Care of the Laparoscopic Colectomy Patient

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PURPOSE

To improve clinical practice and the quality of patient care by providing a learning opportunity that enhances the participant's understanding of laparoscopic colectomy and related patient management and skin and wound care issues.

TARGET AUDIENCE

This CME/CE activity is intended for physicians and nurses with an interest in learning about laparoscopic colectomy and related patient management and skin and wound care issues.

OBJECTIVES

After reading the article and taking the test, the participant will be able to:
1. Identify benefits of and indications for laparoscopic colectomy.
2. Identify patient management issues related to laparoscopic colectomy.
3. Identify skin and wound management issues following laparoscopic colectomy.

ABSTRACT

Laparoscopic bowel surgery has demonstrated patient care benefits of decreased duration of hospital stay, smaller incisions, lower risk of cardiopulmonary complications, and reduced risk of small-bowel obstruction. Resection of complicated diverticular disease and inflammatory bowel disease can be technically challenging and may be associated with higher conversion rates. The applicability of these techniques to colon cancer is supported by a growing body of evidence that demonstrates similar survival and recurrence rates obtained by open resection and the exaggeration of the risk of port site recurrences. Laparoscopic colorectal surgery has also challenged much of the standard postoperative care plans used for colectomy. Optimal postoperative care of the laparoscopic colectomy patient requires an appreciation of the faster recovery enjoyed by these patients and the fact that ambulation and dietary advancement need to be accelerated. Coordination between the surgical team and the postoperative care team is essential to obtain all the benefits associated with this new approach to the management of colorectal disease.

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Laparoscopic-assisted surgical techniques allow mobilization of relatively large lengths of mesentery and management of major vascular pedicles. Laparoscopic bowel resection is associated with a decreased perioperative stress response, fewer cardiopulmonary complications, shorter duration of stay, and a shorter convalescence. Interleukin-6 (a proinflammatory cytokine), an indicator of the degree of systemic response to surgical stress and predictor of morbidity, is generally reduced in laparoscopic colectomy.[1-2] Cell-mediated immunity also appears to be better preserved.[3-6] In addition, monocyte and polymorphonuclear cell function appear to be improved, which may be related to reductions in postoperative infectious complications in laparoscopic bowel surgery.[7]

The shorter duration of hospitalization is related to a shortened period of ileus and earlier resumption of oral intake. Although early feeding regimens and early ambulation programs have been transferred to open colectomy procedures as well,[8-10] on average, laparoscopic colectomy is associated with a reduction of at least 2 hospital days compared with open surgery.[11-14]

SURGICAL TECHNIQUE

Preoperative preparation for laparo-

CME CATEGORY 1
1 Hour

ANCC/AACN
2.5 Contact Hours

scopic colorectal surgery is identical to preparation for open colectomy, including mechanical bowel preparation, perioperative broad-spectrum prophylactic antibiotics, and venous thromboembolism prophylaxis. Laparoscopic colectomy requires the establishment of a pneumoperitoneum, preferably by an open approach for insertion of a 10-mm cannula at the umbilicus. All remaining trocars are placed under direct vision after establishment of the pneumoperitoneum at 12 mm Hg. The procedures typically require a 12-mm trocar (usually inserted in the lower quadrant opposite the pathology) for introduction of laparoscopic staplers or clip appliers. The remaining 2 or 3 trocars may be 5 mm and may be used for placement of graspers and other instruments. The surgeon stands opposite the pathology and the assistant stands on the side of the pathology. Recently, a variety of "sleeve" devices that preserve pneumoperitoneum while allowing insertion of an operating hand via a 7- to 8-cm lower midline incision have been used.[15,16] The benefits of this "hand-assisted" approach will require further data.

Patient positioning during laparoscopic bowel surgery allows the patient to be "airplaned" to provide gravitational exposure of the operative field. Use of leg stirrups maintains the hips in a flat position and provides access to the anal canal for stapler insertion or for surgical access to the colonic flexures.

