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A ten year experience of cecal neovagina procedures for the restoration of sexual function on a gynecology oncology service

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HIGHLIGHTS

- Cecal neovagina has excellent outcomes, with 86% of patients sexually active after one year and 79% reporting intercourse as "pleasurable".
- Most common adverse outcome is mucusy discharge, though at one year, only one patient required a pad to stay dry.
- Cecal neovagina is a safe, efficacious, alternative for vaginoplasty in women with loss of sexual function due to gynecologic malignancy.

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ABSTRACT

Objective. We seek to describe the procedure, complications, and functional outcomes of utilizing the cecum and ascending colon for creation of a neovagina on a gynecologic oncology service.

Methods. A search of all the cases on the gynecologic oncology service over a ten year period yielded fourteen cases of cecal neovagina. A retrospective chart review was performed. Post-operatively, each patient was evaluated at regular intervals. At each visit, they were asked standardized questions, a physical exam was performed by the same provider, and they were advised to follow a uniform regimen of physical rehabilitation.

Results. Eight of the fourteen cases were performed for surgical stricture or vaginectomy, while the indication for the other six patients was radiation fibrosis. The patients were followed for a median length of 37 months. The percentage having intercourse was between 86% and 100% over the course of the first year. Thirteen of the fourteen patients reported intercourse as "comfortable", eleven of the fourteen stated that intercourse was "pleasurable", and seven patients reported having orgasms. The major reported complaint was mucusy discharge, which all patients reported as moderate to severe for the first six weeks. Over time, this improved, and only one patient required the use of pads at twelve months. There were no intestinal anastomotic leaks in the group.

Conclusions. The functional outcomes in our case series show that the cecal neovagina is a safe, uncomplicated, and viable option for those patients who have lost sexual function due to stricture formation or surgical removal of the vagina.

Introduction

As advances in treatment for women with gynecologic malignancies are improving survival, it is becoming increasingly important to address issues of survivorship and quality of life. Pelvic surgical and/or radiation therapies may leave women with impaired sexual function [1,2]. Women who have surgical extirpation of the vagina, or radiation-induced vaginal stenosis or fibrosis may benefit from the surgical creation of a neovagina.

While there are many options for neovagina procedures described in the literature, most are performed for congenital absence of the vagina — Mayer Rokitansky Kuster Hauser syndrome. These procedures are most commonly performed on a non-gynecologic oncology services and generally use relatively non-invasive techniques such as dilators, McIndoe procedures with split thickness skin grafts, or procedures using the pelvic peritoneum, amnion or buccal mucosa [3–7]. In the gynecologic oncology experience, there seems to be a preference toward myocutaneous flaps in the construction of neovaginas after exenterative procedures [8–13].

The use of bowel segments to create a neovagina has been described in the literature for over a century [14]; however, most utilized small bowel segments or less commonly the sigmoid colon. Literature describing the use of the cecum and ascending colon for neovaginal construction is sparse and without significant follow-up [15–17]. Our report presents the findings of a ten year experience using the cecum

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and ascending colon for the construction of a functional neovagina on a gynecologic oncology service.

Methods

A retrospective review of procedures performed on the gynecologic oncology service over a ten year period from 5/1/2002 to 4/30/2012 yielded twenty-six cases with the word "neovagina" in the procedure. Of these, fourteen cecal neovagina procedures were identified and selected for subsequent analysis. All procedures were performed by the same gynecologic oncologist (D.F.S.) assisted by either a third year gynecologic resident (PGY-3) or a certified physician assistant (PA-C). Operative reports, progress notes, and office encounters were evaluated retrospectively.

Surgical procedure –

A similar technique was used for each case using a combined abdominal and perineal approach. If any vaginal tissue was present, a completion-vaginectomy was performed to resect the vagina including the labia minora prior to proceeding to the vaginal reconstruction procedure. Using a linear stapling device, the terminal ileum was transected approximately 10 cm proximal to the cecum. The appendix (if present) was resected and its stump was sutured with 3-0 absorbable suture. The 10 cm segment of terminal ileum was resected at its junction with the cecum with care to preserve the ileocolic artery. The 10 cm segment was discarded. The cecotomy was closed with 3-0 absorbable suture in one layer. This wasted 10 cm segment of ileum provides for greater mobilization of the cecum and ascending colon on its mesenteric pedicle. A segment of cecum and ascending colon measuring 15 cm from the appendiceal stump was isolated and transected using a linear stapler. Its mesentery, including the arterial supply from both the ileocolic artery and right colic artery was preserved.

Once the segment was isolated it was rotated counter-clockwise 180° to drop the distal end deep into the pelvis (Fig. 1). Depending on the patient's anatomy and the effects of radiation therapy on the mesenteric tissue, it was occasionally necessary to sacrifice the right colic artery to provide for greater ease of rotation. If that was considered, then prior to transecting the right colic artery it was temporarily clamped for 5–10 min with a bull-dog clamp to test the vascular tenacity of the ileocolic artery alone. Of the 14 neovagina procedures analyzed, 9 required sacrificing of the right colic artery for tension-free rotation of the bowel segment on its ileocolic blood supply. Although, in our experience, there have been no visible signs of decreased vascularization when the right colic artery is clamped, we recommend this practice as a precaution to ensure viability of the neovagina.

