

An overview in the management of stoma and care of patients

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Abstract

Introduction: Stomas represent a social and medical problem worldwide. Colostomies were used in the late 1800s to treat intestinal obstruction. Stoma creation is indicated for various clinicopathological conditions. Patients undergoing stoma surgery face many lifestyle changes and challenges. So, health care professionals who are involved in creating or caring for stoma should have the up-to-date and fundamental knowledge of stomas complications and management. **Methodology:** PubMed database was used for articles selection and the following keys used in the Mesh ((‘Stoma’[Mesh]), ((‘Ostomy ’[Mesh]), ((‘Ileostomy’[Mesh]), ((‘Colostomy ’[Mesh]) AND ((‘Management ’[Mesh])). **Conclusion:** Excellent perioperative stoma education and care are important for ostomates to feel confident in caring for and changing their pouching systems and to avoid dehydration. Follow-up is critical for the patient with a new stoma both to educate the patient in correct stoma care and for early identification and treatment of complicated conditions.

Keywords: stoma, ostomy, ileostomy, colostomy, management

INTRODUCTION

Health is an important factor in human beings' life [1-4]. Stomas represent a social and medical dilemma worldwide. Stomas are life-saving procedures that create an artificial opening between a hollow viscus and the skin for various clinical conditions. The skin is connected either directly (stoma) or with the use of a tube. They can be established in a temporary or permanent matter, depending on the patient and his/her co-morbidities aiming to improve the quality of life. However, improved surgical techniques, advances in stoma care, and a better understanding of the psychological and physiological consequences of intestinal stomas have contributed to the more rational use of ostomies.^[5] Furthermore, intestinal stomas became an integral component in the surgical management of several diseases; involving the gastrointestinal tract. Colostomy was used in the late 1800s in the treatment of obstruction in the intestine. Some of the earliest survivors were children who had an imperforate anus. The creation of stoma was not favored and was considered a drastic procedure due to the high incidences of complications (mainly peritonitis) and mortality. Due to the absence of anesthesia and aseptic techniques during this period, any surgical procedure resulted in extremely reluctant patients and dismal outcomes. During the early 1900s, proximal colostomy was used to reduce postoperative complications

and protect distal anastomosis. Henry Hartmann procedure was breakthrough and it contained creating an end colostomy involving segmental removal of bowel and closure of the distal stump; his method was adopted to manage the obstructing sigmoid tumor. Moreover, Mikulicz-Radecki also recommended bringing the distal and proximal segments of the bowel outside by the skin level stoma. ^[6]

This review will focus on recent updates in the management and care of stomas and common related issues, to inform medical practitioners about them, facilitate providing the best

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How to cite this article: Abdulraouf Almarzooq, B., Abdullah Al humaidi, Y., Awadh Alshufut, A., Ali Al-Amyateem, A., Aiman Neazy, S., Ibrahim Alhadlaq, A. and *et al.* An overview in the management of stoma and care of patients. Arch Pharma Pract 2020;11(4):55-9.

practices in ostomy management, and improve stoma-related care overall.

METHODOLOGY:

PubMed database was used for articles selection, and the following keys used in the mesh (“Stoma “[Mesh] AND “Stoma “[Mesh] AND “Ostomy “[Mesh] AND “Ileostomy “[Mesh] AND “Colostomy “[Mesh])). In regards to the inclusion criteria, the articles were selected based on the inclusion of one of the following topics; pyoderma gangrenosum diagnosis and management. Exclusion criteria were all other articles that did not have one of these topics as their primary endpoint.