Sigmoid colectomy requires insertion of a 12-mm trocar at the level of the right anterior superior iliac spine and a 5-mm trocar at the level of the umbilicus laterally on the right. The assistant utilizes a 5-mm trocar adjacent to the left anterior superior iliac spine for retraction. A medial approach is taken to the mesosigmoid and presacral space, which allows early exposure of the left ureter. The level of ligation of the inferior mesenteric artery depends on the pathology (benign, distal to the left colic artery; malignant, at the aorta). A linear laparoscopic stapler is used. The sigmoid and left colon are fully mobilized, including releasing the splenic flexure, if needed. The proximal rectum is divided using a linear laparoscopic stapler, and the sigmoid is exteriorized via a muscle-splitting incision at the site of the left lower quadrant trocar. The bowel is divided proximally and the stapler, anvil is inserted. Pneumoperitoneum is reestablished after closing the incision and the circular stapled anastomosis is completed. A leak test should be performed to ensure anastomotic integrity.

Right colectomy utilizes mirror-image trocar insertion and similar patient positioning compared with sigmoid colectomy. The right colic vessels are approached medially and elevated off the retroperitoneum to allow ligation of the vessels with a laparoscopic stapler. A medial dissection elevates the mesentery and colon off the retroperitoneum. The right colon is then mobilized from lateral attachments from the midtransverse colon to the cecum in a retrograde fashion. The bowel is left in continuity, exteriorized via a 3 to 5 cm vertical infraumbilical midline incision, divided and reanastomosed extracorporeally.

DISEASE MANAGEMENT

Diverticular disease

Sigmoid diverticulitis and its complications frequently require colonic resection. Initial series were associated with long operative times but reduced hospital stays by 2 to 3 days compared with open cases.[17-19] Many investigators have reported favorable outcomes, reduced operative times, and further reductions in hospital stays even for complicated disease.[20-25] Not all reports have been favorable, however, with Bergamaschi failing to identify any significant advantages with laparoscopic colectomy.[26] However, cost and operating time may be improved using a completely laparoscopic approach when compared with the use of exteriorization of the bowel.[27]

Colon cancer

The management of colon cancer has prompted the most concern over laparoscopic colectomy because of the potential risk for port site recurrence and the absence of any long-term data to confirm that survival rates are the same as after laparotomy.[28-29] A growing body of evidence based on retrospective studies and interim reporting from prospective, randomized trials indicates that the outcome is no different regardless of technique used.[30-32] This, coupled with the early benefits of shorter lengths of stay, shorter ileus, and shorter recovery, suggest that laparoscopy will have a significant role in the treatment of colon cancer.[30-32]

Oncologic surgical principles can be achieved during laparoscopic colectomy; comparison studies have reported similar colonic margins, length of mesenteric pedicles, and lymph nodes.[33-36] These findings have been corroborated by the National Cancer Institute-sponsored Clinical Outcomes of Surgery Trial (COST) and 2 single-center prospective, randomized trials.[37-39] Large prospective, randomized studies confirming 5-year survival rates are lacking; however, studies will be maturing soon. Similarly, the current body of evidence supports the fact that port site recurrence is a possibility, but not a significant risk that would support abandonment of the laparoscopic technique.[38,40]

