after a dehiscence. Possible causes of the evisceration, updates to technique, and recommendations for management are also discussed. The ultimate recommendation is for use of indocyanine green angiography in assessment of intestinal viability during surgical exploration for small bowel evisceration.

## Keywords

Surgery, obstetrics/gynecology, vaginal cuff dehiscence, indocyanine green angiography

Date received: 20 April 2023; accepted: 4 December 2023

## Introduction

This is a case of an elderly female with small bowel evisceration through vaginal cuff dehiscence. The bowel was irreducible at bedside and she was taken to the operating room for emergency surgery. At the time of surgery, the eviscerated bowel had questionable viability and indocyanine green angiography (IGA) was used to assess perfusion. After the repair of the vaginal cuff and pelvic floor, IGA was once again performed and the bowel in question was shown to be well perfused, saving that bowel from resection. Assessing bowel viability intraoperatively is vitally important in preventing postoperative complications such as leak, sepsis, reoperation, and even mortality. A variety of methods exist for determining bowel viability but there is no consensus as to which test consistently reduces postoperative complications in the acute care setting.<sup>1–3</sup> In this case IGA was used to the benefit of the patient, and therefore suggests its usefulness in the emergent general or gynecologic surgery setting when tissue viability is in question.

## Case

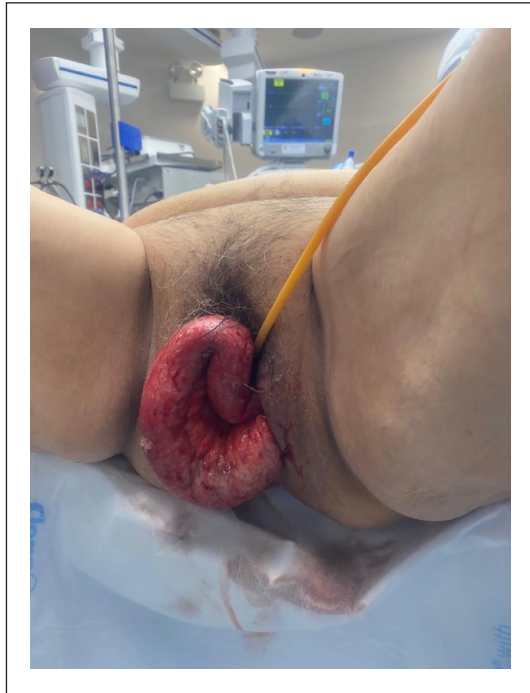
Our patient was a 70-year-old woman with a past medical history of Parkinson’s disease and hypertension, and a past surgical history of a robotic-assisted laparoscopic hysterectomy with bilateral salpingo-oophorectomy for stage 1A endometrial cancer 14 months prior to presentation. She was transferred to our facility from an outside hospital. She stated she was urinating at home and felt something protruding from her vagina. She saw minimal blood on the toilet paper but had no active bleeding. She reported no recent sexual intercourse or constipation, did report heavy lifting in the past but not prior to presentation, and denied

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**Figure 1.** Intraoperative photo of ileal loop evisceration through vaginal cuff prior to operative reduction.

recollection of other recent activities that would increase intra-abdominal pressure. She had no nausea or vomiting. Her last bowel movement was on the day of presentation and her last flatus was also earlier that day. Her vitals were all within normal limits. Her abdominal exam was unremarkable; however, on gynecologic exam she had a loop of small bowel protruding through her vagina. It was edematous and erythematous but without obvious signs of ischemia or necrosis. Laboratory studies were unremarkable and a CT scan done at the outside hospital showed prolapse of a loop of ileum through the vagina without intra-abdominal bowel dilatation.

Initial management included an attempt to reduce the herniated small bowel on the floor using sterile gloves and gentle pressure, but this was unsuccessful. The bowel was then wrapped in saline-soaked gauze to await surgical reduction. The patient was prepared for the operating room with placement of a nasogastric tube, a Foley catheter, and intravenous maintenance fluids. She signed written informed consent for all procedures and for use of her case for medical research purposes.

In the operating room the bowel was edematous and reduction attempts were unsuccessful (Figure 1). The general surgery team performed a lower midline laparotomy incision. With assistance from the gynecological team vaginally, the bowel was reduced back into the abdominal cavity. As viability was in question, IGA was used to assess perfusion. Initially, the bowel did not appear as bright green as the surrounding structures, thus indicating compromised perfusion.

The gynecology team then assessed for evidence of recurrent malignancy on the edges of the cuff dehiscence and repaired the vaginal cuff in two layers. In addition, the uterosacral ligament remnants were plicated across the posterior peritoneum, suspending the vaginal apex, and the round ligaments were identified and secured to the ipsilateral vaginal apices, repairing the pelvic vault.

Upon their completion, the general surgery team reassessed the bowel. It was found to be less edematous and had active peristalsis. IGA was once again performed and this time the bowel in question was equally as bright green with perfusion as the adjacent uninvolved bowel. The decision was made to not resect any intestine.

The patient followed an uncomplicated postoperative course and was discharged on postoperative day 3. Upon follow-up 2 weeks later, she was recovering well from surgery and did not have any evidence of bowel dysfunction. Her pathology from the vaginal cuff resected in surgery showed mild acute and chronic inflammation without signs of malignancy. Upon follow-up with her gynecologist, her repaired vaginal cuff and pelvic floor were also healing well. After all postoperative follow-up courses were completed, she commenced routine follow-up with her primary gynecologist.