Review:

Stomas are indicated in several diseases including malignancies, inflammatory bowel disease, neurological problems, urological disease, traumatic injury, and diverticulitis. The exact incidence and prevalence of ostomy surgery are unknown. In 2009, one report stated that there is an estimated range of 650 000 to 730 000 people living with a permanent ostomy in the United States.^[7]

Types:

Moreover, stoma types are classified depending on where it has been created either from the small or large intestine, and are characterized by whether they are configured as a loop, end, or end-loop and how proximally they are formed. An ileostomy is an opening into the ileum, which is a part of the small intestine, it is sited on the right side of the abdomen and is placed about 2-3 cm above the level of the skin. On the other hand, a colostomy is an opening into the colon (large bowel), which is usually sited on the left side of the abdomen. The stoma type and location generally depends on the specific diagnosis and the patient’s age.^[8, 9] It can be permanent or temporary depending on the reason of the operation and the specific aim decided by the clinician. Another difference between pediatric and adult ostomies is that in adults, stomas are formed in the colon or distal ileum in order to treat trauma, malignant conditions, and inflammatory bowel disease.^[10] In contrast, in children and infants, stomas may be needed anywhere along the gastrointestinal tract due to the variety of acquired and congenital conditions, which necessitate a stoma.

Emergent colostomies can also be used in newborn infants with distal obstruction, often due to Hirschsprung’s disease or imperforated anus. Nevertheless, these stomas are usually temporary and the definitive surgery for most of these congenital conditions is delayed for one or more years.^[10, 11]

Moreover, depending on the severity of the patient’s illness, colostomy may be the only procedure performed during the entire operation. Elective stoma creation is often due to low rectal cancers that require an abdominoperineal resection for removing the tumor. An elective setting mostly tends towards an ileostomy as a temporary option, but colostomy is usually done as a permanent option because it is easier to manage. Moreover, the stoma done in emergency surgery can be done

as a lifesaving method to control sepsis, especially during acute illness. This normally gets reversed when the patient has fully recovered. However, this step has a high complication rate in the long and short term, especially if the site has not been identified by a stoma therapist before surgery.^[11, 12]

Stoma Planning:

Preoperative counseling and planning are important in the creation of functional and proper ostomy for the patient and the surgeon, especially in elective operations. Preoperative planning embraces the stoma site identification as to provide an opening that allows the easy placement of ostomy appliance that can be maintained with an adequate seal. Preoperative stoma site marking involves the selection of the optimal stoma location in order to promote the independence of patients in stoma care, resumption of normal activities, predicting wear times of pouching systems, and also reduces postoperative complications.^[13, 14] The main challenge for this step is the different anatomy in patients that may necessitate a more complex stoma as it may affect the composition, viscosity of the output, and the possibility of complications including prolapse and parastomal herniation.

Techniques and Considerations:

Generally, the stoma should be brought through the abdominal muscle, even though there are cases that require a partial transection of the muscle, the surgeon shall always try to use a muscle-splitting technique. Generally, the rectus muscle can be identified by having the patient perform a head or leg raise in a supine position. In obese cases, another technique is to follow the nipple line downward to approximately the lateral edge of the rectus muscle.^[8, 9, 15] Moreover, adjusting to new physical changes, many considerations shall be in the minds of the clinicians when dealing with patients with recently laced stomas. The new patients who undergo stoma surgery must gain the ability to assess stomal and peristomal conditions especially if it is complicated for example by a skin infection. Newly discharged ostomate first needs to obtain the basic skills of emptying, changing the pouching system, and application of stoma care techniques learned in inpatient teaching sessions.^[14, 16] Nevertheless, the incidence of ostomies done nowadays is decreasing with recent developments in surgical techniques, and this can be attributed to the profound negative impact on the lifestyle of patients as well as their quality of life.^[17]

Complications and Management:

Stoma complications, improper management of stoma, and unsuitable stoma site diminished the quality of life in ostomates. Complication rates vary depending on the general condition of the patient and the circumstances surrounding stoma creation. Although it seems intuitive, emergency surgery with gross peritoneal perforated, gangrenous, or soiling intestine and creation of stomas in malnourished or debilitated patients would lead to increased morbidity after surgery.^[13, 18] Early complications occur within the first 30 days post-operative and include parastomal abscess,

mucocutaneous separation, necrosis, retraction, and ischemia. Late complications usually result from weight gain or adhesions and include peristomal pyoderma gangrenosum, parastomal varices, stoma prolapse, and parastomal hernia. [13]