Rectal prolapse

A variety of approaches have been

TROUBLESHOOTING SKIN COMPLICATIONS

CATEGORY	ASSESSMENT	INTERVENTION
Chemical		
Irritant dermatitis. Area appears erythematous, moist, and painful; may be localized to site of pouch undermining or leakage	• Assess patient's pouch-changing frequency and technique and type and amount of effluent. • Inspect soiled pouch for undermining or meltdown.	• Alter pouch/skin barrier aperture. • Change/add convexity. • Change/add skin barrier paste or seal. • Dust peristomal skin with skin barrier powder.
Pseudoverrucous lesions. Maceration and overhydration of peristomal skin from prolonged exposure to moisture; most common with urostomies and high-output stomas	• Assess for raised, painful lesions with wartlike appearance. • Lesions may appear pink, white, or gray.	• Alter pouch/skin barrier aperture. • Change/add convexity. • If severe, sharp debridement and application of appropriate wound care dressing (calcium alginate, hydrofiber, hydrocolloid) may be indicated to treat wound bed and permit application of pouching system.
Mechanical		
Pressure, friction, or shear injuries. Lacerations, ulcerations, or stripping of skin from improper fitting or application of pouching system or accessory products, such as an improperly sized rigid system	• Inspect stoma mucosa and skin for evidence of lacerations. • Evaluate patient's pouch-changing technique and check fit while he is supine, sitting, and standing.	• Alter pouch/skin barrier aperture and type of system. • Assess for need and degree of accessory products, such as convexity, skin sealants, and adhesive removers. • Investigate whether wearing a belt is causing the problem.
Infectious		
Folliculitis. Inflammation of hair follicle from traumatic hair removal during pouch change; moist, painful lesions	• Evaluate patient's technique for applying and removing pouch and using accessories.	• Dust with topical antimicrobial powder and skin barrier powder. • Apply nonadherent dressing to lesions and cover with occlusive or semiocclusive barrier before applying pouching system. • Teach patient how to use skin sealant and adhesive remover. • Advise careful shaving or electrolysis of peristomal hair once lesions heal.
Candidiasis. Proliferation of *Candida albicans* in the warm, moist peristomal region; plaques with advancing border and satellite lesions; intense pruritus	• Evaluate patient's technique and pouch fit. • Look for signs of undermining or leakage.	• Apply topical antifungal powder and skin barrier powder. • Alter pouching system, wearing time, and barrier type. • Consider use of skin sealant.
Immunologic		
Allergic contact dermatitis. Allergic reaction precipitated by patient's sensitivity to pouching products; area erythematous and tender with an outline generally corresponding to sensitizing agent	• Assess patient's use and application of all products, including cleansing and accessory items.	• Identify and remove allergen. • Avoid related products. • Conduct a patch test to identify nonsensitizing agents. • Dust with skin barrier powder as needed; apply pouching system products accordingly.
Disease related		
Pyoderma gangrenosum. Ulcer characterized by tender wound bed with irregular border and bluish hue; associated with extraintestinal manifestation of inflammatory bowel disease, lupus erythematosus, or rheumatoid arthritis	• Assess for other local and systemic signs and symptoms of recurrent disease.	• Administer local and systemic steroid therapy or treatment with other anti-inflammatory agents. • Sharp debridement is not typically indicated. • Initiate topical wound care with appropriate product (hydrogel, calcium alginate, hydrofiber, polyurethane foam, or hydrocolloid) and pouching system. • If ulceration affects more than one-third of the area around the stoma, consider using belts to create a nonadherent system to secure the pouch and prevent traumatic removal and undue pressure to the ulcerated area.

described for rectal prolapse; however, a transabdominal approach with full rectal mobilization to the pelvic floor posteriorly, preservation of the lateral stalks to avoid denervation to the anorectum, and rectal fixation to the sacrum with or without bowel resection offers the best results.[41-49] Kesseler et al[50] recently presented a series of 28 cases of rectal prolapse managed by suture rectopexy with a recurrence rate of 7% at 33 months. The median operative time was 150 minutes and the median length of stay was 5 days. Bruch et al[51] presented a series of 32 cases of suture rectopexy and 40 sigmoid colectomies with rectopexy with similarly good results. Himpens et al[52] described the use of the Wells procedure in 37 patients with minimal morbidity and similar reductions in length of stay. Finally, Baker et al[53] compared open resection/rectopexy to a laparoscopic approach and found almost a 50% reduction in ileus and length of stay. Even the perineal approach has been coupled with laparoscopic assistance, with insertion of the laparoscope transanally or transabdominally to ensure complete excision of the redundant sigmoid colon.[54,55]

