Preoperative Considerations for the Ostomate

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Abstract

Keywords

- ▶ stoma
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Intestinal stomas significantly impact patients' quality of life. Stoma-related complications are common, but even without complications, patients are faced with new challenges in stoma management and daily activities. Preoperative patient education and stoma site marking, in conjunction with conscientious surgical stewardship, are key to patient satisfaction and successful operative outcomes.

The most fearsome entity facing many preoperative colorectal surgery patients is the possibility of a stoma, which often surpasses the concern of death from surgery. Patient misunderstanding, societal and cultural stigmatization, and self-ostracization often render the impact of stoma creation more substantial than the underlying culprit surgical disease. Moreover, the psychological impact of a stoma can outlast the physical pain associated with surgery for years. Unfortunately, to date, no social media campaign has been implemented to promote awareness and charity for patients suffering silently with stomas under their clothes. The surgeon, who frequently plays technician, social worker, and therapist for new ostomates, can play a larger role in physically and mentally preparing patients for a stoma. While preoperative measures may not result in avoidance of a stoma, proper patient preparation can profoundly impact the ostomate's well-being and decrease postoperative complications and resource utilization. While national quality initiatives continue to focus on facility-level process improvement measures, the simplest and most humane medical interventions, those involving patient education and activation, are sadly often overlooked.

The Impact of Stoma Creation on the Individual and Health Care System

Stoma surgery has been colloquially named the “secret surgery” owing to embarrassment of living with and caring

for a stoma. However, a remarkable number of patients have stomas. More than 750,000 people in the United States are living with an ostomy and more than 130,000 stomas are created annually to treat a variety of diseases.¹ To contextually orient the magnitude of ostomates, there are more stomas created annually than estimated incident cases of much more publicized diseases such as colon cancer (95,270), leukemia (60,140), and melanoma (76,380) in 2016.² The average new ostomate is 68 years old, and with an aging population, the prevalence of individuals living with a stoma is anticipated to increase.³

Stoma creation, while potentially a lifesaving surgical procedure, is unfortunately associated with high rates of short- and long-term complications. Up to 72% of patients experience stoma-related complications.⁴ In a systematic review of stoma-related complications, the most prevalent complications at 1 year included peristomal skin problems (43%), parastomal hernia (40%), stoma retraction (24%), stoma prolapse (10%), and stoma necrosis (7%).⁴

Many more elusively defined psychosocial complications, including pouch leakage, odor, pouching difficulty, clothing incompatibility, poorly localized stomas, and requisite diet modifications, further compound the impact of the stoma.⁴ Any surgeon who has recently created a stoma understands that there are many more ethereal complications such as subclinical anxiety, depression, and agoraphobia seen in most new ostomates. Recent unpublished data from an American College of Surgeons (ACS) survey reported that recently

discharged new ostomates are poorly equipped with the education and skills to perform their own stoma care. In the ACS survey, 29% of recently discharged new ostomates could not empty a pouch and 56% could not apply a new pouch independently. As a result, 55% of surveyed patients admitted to peristomal skin excoriation, 40% experienced daily pouch leakage/soilage, 47% felt depressed/saddened, and 44% had anxiety surrounding stoma care. When the sheer number of ostomates is multiplied by the frequency of tangible and intangible complications, the holistic effects of stomas can tax patients, providers, and the health care system as a whole.

While even a perfect stoma can distress a patient, risk factors for problematic stomas have been identified. Not surprisingly, stomas created under emergency conditions are associated with higher complication rates than those constructed electively.⁵⁻⁹ Additionally, surgical technique impacts complication rates. The finished stoma must protrude from the surface of the skin far enough to enable pouch apparatus adhesion and seal through liquid stoma output. Poorly protruding stomas (e.g., those < 10 mm from skin level to stoma tip) are associated with early complications and especially pouch leakage.^{5,7} This observation has led some to suggest that ileostomies should ideally be fashioned to protrude at least 2 cm from the skin, whereas colostomies should be created to protrude at least 1 cm from the skin. Finally, stoma type (e.g., ileostomy vs. colostomy, loop vs. end stoma, and sigmoid colostomy vs. transverse colostomy) impacts complication profiles. Creation of a loop ileostomy is a risk factor for early complications owing to high stoma outputs and resultant dehydration, electrolyte abnormalities, peristomal dermatitis, and pouching difficulties.^{5,7}

Undoubtedly, not every stoma-related complication can be avoided with preoperative preparation alone (e.g., parastomal hernia, prolapse, necrosis), but many can. Proper understanding of the aforementioned risk factors in combination with conscientious surgical stewardship and partnered stoma care can decrease complications and improve quality of life for ostomates. As such, preparing and caring for stomas are a hallmark of the colorectal surgeon's armamentarium.

