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A Technique for Re-siting a Midline Transverse Loop Colostomy

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Ovarian cancer is often diagnosed at an advanced stage, with 47 % of cases at stage III and 36.9 % at stage IV (Huepenbecker et al., 2021). Optimal cytoreductive surgery is the key determinant of survival for patients with stage III or IV ovarian carcinoma (Bristow et al., 2002). Achieving complete cytoreduction may require bowel resections, with colorectal resection being the most common type performed (Gillette-Cloven et al., 2001; Hoffman et al., 2005).

Advanced stages of ovarian cancer are usually associated with extensive peritoneal carcinomatosis and can lead to tethering of the bowel loops leading to bowel obstruction. In such cases, surgical intervention may be necessary to relieve symptoms and manage complications, with colostomy formation being one surgical technique used. When full bowel mobilization is not feasible, the stoma is sometimes matured at the site with the least tension.

In this case, an exploratory laparotomy revealed extensive peritoneal carcinomatosis, along with tethering of both the small and large bowel mesentery, making full mobilization of the colon not possible. As a result, the surgical team performed a midline transverse loop colostomy to manage the obstruction and improve patient comfort.

Following three cycles of neoadjuvant chemotherapy, the patient was scheduled for interval debulking surgery. However, re-siting a midline colostomy introduces specific challenges, particularly in maintaining a sterile surgical environment to minimize infection risks and other complications.

Retaining the colostomy in its original midline position posed a significant risk of wound infection, which could complicate the surgical outcome and delay recovery. The overall surgical site infection (SSI) rate in ovarian cancer can be as high as 20 % (Lippitt et al., 2017). This risk would likely increase further if the stoma was retained in its midline position, near the primary incision. The proximity of the stoma to the surgical site would increase the risk of wound infection due to the potential for bowel contents to spill and contaminate the area.

Traditionally, instruments like Babcock clamps are used to maintain stoma integrity throughout the procedure. However, this method has its limitations, as it may not provide a complete seal, further increasing the risk of bowel content spillage and contamination of the surgical field, leading to an increased risk of infection.

Given the heightened risk of infection in these scenarios, we developed a novel five step technique for safely re-siting a midline colostomy during cytoreductive surgery, addressing these challenges while reducing the risk of complications.

1. Step 1: Elevation of skin edges

The first step involves meticulously elevating and approximating the skin edges surrounding the stoma. With the aid of fine instruments, the skin is elevated to enhance visibility, and a continuous suturing technique is employed to align the skin edges, making sure not to include any bowel with each bite; this ensures minimal trauma to surrounding tissue. This process is repeated till the opening of the stoma is closed. By closing the stoma at this stage, we create a barrier that helps maintain a sterile environment throughout the surgical procedure.

2. Step 2: Creation of an elliptical incision

An elliptical incision is then created around the closed stoma, with its upper and lower ends seamlessly extending from the midline laparotomy. This incision should be precise, as it will facilitate dissection of the stoma without damaging underlying structures. The elliptical shape allows for easier approximation of the midline laparotomy incision.

3. Step 3: Dissection to free the stoma

Next, dissection is performed until the stoma is completely free from its original attachment. The bowel is gently retracted to one side, providing a clear view for the meticulous dissection and complete detachment of the stoma from the anterior abdominal wall. This step requires careful attention to ensure that the surrounding tissue remains intact. Freeing the stoma without trauma is crucial for minimizing postoperative complications and ensuring the viability of the stoma at its

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new site.

4. Step 4: Repositioning the stoma

Once the stoma is free, it is then repositioned at the new designated site. The skin at the new stoma site is excised in the standard fashion. The previously closed stoma surface is carefully trimmed, revealing the bowel opening. The surgical team must ensure that the new site is adequately prepared to receive the stoma, considering factors such as blood supply and the potential for tension on the abdominal wall.

5. Step 5: Maturation of the stoma opening

Finally, the skin edges of the stoma are shaved. The stoma opening is matured, ensuring proper alignment and functionality. This maturation process is critical for ensuring that the stoma functions effectively and remains free of complications such as stoma retraction or prolapse.

The decision to reverse a stoma during interval debulking surgeries is typically made at the end of the procedure, after a thorough exploration and dissection of the pelvis and abdomen, ensuring that all detectable tumors have been successfully resected. Our described approach helps maintain a sterile surgical field, minimizing the risk of contamination throughout surgery until a definitive decision is reached.

This novel technique is particularly valuable in case where the stoma must be preserved to protect a very low anastomosis, in cases involving irradiated fields, multiple anastomotic sites, or patients with potential healing complications at the anastomosis site. Among patients who have these factors the stoma's current midline position poses a risk of wound contamination, necessitating employing this technique for relocation. In this specific case, the patient underwent a distal bowel resection, and the stoma was preserved to protect a very low distal re-anastomosis.

In conclusion, by employing this five-step technique that prioritizes the integrity and sterility of the surgical field, we have been able to enhance the safety and efficacy of the procedure.

6. Consent

Informed consent was obtained.

CRediT authorship contribution statement

Nourah Ibrahim: Writing – original draft, Methodology, Conceptualization. **Alon D. Altman:** Writing – review & editing, Supervision, Methodology.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.gore.2024.101668.

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