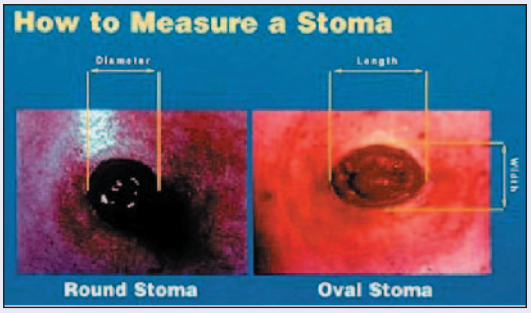
Inflammatory bowel disease

Laparoscopic bowel resection techniques have been successfully applied to patients with Crohn's disease and ulcerative colitis, although these inflammatory diseases can present formidable technical challenges. The most frequently reported surgical procedure in patients with Crohn's disease is segmental small-bowel or ileocolic resection.[56-61] The advantages are the same as with other laparoscopic bowel surgeries, and the procedure offers the potential to improve diagnosis and avoid unnecessary laparotomy and/or bowel resection.[62] In addition, smaller wounds have led to enhanced cosmesis and body image in patients with Crohn's disease.[63]

The data for laparoscopic bowel resection for the management of ulcerative colitis are not as compelling because of the need for extensive procedures, such as total abdominal colectomy, total proctocolectomy, and restorative proctocolectomy.[64-67] These procedures appear to require long operative times, even in highly experienced hands, which raises the concern for higher operative costs compared with an open technique.

FITTING A PATIENT'S POUCHING SYSTEM

Pouching system:



- For a patient with a fairly firm abdomen and a well-sited, protruding stoma, a standard flat or flexible 1- or 2-piece pouching system may be appropriate. A skin barrier composed of natural, pectin, or synthetic substances protects the skin around the stoma.
- A patient with high output or output capable of rapidly eroding a standard barrier may benefit from an extended-wear barrier.
- Someone with a flush or retracted stoma may require a small or moderate degree of convexity in the skin barrier flange or pouch. Convexity creates downward pressure to enhance the seal around the stoma base to secure the fit and inhibit undermining of the pouch seal.
- A patient with a very soft abdomen, regardless of stoma protrusion, may require deep to very deep convexity to obtain a secure seal. Several commercially available pouching systems offer this degree of convexity.
- Accessory products, such as pastes, skin barrier rings, and seals and careful use of belts can further enhance a good fit and support the pouching system.

Paper guide with precut holes for measuring a stoma

Standard 2-piece pouching system

Disposable measuring guides:

- paper guide with precut holes
- guide with printed circles for comparison with the stoma
- clear plastic measurement tool with circles of varying sizes
- transparent guide or plastic wrap for tracing the shape of an asymmetrical stoma.

PATIENT CARE IMPLICATIONS

Wound care is minimal for the laparoscopic patient because of the use of small trocars (5 mm or 10 mm) and small extraction wounds (3 to 5 cm). The rate of wound infection in the authors' experience is less than 1%. The wounds are closed with subcuticular polyglycolic acid suture and steristrips. Therefore, patients can shower immediately and

require only adhesive bandage dressings, if anything (Figure 1). The physiologic advantages of laparoscopic bowel surgery are well documented.[14] Historically, advances in surgery necessitate changes in patient care practices.[63] Patient and family education includes standard preoperative preparation as well as information on the particular implications of laparoscopic surgery. The risk of typical postoperative complications, such as atelectasis, pneumonia, wound infection, thrombophlebitis, and urinary tract infections, is infrequent (<2%) in the authors' experience. The risks of anastomotic leak and abdominal abscess are approximately 1%, which is similar to open surgery. Significantly, postoperative ileus is rare. Early advancement of diet, early ambulation, and a shorter length of stay are hallmarks of laparoscopic colon surgery.[10] If patients are undergoing an intestinal diversion, preoperative stoma site marking and counseling are critical elements of preparation. Patients are referred to an enterostomal therapist preoperatively for marking and preliminary stomal instruction.