Ischemia is considered the most postoperative complication of newly constructed stomas, which will arise usually within the first 24 hours. The patient will present with bluish discoloration of the mucocutaneous junction and the stoma appears edematous immediately because of the venous congestion in the mesentery causing cyanosis and swelling in the stoma. [19] However, delayed ischemia and/or necrosis may occur as well, especially with underlying medical conditions (i.e., hypoperfusion) causing devascularization; with an incidence of 1.6% up to 11%. [20] The risk of developing severe dehydration is high when the stoma output exceeds two liters per day, and this is relevant especially in the immediate postoperative period when the oral intake of fluids is insufficient. In fact, it occurs in up to 16% of patients with stoma and can be due to multiple or single factors, including enteritis with *Clostridium difficile* infection, sudden withdrawal of opiates or steroids, prokinetic drugs (e.g. metoclopramide), intra-abdominal sepsis, and partial bowel obstruction. Diuretics, coexisting diabetes mellitus, and total proctocolectomy are other risk factors for high output stoma. Thus, close monitoring of body weight, fluid balance, serum biochemistry, and electrolytes is mandatory in the immediate postoperative period. Abdominal computed tomography is to be considered to identify intra-abdominal abscesses and bowel obstruction when suspected. Some recommendations in the treatment protocol for such patients include restriction of fluid intake to 500-1000 mL/day, avoiding intake of hypotonic drinks (such as tea, coffee, and fruit juice), and antidiarrheal or antiperistaltic medications, such as loperamide, proton-pump inhibitors, codeine, cholestyramine, or somatostatin analogs. [21-23]

Mucocutaneous separation (MCS) is another major complication of stoma with an incidence of 3.7%-9.7%. [12] Multiple factors can cause MCS, mainly surgical site infection, diabetes mellitus, corticosteroids, malnutrition, excessive tension on the suture line, and stoma necrosis. MCS can be treated conservatively by local wound care and regular dressing. However, observation is needed in cases of circumferential MCS due to the risk of subsequent retraction of stenosis. [5, 16]

Poor fitting of the stoma can result from retraction, which is typically seen in the early postoperative period and occurs secondary to ischemia in the follow-up period. Retraction is the inversion of the mucocutaneous junction towards the abdominal wall and the incidence of this complication is between 2.9% and 5.4%. [24-26] Stoma rods have traditionally been used to prevent retraction, in patients with mild symptoms with a convex appliance that may be helpful in reducing bowel leakage. However, in patients with severe symptoms, local repair can be attempted with partial mobilization of the proximal bowel. Nevertheless, a recent

systematic meta-analysis and review revealed that a stoma rod for loop stoma construction did not prevent stoma retraction. Furthermore, when a stoma rod was used, the incidence of stoma necrosis and peristomal dermatitis was significantly higher. [25]

Another major issue with stoma is body image problems, which are common in stoma patients especially in the early postoperative stage and it requires an early assessment. Recent studies suggested that ileostomy may alter the experience of age and sexuality, disrupt body image, and destabilize the sense of self. The permanent stoma group reported higher levels of depression and anxiety and worse body image compared to the non-stoma group, the psychological effects of having a stoma can affect the long and short term outcomes. [27]

Another major complication is parastomal hernia (PSH), which is a bulge under the peristomal skin. This bulge usually indicates that one or more loops of the bowel have passed through the dissected area of fascia and muscle, which are needed to externalize the stoma. The incidence of hernia is reported to be up to 50% in patients of stoma, which is remarkably higher than operational hernia risk generally. Hernia is more common in an end stoma, and parastomal hernia is more prevalent after ileostomy than colostomy. [28, 29] The parastomal hernia may happen any time after the surgical procedure but it commonly occurs within the first two years. The risk of these complications is higher when certain risk factors are present in the patient; these risk factors are listed in (Table 1).