Technical Aspects of Stoma Site Marking

Preoperative stoma site marking affords numerous advantages for the surgeon and the patient and, as a result, is recommended by both the American Society of Colon and Rectal Surgeons (ASCRS) and the Wound, Ostomy and Continence Nurses Society.^{7,10} Stoma siting should ideally be done preoperatively in the outpatient setting, which enables the patient to actively participate in a low-stress environment whereby promoting a patient-centered approach to stoma creation.¹⁰ **Fig. 1** depicts strategies for successful stoma siting. The patient should completely remove any clothing covering the abdomen (**Fig. 1A**). Initially, the patient should be surveyed in the sitting, standing, bending forward, and supine positions to evaluate the abdominal contour and body habitus. Attention to physical characteristics that may affect stoma pouching should be noted: large or protruding abdomen, abdominal folds, creases, scars, ventral hernias, waist-

line and beltline, umbilicus, pendulous breasts, and bony prominences including the rib cage and iliac crest.¹⁰ Consideration must also be given to patients' vision, finger dexterity, occupation, lifestyle, clothing style preferences, level of independent mobility, and preference for stoma location. The rationale, type, and number of stomas to be constructed should also be considered. If multiple stomas are planned (e.g., urostomy and colostomy in conjunction with a pelvic exenteration), attention to siting on different horizontal planes will enable proper fitting of an ostomy belt, should one be required. If the number, type, or final stoma location is uncertain, multiple sites can be marked (**Fig. 1D**) and ranked in order of preference, affording the surgeon intra-operative options should unexpected findings arise.

As a preliminary guide to the stoma siting practitioner, the "ostomy triangle" should be identified, bounded by the anterior superior iliac spine laterally, the pubic tubercle inferomedially, and the umbilicus supramedially.¹¹ The geometric center of the triangle initially guides the clinician to a preliminary stoma site. Identification of the rectus abdominis muscle should be performed (**Fig. 1B**), as siting the stoma trephine within the rectus abdominis muscle may decrease the incidence of parastomal herniation,^{10,12,13} although this has been debated in the literature.¹⁴

Following preliminary stoma site identification, the skin around the target site should be thoroughly inspected to ensure suitability for stoma creation. A 2- to 3-inch perimeter of healthy skin should surround the target stoma site. The stoma should sit at least 2 inches away from scars, skin creases, abdominal folds, or the umbilicus, as these may interfere with the seal between the pouching apparatus and skin and result in leakage, excoriation, and a problematic ostomy.¹⁰ Bony prominences such as the anterior superior iliac spine, costal margin, or pubic symphysis should be avoided as these, too, may hinder optimal stoma appliance application and seal (**Fig. 1C**). The practitioner should ensure that the preliminary stoma site is directly visible to the patient so that the patient will be able to both manage the stoma and assess the surrounding skin. The patient should then be assessed again in multiple positions (sitting, standing, bending forward, and supine) to ensure that the preliminary stoma site remains visible to the patient and is devoid of abdominal folds, bony prominences, beltline, pendulous breasts, or hernias, which may only be appreciated after evaluation of multiple patient positions.

Special attention should be paid to stoma creation in the obese patients with a protuberant abdomen. Creation of a stoma more superiorly on the abdominal wall through the supraumbilical rectus abdominis muscle may be more advantageous for the patient, enabling easier visualization of the stoma as well as stoma appliance manipulation.^{15,16} Since the supraumbilical pannus is usually thinner than the infraumbilical portion, stoma creation is typically easier at the supraumbilical location in an obese patient.¹⁶

Once the preliminary stoma site has been reconfirmed as suitable by both the patient and the practitioner, the site should be marked. This can be done in several ways. The site can be marked with an indelible marker or tattooed with a

Fig. 1 Preoperative stoma citing. (A–D) Technical aspects of conscientious stoma citing. (A) Clothing overlying the abdomen is removed and the patient is evaluated in the sitting position with attention to the abdominal contour, body habitus, bony prominences, scars, abdominal folds, waistline, and beltline. Attention to siting the stoma within the rectus abdominis muscle (B) and away from bony prominences (e.g., rib cage) (C) will reduce hernia formation and facilitate successful stoma appliance application. (D) If there is the potential for creation of multiple stomas, attention to siting the stomas on different horizontal planes is essential.

fine gauge needle (26 gauge) and India ink. If an indelible marker is used, the site should be covered by an occlusive transparent film dressing to protect the marking from washing away during bathing.

Clinical Benefits of Preoperative Stoma Site Marking

Preoperative stoma site marking reduces stoma-related complications.^{9,10,17–20} Bass et al evaluated the effect of preoperative patient education and stoma site marking by enterostomal therapists on postoperative complications.²¹ Early (≤ 30 days) complications were significantly decreased in the group receiving preoperative stoma site marking (23.3%) versus those who did not undergo preoperative stoma site marking (31.6%).²¹ Additionally, the omission of preoperative stoma site marking has been linked to increased stoma-related complications and a “problematic ostomy,” defined as an ostomy that cannot maintain its pouching apparatus or the ability to keep the patient clean and dry for >24 hours without accessories or reinforcement techniques.^{5,7,9,18,19,21}