Occasionally, a procedure that begins with a laparoscopic approach may be converted to an open procedure. Patients need to be prepared for this possibility preoperatively. Because most patients are not admitted to the hospital prior to surgery, a complete bowel preparation is dependent on the patient's compliance with the prescribed regimen. As with all patients undergoing surgery, optimization of cardiopulmonary disease status and assurance of adequate nutritional intake will improve postoperative wound healing and overall recuperation.[68]

Patients who have a new ostomy are faced with numerous challenges physiologically and psychologically. An altered pattern of elimination and changes in body image and function necessitate specialized, individualized education. One of the hallmarks of adult education is learner readiness.[69] Reduced hospital stays are further decreased for patients with laparoscopic colon resection and creation of an ostomy. Physiologically, patients may be well ahead of their open laparoscopy brethren, but psychologically, they face the same fears and uncertainty all patients with a new stoma encounter,[70] including concerns of security, odor management, activities, sexuality, body image, and other financial and psychosocial issues. Acquisition of new self-care skills, along with psychological support, are essential components of patient care. Due to the shortened hospital stay, acceleration of teaching is undertaken. Although practitioners hope patients achieve learner readiness prior to instruction, the impetus to begin early teaching is a driving force. The basic skills needed for ostomy care in the laparoscopic-created stoma and the open laparotomy-created stoma are the same.

Patients undergoing laparoscopic surgery are usually discharged on their second postoperative day;[8] extension of the patient's hospital stay because they have a stoma is not generally justified. Ideally, discharge planning begins during the preoperative period and continues after surgery.[71] Identification of educational needs, social support, and psychological implications should be undertaken. Not only is evaluating patient/family education and the continuum of care[72] important from a patient care perspective, but it is also required by accrediting bodies such as the Joint Commission on the Accreditation of Healthcare Organizations.

In the acute care setting, patient/family ostomy self-care education tends to focus on "survival skills," such as pouch emptying, basic changing techniques, and coping skills (see *Fitting a Patient's Pouching System*).[71] Individualized education sessions with the patient and responsible caregiver commence on the first day postoperatively and are repeated on the second day. Reinforcement of ostomy-related patient/family education by the nursing staff may further enhance learning.

The case manager or discharge planner may make arrangements for home health care follow-up. This is an important option that benefits patients practicing newly acquired ostomy self-care skills.[73] It also allows the home health nurse to expand the patient's education into such areas as potential complications (see *Troubleshooting Skin Complications*). In addition, the advent of the prospective payment system (PPS) in home care provides further impetus for promotion of the patient's acquisition of self-care skills.

Individualized preoperative and postoperative patient education and counseling for patients undergoing laparoscopic colon resection with or without a stoma are essential for comprehensive patient care. An interdisciplinary approach before and after surgery across all health care settings may further promote positive patient outcomes. ●

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CONTINUING MEDICAL EDUCATION INFORMATION FOR PHYSICIANS

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Lippincott Williams & Wilkins designates this educational activity for a maximum of 1 hour in category 1 credit toward the AMA Physician's Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

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CONTINUING-EDUCATION INSTRUCTIONS

To earn continuing medical education (CME) or continuing-education (CE) credit, follow these instructions:

1. **Read the article** on pages 277-85. Choose one answer for each question and darken circle.
2. **Fill in registration information** and evaluation on answer form.
3. **Mail your answer form** (copies accepted) and processing fee ($17.95 for nurses, $20.00 for physicians) to: Lippincott Williams & Wilkins (LWW), 2710 Yorktowne Blvd, Brick, NJ 08723. Make check payable to Lippincott Williams & Wilkins; if paying by credit card, include number and expiration date. Within 4 weeks, you will be notified of your test results.
4. **Nurses may fax the test** (credit card orders only) to 732-255-2926, and we'll fax back your CE certificate within two business days. Provide a fax number for a location where confidential information will be safe (home/workplace). Faxes sent to a workplace will be accompanied by a cover letter. LWW is not responsible for faxes not received due to a malfunctioning machine on the receiving end. A CE certificate will be mailed after attempts to fax have failed.
5. **Nurses may take the test on-line at http://www.nursingcenter.com/prodev/ce_online.asp** and have it processed immediately.

