



Surgical Techniques

Stoma Site Selection: Why and How?

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Abstract

A stoma has a great impact on a patient's body image and self esteem and a poor stoma placement can cause undue hardship and have a negative impact on physical, social, psychological and emotional health and may increase the stoma maintenance costs. Selecting the stoma site prior to surgery, rather than exactly at the time of surgery, will help to ensure that the stoma is in a position that facilitates self-care and secure pouching. Multiple studies indicate that patients who have their stoma sites marked preoperatively by a trained clinician have fewer ostomy-related complications.

The ideal stoma site is the one that is easily seen by the patient, allows secure adhesion of the stoma appliance, gives significant freedom of movement to the patient and allows the patient to manage the bag without assistance. Colorectal surgeons and certified SCN are the optimal clinicians to select and mark stoma sites, as this skill is the part of their training, education and practice. Basic principles of proper stoma site selection include placement of the stoma within the rectus abdominis muscle using different body positions to identify appropriate stoma sites and avoiding creases, folds, scars and bony prominences with consideration of the clothing and beltline.

Keywords: Stoma siting; Stoma site selection; Stoma site marking; Ostomy nurse; Stoma care nurse; Ostomy

Introduction

Stoma site selection is the process carried out in patients in whom any type of stoma creation is anticipated, by the operating surgeon or the Ostomy Nurse (ON) prior to surgery, in which a specific location for the stoma is selected on patient's abdomen wall. Stoma site marking is slightly complex process, but is very important for ensuring safe and secure pouching for your patient's stoma. A stoma has a great impact on a patient's body image and self esteem and a poor stoma placement can cause undue hardship and have a negative impact on physical, social, psychological and emotional health and may increase the stoma maintenance costs.

Pre-operative stoma siting and education reduces post-operative complications and anxiety. Hence ostomy education, psychotherapy and stoma site selection should be performed preoperatively in all patients when an ostomy is a possibility. Selecting the stoma site prior to surgery, rather than exactly at the time of surgery, will help to ensure that the stoma is in a position that facilitates self-care and secure pouching. While preoperative stoma site marking is strongly advocated, but sometimes the intra-operative circumstances may not allow for the optimal stoma site to be used. The final stoma site is chosen by the surgeon on the operating table after the abdominal cavity is entered and the condition of the bowel and its mesentery and

blood supply is determined. And depending upon the intra-operative findings and various other factors, the operating surgeon may decide on table whether to make the stoma at the pre-operatively marked site or to change the site according to the circumstances.

Why to mark the stoma pre-operatively?

Because of the following advantages the stoma site should be marked pre-operatively:

- The stoma marking session may allow time to the stoma therapist to give psychological support and provide information to the patient regarding ostomy management, including pouching options.
- Choosing an appropriate site for a stoma is the first step in ensuring that the patient will enjoy optimum quality of life after the operation.
- A well sited stoma can help the individual in a positive way to psychologically accept the stoma.
- Good stoma placement enhances the likelihood of patient independence in stoma care and early resumption of day-to-day activities.
- A particular stoma site may help to predict the pouch's wear time.

Ideal stoma site!

The ideal stoma site is the one which is:

- Easily seen by the patient.
- Allows secure adhesion of the stoma appliance.
- Allows the patient to manage the bag without assistance.
- Gives freedom of movement.
- Away from incisions, scars and bony prominences.

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Poor stoma site!

Poor stoma site is the one in which the stoma is situated in a location that makes it difficult for patient to perform:

- Necessary cleaning.
- Pouch management.
- Conceal stoma and stoma appliance under clothing.
- Enjoy freedom of movement without fear of leakage.
- And results in frequent pouch leaks requiring frequent bag changes, peri-stoma complications and increased connected costs.

Consequences of poor stoma siting

- Bag fitting challenges and appliance leakage.
- Skin irritation, peristomal dermatitis, erythema and pain.
- Ill-fitting stoma bag due to poor stoma site may result in mucosal injury and bleeding.
- An inaccessible stoma makes cleansing and maintenance of ordinary hygiene very difficult.
- Clothing concerns due to poor fitting of readymade cloths and frequent soiling of cloths leading to poor hygiene and sense of impurity.
- Negative impact on psychological, physical and emotional health.
- Increased overall complications of stoma resulting in poor quality of life and repeated hospital admissions and increased health care costs.
- Needs frequent change of stomal appliance (pouch), again increasing the economic burden on patient.