## Discussion

General surgeons are familiar with rectal prolapse and gynecologists deal with vaginal prolapse regularly, but small bowel evisceration due to a vaginal cuff dehiscence is an unusual intersection of general surgery and gynecologic surgery practice. Vaginal cuff dehiscence after hysterectomy is rare. In a large retrospective study, the incidence ranges from 0.13% to 0.64% depending on the type of hysterectomy.<sup>4</sup> The risk factors are related to increased age, laparoscopic, or robotic surgical technique, early intercourse resumption, poor wound healing, and increased intra-abdominal pressure.<sup>5-8</sup>

However, the incidence of small bowel evisceration through vaginal cuff dehiscence is exceedingly rare. There are isolated case reports in the literature. These case reports document that each patient's case is unique and management is individualized. It is recommended to counsel women after hysterectomy to delay coitus for 3 months and refrain from causing undue increased intra-abdominal pressure.<sup>3</sup> For premenopausal women, most vaginal cuff dehiscence occurs within the first year after surgery, however for postmenopausal patients it may occur months to years after surgery. However, unlike the more common pelvic organ prolapse at such a delayed presentation, this patient's dehiscence was associated with the small bowel.<sup>9</sup>

It was considered that perhaps the history of malignancy was a factor in this patient's case of cuff dehiscence and small bowel evisceration, due to potential malignant invasion and subsequent tissue breakdown. However, the

pathology report confirmed only inflammation and no signs of recurrence. Therefore, attention was turned toward surgical technique. Perhaps heavy cauterization of tissue prior to suturing the vaginal cuff could lead to poor healing and higher rates of necrosis at the suture line, as has been speculated in the literature.<sup>8,10</sup> Additionally, this patient was of increased age and postmenopausal patients are at higher risk for bowel evisceration after vaginal cuff dehiscence.<sup>9</sup> A factor of hypoestrogenism and atrophy from her postmenopausal state could lead to poor wound healing after her original surgery, eventual laxity of the vault, or decreased vascularity of the cuff.<sup>11</sup>

Prevention of the unusual but severe complication of small bowel evisceration after vaginal cuff dehiscence would therefore rely on acknowledging the risk factors for dehiscence and attempting to mitigate preventable factors. This involves ensuring that viable tissue is approximated to close the vaginal cuff, decreasing the thermal spray of the cauterization, and considering a multiple layer approach to vaginal cuff closure.<sup>12</sup> Additionally, patients should receive a bowel regimen of stool softeners, fiber, and fluids to ensure regular bowel movements throughout the postoperative period from their hysterectomy and counseling to continue to achieve regular bowel movements for the rest of their life. Those at highest risk should be counseled to intend for a longer delay in coitus after hysterectomy and avoid other instances of increased abdominal pressure.

In terms of acute interventions, stabilization of the patient and emergent surgery is indicated in management of this complication.<sup>5,9</sup> We suggest Foley catheter insertion for bladder decompression, nasogastric tube insertion for gastrointestinal tract decompression, and placement of saline-soaked gauze for the herniated bowel. Immediate surgical intervention for reduction of the bowel and closure of the vaginal cuff should then be performed. It has been noted that there are cases in which bowel may be reduced and the cuff may be closed transvaginally or laparoscopically if there is no sign of bowel necrosis or peritonitis. Had this patient had amenable anatomy to allow for bowel reduction on the floor prior to the operating room, she may have been a candidate for a less invasive approach to repair.<sup>13</sup>

In addition to repair of the vaginal cuff, it should be noted that bowel viability should always be assessed during the emergent operation, with the assistance of a general surgeon. Any questions of intestinal viability should be thoroughly evaluated for a successful outcome to decrease necrosis, anastomotic leak, or stricture that could cause significant morbidity or mortality. Clinical appearance is a poor and subjective assessment as peristalsis can persist in ischemic bowel, and intraoperative Doppler can be of limited value.<sup>1,2</sup> Therefore, if intestinal viability is in question, IGA has shown to be a useful adjunct, especially in this case. It allowed for multiple reassessments of potentially ischemic and questionable bowel and provided the opportunity to

forgo bowel resection for this patient. This is consistent with literature from reviews on IGA use in planned gastrointestinal surgery and in mesenteric ischemia, and our use in this case is encouraging for continued application of this technique in acute care surgery.<sup>1,3</sup>

## Conclusion

In conclusion, the case of small bowel evisceration after vaginal cuff dehiscence is a rare phenomenon. Management of this case should include discussion of mitigating risk factors of vaginal cuff dehiscence, early operative intervention, and multiple reassessments of intestinal viability. The use of IGA has far-reaching benefits in general surgery and can produce positive outcomes for patients even in emergency situations. Additionally, an area for future exploration could be considered in assessment of the tissue of the vaginal cuff during a hysterectomy as a means to potentially prevent these complications. The use of IGA was a favorable choice in our case, and our patient has recovered well from this very rare pathology without significant complication. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors. The authors declare no conflict of interest in preparing this article.

## Acknowledgements

Ascension Health System. Saint Joseph Hospital Obstetrics and Gynecology Department. Dr. Baqir Jakvani MD, Obstetrics and Gynecology. Our patient.

## Author contributions

The primary and secondary authors provided the bulk of the contribution, with review by the third and fourth authors.

## Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## Ethics approval

Our institution does not require ethical approval for reporting individual cases or case series.

## Informed consent

Written informed consent was obtained from the patient(s) for their anonymized information to be published in this article.

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