The passing score for tests is 70%. If you pass, a certificate for earned contact hours will be awarded by Lippincott Williams & Wilkins. You will also receive an answer sheet with the rationale for each correct answer. Nurses who fail the test can take the test again for free. Only the first entry sent by physicians will be considered for credit.

For questions about test results, contact Lippincott Williams & Wilkins, Springhouse Office, CE Dept, 1111 Bethlehem Pike, P.O. Box 908, Springhouse, PA 19477;1-800-346-7844, ext. 6513.

*In accordance with the Iowa Board of Nursing administrative rules governing grievances, a copy of your evaluation of the CE offering may be submitted directly to the Iowa Board of Nursing.

CARE OF THE LAPAROSCOPIC COLECTOMY PATIENT

CME CATEGORY 1
1 Hour

ce ANCC/AACN
2.5 Contact Hours

ANSWER SHEET AND EVALUATION FORM

Please indicate for which discipline you are requesting continuing-education credit:

○ Physician (MD and DO only) ○ Nurse

Your evaluation of this CME/CE activity will help guide future planning. Please rate this activity on a scale from 1 to 5, with 5 being the highest and 1 being the lowest.

1. Did the material identify the benefits of and indications for laparoscopic colectomy?
   ○ 5 ○ 4 ○ 3 ○ 2 ○ 1
2. Did the material identify patient management issues related to laparoscopic colectomy?
   ○ 5 ○ 4 ○ 3 ○ 2 ○ 1
3. Did the material identify skin and wound management issues following laparoscopic colectomy?
   ○ 5 ○ 4 ○ 3 ○ 2 ○ 1
4. Did the objectives relate to the purpose of this activity?
   ○ 5 ○ 4 ○ 3 ○ 2 ○ 1
5. How do you rank the overall quality of this educational activity?
   ○ 5 ○ 4 ○ 3 ○ 2 ○ 1
6. How do you rank the effectiveness of this educational activity as it pertains to your practice?
   ○ 5 ○ 4 ○ 3 ○ 2 ○ 1
7. Did you perceive any evidence of bias for or against any commercial products? If yes, please explain.
   ○ Yes _____
   ○ No
8. Please state 1 or 2 topics that you would like to see addressed in future issues.

   _____

   _____
9. It took ___(hrs) ___(mins) to read and review the article and take the test.

Name _____

Address _____

City _____ State _____ ZIP _____

Social Security No. _____- _____- _____

Medical License No(s) and State(s) of Licensure _____

Nursing License No(s) and State(s) of Licensure _____

Phone Number (home) _____ (work) _____

Fax Number (home)_____ (work) _____

○ Visa ○ MasterCard No. _____ Exp. Date _____

Any licensed nurse may submit this evaluation form directly to the Iowa Board of Nursing.

Before December 31, 2003, photocopy this form (an original is not necessary) and mail to: Lippincott Williams & Wilkins, 2710 Yorktowne Blvd, Brick, NJ 08723. Mail your test with a check for $20 (physicians) or $17.95 (nurses), payable in U.S. funds only, to Lippincott Williams & Wilkins.

Care of the Laparoscopic Colectomy Patient

1.	2.	3.	4.	5.	6.
○ 1.	○ 1.	○ 1.	○ 1.	○ 1.	○ 1.
○ 2.	○ 2.	○ 2.	○ 2.	○ 2.	○ 2.
○ 3.	○ 3.	○ 3.	○ 3.	○ 3.	○ 3.
○ 4.	○ 4.	○ 4.	○ 4.	○ 4.	○ 4.