Evidence based literature review

Most common early complication of stoma construction in any patient is the improper siting [1]. Multiple studies indicate that patients who have their stoma sites marked preoperatively by a trained clinician have fewer ostomy-related complications [2-4]. Preoperative stoma siting and education results in less difficulty with ostomy adjustment, reduction of peristomal skin irritation and reduction of pouch seal leakage [3]. Millan et al. [2] showed in their study the lower rates of stoma complications and disease related patient anxiety when marked and educated by the Stoma Care Nurse [also called as Ostomy Nurse (ON)].

Why is sometimes stoma not marked?: Ideally the stoma should be marked by a trained Ostomy Nurse (ON), also called as Stoma Care Nurse (SCN), who besides marking the stoma educates the patient about post-operatively stoma management and also relieves his anxiety by proper psychotherapy. However if no SCN is available, the surgeon should undertake this task himself. From the above discussion, it seems mandatory and essential to mark the stoma pre-operatively but in clinical practice there will be instances where the stoma may not be marked pre-operatively. The various reasons for not marking the stoma may be non-availability of SCN, lack of communication between the operating surgeon and the SCN, stoma not anticipated preoperatively, emergency surgery or the patient being too ill, in pain or having a grossly distended acute abdomen.

Who should mark the stoma site?

Marking of the stoma site is not within the scope of practice of the registered general nurse. Colorectal surgeons and certified SCN are the optimal clinicians to select and mark stoma sites, as this skill is the part of their training, education and practice. However, these providers are not always available, particularly in emergency situations. All clinicians especially the surgeons should familiarize themselves with the principles of proper stoma site selection. However any clinician who is ascertained with the job of stoma site marking should know patient's underlying disease and diagnosis, the surgical procedure to be performed and the type of stoma anticipated.

Basic principles of proper stoma site selection include:

- Placement of the stoma within the rectus abdominis muscle.
- Use of multiple patient positions to identify appropriate stoma sites.
- Avoidance of creases, folds, scars and bony prominences.
- Avoidance of main incision site and consideration of the clothing/beltline.

Site with respect to type

The type of stoma constructed depends upon the underlying disease, nature of operation whether elective or emergency, presence or absence of anastomosis, level of anastomosis and many more factors. There is no single area on the abdominal wall that could be considered ideal for all types of stoma constructions. Thus the ideal area for stoma construction also depends upon the type of stoma e.g., ileostomy and urostomy are positioned on right lower abdomen overlying the outer third of the rectus muscle while as loop sigmoid colostomy and end colostomy are usually constructed in left lower abdomen through the rectus muscle. However transverse colostomy is mostly positioned in the right upper quadrant.

Wrong stoma site: Areas that could potentially impair the proper fitting of an appliance should be avoided for stoma construction and may include nearby bony prominences such as hip bones, pubic bone and lower rib cage, previous scars, abdominal folds, creases and wrinkles, skin areas previously damaged from radiation, burns or skin grafting, abdominal wall bulges like hernias, main surgical wound, umbilicus, waist-line, pendulous breasts and other stomas.

Factors affecting the choice of stoma site: For selection and marking of an ideal stoma site, various factors that should be taken into consideration include:

- Patient related factors like underlying diagnosis, age, stage of growth and development, previous surgeries and scars, shape and size of abdomen, history of radiation, patient preference, and any prior experience with a stoma.
- Body positioning issues depending upon patients' lifestyle, occupation, culture and religion.
- Physical issues like eyesight, dexterity, mental acuity and memory, physical strength and mobility, obesity and pendulous abdomen and pendulous breasts.
- Surgical considerations like surgeon's preferences, type of surgery/stoma planned, gut viability and mobility, segment of intestine used and whether an incontinent or a continent-catheterizable diversion is planned.

- Multiple stoma sites; e.g. if a urinary stoma is also present or planned, consider marking the fecal and urinary stoma sites in different abdominal quadrants on different horizontal planes/lines.