The distal end of the isolated colonic segment was then grasped with Babcock clamps through the introitus (or opening in the pelvic floor). The distal staple line was resected and the edges of the ascending colon were sutured to the vulvar skin using interrupted 3-0 absorbable suture in 360° (Fig. 2). Since the labia minora were removed at the time of the vaginectomy, the edges of the neovagina are slightly exteriorized to the labia majora — a step that helps prevent introital stenosis. Because the cecum and ascending colon segment provides a natural lumen, no vaginal form or dilator is required intraoperatively.

Once a tension-free anastomosis between the neovagina and the vulvar skin is achieved, attention was turned toward re-establishing continuity of the intestinal tract. A stapled functional end-to-end reanastomosis was performed to create a tension-free ileo-colic anastomosis in the usual fashion. Staple lines and mesenteric internal hernia rings were closed with interrupted suture.

Postoperative follow-up

Close postoperative follow-up for the first 3 months was scheduled in order to observe postoperative suture lines, ensure that there was no evidence of stenosis at the neo-introitus, and to provide an emotional support system for the patient and her significant other as they resumed sexual relations. At each office visit, suture lines were examined and a medium-to-large vaginal dilator was inserted through the neo-introitus into the neovagina to demonstrate its capacity and comfort. Office visits were scheduled weekly for the first two weeks. Office visits were then extended to every other week for the next four weeks. At this point the introital suture lines were confirmed to be intact and the patient was instructed to use the dilator at home at least once a day. At six weeks, a speculum exam was performed to evaluate vaginal depth and capacity and the patient was asked to resume sexual relations. The patient was then seen every 2–4 weeks (depending on her level of comfort) until the end of the 3-month postoperative period at which time a speculum exam was performed. Subsequent visits did not include the use of a vaginal dilator and were scheduled at 6, 9, and 12 months at which time speculum examinations were performed. After the 12-month postoperative visits, patients were seen annually.

A standard set of questions was asked at each office visit to evaluate functionality and comfort. These questions included frequency of intercourse; comfort with intercourse; orgasm or pleasurability at intercourse; and neovaginal bleeding or mucus production. The questions

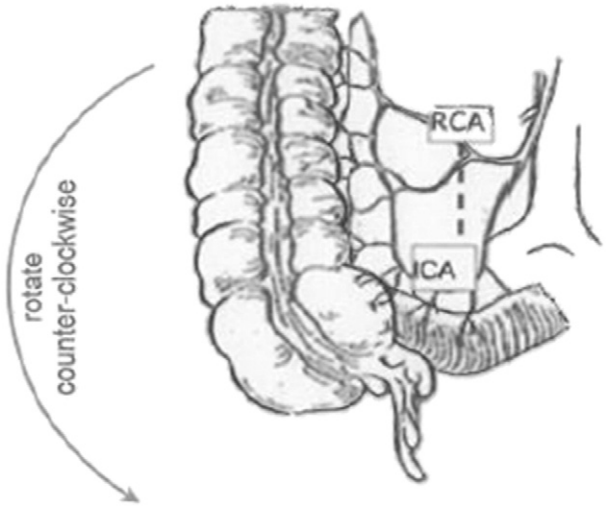

Fig. 1. Cecal segment isolated on its vascular pedicle with the 10 cm segment of terminal ileum intact. Preparing to be rotated 180° counterclockwise.

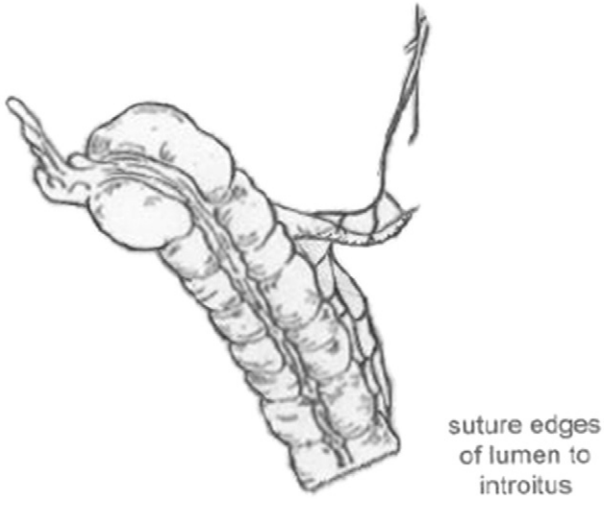

Fig. 2. Cecal segment after rotation, in the proper orientation prior to being sutured to the introitus. In this illustration the 10 cm segment of ileum has been resected leaving only a fold of its mesentery with its vasculature intact.