7.	8.	9.	10.	11.	12.
○ 1.	○ 1.	○ 1.	○ 1.	○ 1.	○ 1.
○ 2.	○ 2.	○ 2.	○ 2.	○ 2.	○ 2.
○ 3.	○ 3.	○ 3.	○ 3.	○ 3.	○ 3.
○ 4.	○ 4.	○ 4.	○ 4.	○ 4.	○ 4.

A062

Care of the Laparoscopic Colectomy Patient

CME CATEGORY 1
1 Hour

ANCC/AACN
2.5 Contact Hours

PURPOSE To improve clinical practice and the quality of patient care by providing a learning opportunity that enhances the participant's understanding of laparoscopic colectomy and related patient management and skin and wound care issues.
TARGET AUDIENCE This CME/CE activity is intended for physicians and nurses with an interest in learning about laparoscopic colectomy and related patient management and skin and wound care issues.
OBJECTIVES After reading the article and taking the test, the participant will be able to: **1.** Identify benefits of and indications for laparoscopic colectomy. **2.** Identify patient management issues related to laparoscopic colectomy. **3.** Identify skin and wound management issues following laparoscopic colectomy.

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1. Laparoscopic bowel resection is associated with
1. increased perioperative stress response.
2. decreased length of hospital stay.
3. increased cardiopulmonary complications.
4. increased morbidity.

2. Laparoscopic colectomy tends to reduce
1. cell-mediated immunity.
2. monocyte cell function.
3. interleukin-6 levels.
4. polymorphonuclear cell function.

3. Fear of port site recurrence following laparoscopic colectomy has been associated with
1. sigmoid diverticulitis.
2. ulcerative colitis.
3. rectal prolapse.
4. colon cancer.

4. The need for extensive procedures and long operative times has been associated with
1. sigmoid diverticulitis.
2. ulcerative colitis.
3. rectal prolapse.
4. colon cancer.

5. Patients undergoing laparoscopic colectomy should be made aware that
1. their hospital stay will be extended if they have a stoma.
2. bowel preparation will occur after admission to the hospital.
3. they can expect to be discharged on their fourth postoperative day.
4. their laparoscopic procedure may need to be converted to an open procedure.

6. Ostomy self-care education includes
1. early ambulation.
2. early advancement of diet.
3. basic pouch changing techniques.
4. nutrition assessment.

7. A patient with a very soft abdomen should use a
1. standard flat 1-piece pouching system.
2. flexible 2-piece pouching system with an extended-wear barrier.
3. pouching system with a small or moderate degree of convexity.
4. pouching system with deep to very deep convexity.

8. A patient with a flush or retracted stoma should use a
1. standard flat 1-piece pouching system.
2. flexible 2-piece pouching system with an extended-wear barrier.
3. pouching system with a small or moderate degree of convexity.
4. pouching system with deep to very deep convexity.

9. Irritant dermatitis should be suspected when the peristomal skin
1. has raised, painful lesions with a wartlike appearance.
2. has pink, white, or gray lesions.
3. appears erythematous, moist, and painful.
4. has inflamed hair follicles.

10. Peristomal pyoderma gangrenosum is characterized by
1. plaques with advancing borders and satellite lesions.
2. a tender wound bed with an irregular border and bluish hue.
3. lacerations, ulcerations, or stripping of peristomal skin.
4. maceration and overhydration of peristomal skin.

11. Sharp debridement may be indicated to treat severe
1. folliculitis.
2. candidiasis.
3. pyoderma gangrenosum.
4. pseudoverrucous lesions.

12. Local and systemic steroid therapy may be needed to treat
1. folliculitis.
2. candidiasis.
3. pyoderma gangrenosum.
4. pseudoverrucous lesions.