Stoma site marking procedure

1. Before proceeding to the patient for stoma site selection procedure, keep ready all the necessary items needed like surgical marker (marking pen), different types of stoma bags, transparent film dressing (tegaderm), flat skin barrier, measuring tape and scale.
2. Seek patient's consent and active participation. Simultaneously educate the patient about the necessity of this stoma and try to alleviate his anxiety about the post-operative stoma management.
3. Before starting the actual procedure, explain in detail the 'stoma site marking' procedure to the patient, and encourage the patient's participation and input whose needs must be ascertained.
4. Arrange good lighting and maintain privacy during the procedure.
5. For marking a stoma site in a female patient by a male SCN, keep a female nurse or a female attendant by the side and vice-versa.
6. Careful inspection and examination of the patient's abdominal surface:
 - Begin with the patient fully clothed in a sitting position on a stool with both feet on the floor.
 - Have the patient completely remove any clothing that is placed over the abdomen, rather than just moving it out of the way. Waist-bands and elastics can create or obscure skin folds that may or may not be actually present when the clothing is completely removed.
 - Observe the presence of belts, belt-lines, braces and any other previous ostomy pouches.
 - To prominently make out the abdominal wall creases, folds, valleys, scars, skin turgor and contour; examine the patient's exposed abdomen in various body positions like sitting, standing, lying and bending forwards.
 - Individuals with spinal cord injuries are optimally marked in their usual position, as this will facilitate fitting and care of the pouching system [5].
 - If the patient uses a wheel chair, it is best to position them in their own chair and allow time for their body to relax into their usual habitus before marking [6].
7. Consider an imaginary line where the surgical incision will be located, which could be confirmed from the operating surgeon.
8. If possible, choose a point at least 2 inches from the proposed surgical incision where 2 inches to 3 inches of a flat adhesive skin barrier can be placed. Smaller area may be needed for children. The pouching system is secured around the stoma by adhesive. There needs to be an adequate adhesive contact surface between the pouch and the peri-stomal skin for secure attachment. A stoma siting disc can be used to evaluate the adequacy of skin surface area preoperatively.
9. Identify the patient's rectus abdominis muscle: Ask the patient to do some maneuvers that make the rectus muscle prominent and identifiable. Let the patient lay on his or her back. Ask the patient to do a modified sit up i.e., to raise the head up and off the bed or lift up the extended lower limbs or ask the patient to cough. By these maneuvers you can easily make out and mark the boundaries of rectus abdominis muscle. Placement of stoma within the rectus muscle helps to decrease parastomal hernia formation and stoma prolapse rates [7].
10. Marking the actual spot: On the skin of the abdominal wall, mark a point for stoma site in the appropriate abdominal quadrant, located within the rectus abdominis muscle approximately 2 inch (5 cm) from main incision and within the patient's visual field. Keeping the stoma within the patient's visual field makes him independent in his own stoma management and care. The selected area should be preferably a flat surface avoiding scars or creases and if possible below the belt line to conceal the pouch properly.
11. Patients who use wheelchair or have a large, rounded abdominal contour (extremely obese) may benefit from having the stoma site marked in an upper quadrant [6,7]. In many obese patients the adipose layer is not as thick in the upper abdominal quadrants as compared to the lower quadrants, which may allow better visualization of the stoma by the patient and easy stoma construction for the surgeon [7]. If the abdomen is protuberant, choose the apex of the abdominal contour.
12. The mark should initially be made with a sticker or ink pen that can be removed if this is not the optimal spot. It may be desirable to mark sites on both the right and left sides of the abdomen to prepare for a change in the surgical outcome, and number the first choice as *1*. Alternatively we may need the marking for both ileostomy and colostomy on the same patient especially in patients being operated for low rectal cancers.
13. Apply a stoma bag temporarily at the marked site and have the patient assume sitting, bending, and lying positions to assess and confirm the best choice.
14. It is important to seek patient confirmation also. However, the critical consideration should be a flat pouching surface.
15. After the optimal site is chosen, clean the desired site with spirit and allow it to dry and proceed with marking the selected site with a surgical marker/pen (sterile and single use only). An indelible marker or skin dye may be used to identify the site but must be visible after the surgical scrub.
16. It is desired to cover the marked site with a waterproof transparent film dressing (tegaderm) to preserve the final mark from being rubbed off.
17. Ensure that any other stray marks have been removed.
18. Notify the operating surgeon of any difficulties in marking an ideal stoma site.
19. If more than one potential stoma sites are marked then number the stoma sites according to preference for use.

20. Document the procedure and the stoma *site marking location* on patient's case-sheets. And *communicate to the surgeon so that the intent of the mark is understood in the operating room.*
21. At the end make the patient to understand that this preoperative stoma site marking is just a guide for good stoma placement, and not necessarily the final surgical site. The final stoma site selection is done by the surgeon on operating table once the abdominal cavity is entered and the condition of the bowel is determined.

Conclusion

Selecting the stoma site prior to surgery will help to ensure that the stoma is in a position that facilitates self-care and secure pouching. Stoma sites marked preoperatively by a trained clinician have fewer ostomy-related complications. Basic principles of proper stoma site selection are placement of the stoma through the rectus abdominis using different body positions to identify appropriate stoma sites and avoiding creases, scars and bony prominences.

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