Preoperative stoma site marking not only decreases stoma-related complications, including pouch leakage and peristomal dermatitis, but also accelerates patient’s pouch

management independence and eases the psychological adjustment of living with and caring for an ostomy.^{17,22} Gulbinene et al evaluated the impact of preoperative education and stoma site marking by an enterostomal therapist on postoperative health-related quality of life (HRQoL) in patients with colorectal cancer.²³ They found that subjects who received both preoperative education and stoma site marking had less stoma-related complications, higher HRQoL scores, better emotional functioning, and fewer gastrointestinal problems compared with those who received preoperative education alone with no stoma site marking. Additionally, Person et al evaluated the impact of preoperative stoma site marking on patients’ quality of life and independence.²⁰ Patients who were marked preoperatively had a statistically significant increase in their quality of life scores as well as independence parameters compared with patients who did not receive preoperative stoma site marking, and these results were independent of stoma type.²⁰

Preoperative Stoma Education

All patients undergoing ostomy surgery require education and counseling both to functionally manage the stoma and to psychologically adapt to living life with a stoma.^{24–26}

A wound, ostomy, and continence nurse (WOCN) is an invaluable educational resource and there is a plethora of evidence of the value that a WOCN can bring to the patient, to their family, and to the surgeon.^{7,17,27} As a result, the ASCRS recommends that ostomy education should have a preoperative and postoperative component and should involve a specialized provider, such as a WOCN, when possible.^{7,10}

The inability to effectively manage one's stoma and the pouching apparatus is well known to result in increased stoma complications and to delay hospital discharge.^{7,17,28–31} Preoperative stoma education by a WOCN, however, decreases complication rates and decreases hospital length of stay.^{7,30} Chaudhri et al evaluated the effect of preoperative intensive community-based education versus traditional postoperative education with regard to time to stoma self-care proficiency, unplanned stoma-related interventions, and cost savings in patients undergoing elective stoma formation.³² Patients in the intervention group received two 45-minute preoperative visits in the community and were taught how to use and change the stoma pouching apparatus with instruction and audiovisual aids. Both intervention and control groups received the traditional postoperative stoma education. Patients in the intervention group demonstrated significant improvements in time to stoma proficiency over the traditional, control group (5.5 vs. 9 days, respectively), had fewer unplanned stoma-related issues requiring intervention, and had a shorter inpatient hospital stay (8 vs. 10 days, respectively). Additionally, there was an average cost savings of \$2,104 (when adjusted for U.S. dollar) per patient in the intervention group.³²

Similarly, Younis et al evaluated the effect of preoperative stoma education on hospital length of stay.³⁰ They found that preoperative consultation with a stoma nurse and preoperative education by way of handling of sample stoma equipment, audiovisual DVD, and practical stoma management exercises resulted in a reduction in hospital inpatient length of stay from 14 days without the educational intervention to 8 days with the preoperative education.³⁰

A lack of preoperative stoma education not only results in increased stoma-related complications, increased hospital length of stay, and an overall increased cost burden on the health care system, but patients receiving inadequate preparatory stoma education often suffer with psychosocial difficulties.²⁵ Waiting for the postoperative period to begin stoma education places the patient and providers at a disadvantage. As accelerated care paths and minimally invasive surgery result in shorter hospitalizations, there is less time to educate new ostomates as inpatients postoperatively. When one accounts for postoperative narcosis, anxiety, and the potentially overwhelming amount of information patients are bombarded with postoperatively, stoma care is often lost in a sea of regulatory paperwork and notices. The preoperative period, which avoids competing with postoperative hindrances, is the optimal time to build a primer of skills and knowledge better suiting the patient. Savvy internists have been heard to say “discharge starts at admission”; however, with stoma education, discharge starts in the preoperative clinic.

Regular contact with a WOCN specialist in the pre- and postoperative setting increases patient confidence in managing their stoma appliance,^{17,33} increases patient quality of life,^{27,34–36} and decreases healthcare resource utilization.^{30,32,37} Danielsen et al explored the effect of a structured patient education program that included a preoperative education session by an enterostomal therapist, stoma site marking, postoperative inpatient enterostomal therapist education sessions following a structured stoma care curriculum, close postdischarge telephone follow-up, and formal 3-hour postdischarge educational sessions. The authors noted a significant increase in early HRQoL scores in the patients who received the intensive perioperative education.³⁴ While cost analysis of the robust stoma education program demonstrated similar total costs to traditional educational program costs, significant savings were noted in decreased unplanned hospital readmissions and reduced visits to primary care providers.³⁷

Due to the overwhelming evidence of the benefits of preoperative stoma education and the value that the WOCN specialist brings to the care team, the ASCRS Clinical Practice Guidelines Committee strongly recommends that patients undergoing ostomy surgery involve a WOCN specialist whenever possible.⁷ The Wound, Ostomy and Continence Nurses Society guidelines recommend that preoperative education include the following topics: overview of the anatomy and physiology of the gastrointestinal tract, discussion of the planned procedure to be performed, demonstration of management of a one- and two-piece ostomy appliance, and discussion of lifestyle adjustments and psychological preparation of living with an ostomy.^{7,24}

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