Table 1: Risk Factors for Parastomal Hernia [20, 30]

Patient's Risk Factors

- Obesity
- Malnutrition
- Advanced age
- Smoking
- Collagen abnormalities
- Corticosteroids use
- Postoperative wound sepsis
- Ascites
- Abdominal distention
- Chronic constipation
- Obstructive uropathy
- Chronic obstructive lung disease

Surgical Technique Factors

- Inappropriate stoma site selection
- Oversized fascial trephine
- Excessive stretching and splitting of the abdominal rectus muscle
- Epigastric nerve denervation
- Emergency stoma creation

Conservative therapy and patient education strategies are the typical initial treatments in PSH patients, mainly with the management of body weight, exercise, and increasing the awareness of risk factors as the pillars for management.

Surgical repair techniques can be used in these patients, with the overall success rates of around half of the cases.^[30] However, the nonoperative treatment of PSH has a lower cross-over rate (21%) than the surgical treatment, and most of these are not emergency surgery.^[31]

Stoma prolapse is another common complication, it involves a full-thickness protrusion of the intestine through the stoma and the incidence varies between 1-16%. Stoma prolapse is due to poor muscle tone, pregnancy, obesity, chronic obstructive pulmonary disease (COPD), lack of fascial support, increased abdominal pressure, inadequate bowel fixation to the abdominal wall during surgery, and large abdominal-wall openings. The definitive treatment for stoma prolapse is surgery; moreover, emergency surgery is indicated if the prolapse becomes ischemic, and showing signs of incarceration or strangulation.^[15, 20]

Patients with portal hypertension commonly develop varices that typically arise in the gastro-esophageal region, mostly seen in patients with primary sclerosing cholangitis and liver cirrhosis with over 70% of the bleeding cases observed in an ileostomy.^[20, 31] Due to the challenges related to diagnosis, management, and treatment of parastomal variceal initial bleeding, the mortality rate of this condition is as high as 40%. Moreover, non-operative local management of bleeding resulted in 85% of the re-bleeding rate, which makes this scenario the expected one when managing such cases. However, a local operative management option can be indicated and preferable in patients with significant systemic risks or short life expectancy.^[20] Percutaneous embolization using a transhepatic or direct approach is a management option that showed moderate success in decreasing the re-bleeding rate (45%), plus, complications associated with this procedure are few and usually limited to parastomal skin ulcers.^[32]

Peristomal pyoderma gangrenosum is a rare subtype of pyoderma gangrenosum. It is a challenging condition of diagnosing and treatment; due to no evidence-based guidelines approved internationally yet. However, the incidence of PPG is generally low in these cases, ranging between 0.9% and 4%.^[33-35] The management generally starts with systemic steroids as the first-line therapy; with biological agents like infliximab and adalimumab providing concomitant control of any present inflammatory process. Another commonly used treatment option is combining local and systemic therapy with variable results seen on patients. Other factors like appropriate ostomy devices and proper wound dressings to minimize irritation, leakage, and pressure-induced ischemia can improve healing.^[33] Generally, stoma relocation and revision should be avoided due to the high incidence of recurrent PPG in up to 67% of cases.^[34]

CONCLUSION:

Stoma creation started to have a more prominent role for surgical intervention in recent years, especially due to the

higher incidence of the indications. However, managing stoma patients needs special strategies such as pre- and postoperative patient education, which remains a major concern for clinicians. Preoperative preparations are vital to understand the stoma, select an optimal stoma location, and achieve patient acceptance. A surgeon should be well versed in these options and considerations in order to be able to choose the best stoma type and if it will be on a permanent or temporary basis. Every clinician shall have adequate knowledge if the possible complications and have an idea of how to diagnose and treat each of them. The horizon for research in this topic generally focuses on lowering the risk of complications and providing the best quality of life for such patients.

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