Perioperative Management of the Ambulatory Anorectal Surgery Patient

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Abstract

Keywords

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Ambulatory surgery is appropriate for most anorectal pathology. Ambulatory anorectal surgery can be performed at reduced cost compared with inpatient procedures with excellent safety, improved efficiency, and high levels of patient satisfaction. Several perioperative strategies are employed to control pain and avoid urinary retention, including the use of a multimodal pain regimen and restriction of intravenous fluids. Ambulatory anorectal surgery often utilizes standardized order sets and discharge instructions.

Prior to the 1980s, most anorectal surgery was performed in a hospital environment, and involved a stay in the hospital that could last for several nights as the patient recovered. Over time, it became evident that most anorectal procedures did not require such an elaborate recovery, and could instead be performed in an ambulatory fashion. Currently, it is estimated that as many as 90% of anorectal procedures may be candidates for ambulatory surgery.¹ Anorectal pathology amenable to ambulatory surgery includes anal fissures, warts, fistulas, hemorrhoids, pilonidal cysts, abscesses, and small neoplasms, among others.²

Ambulatory anorectal surgery is an appealing approach for patients and physicians due to its increased efficiency and decreased surgical costs.³ This coincides with a high degree of patient satisfaction in spite of challenges such as decreased contact time with the medical staff. Ambulatory anorectal surgery can be successful for all parties involved with proper patient selection, the use of evidence-based perioperative care, effective postoperative pain control, patient education, and follow-up. This article focuses on the perioperative approach to patients undergoing ambulatory anorectal surgery.

Preoperative Evaluation

Ambulatory surgical procedures should be performed in a setting with adequate personnel and equipment to provide

a safe procedure, anesthesia, and recovery. This includes freestanding ambulatory surgery centers (ASCs) as well as hospital-based outpatient surgery departments which appear to perform equally well.⁴ Reasons cited for improved performance of freestanding ASCs may include increased volume for specific procedures, newer facilities, and improved staffing. Hospital-based outpatient surgery departments may have benefits derived from their hospital relationship, including greater resources of equipment and specialists.⁵

A history and physical examination is the first step in preoperative evaluation for selection of ambulatory surgery candidates. Patient comorbidities as well as functional limitations should be assessed.⁶ The type and extent of surgery should be considered since not all anorectal procedures are minor. When deemed necessary based on the history and physical exam, a cardiovascular evaluation may help to exclude medical conditions such as unstable angina, acute heart failure, significant arrhythmia, valvular disease, or recent myocardial infarction. Emphasis should be placed on physician assessment to guide further testing rather than routine chest radiographs and electrocardiograms.⁷ Similarly, the current American Society of Anesthesiology Task Force guidelines on preanesthesia evaluation advocate against routine preoperative laboratory testing without the history suggesting an indication to do so.⁸

Preoperative anesthesia evaluation may also facilitate prompt discharge from the ambulatory surgical facility. Anesthesia assigns a class according to the American Society of Anesthesiologist (ASA) system which is helpful in predicting admission.⁹ This classification describes the overall fitness of patients based on systemic disease. In general, ASA class I and II patients are deemed appropriate candidates for ambulatory anorectal surgery. Select ASA III patients may also be amenable to ambulatory surgery.¹⁰ Anesthesia interventions can also facilitate discharge by identifying and preemptively treating patients at risk for postoperative nausea and vomiting (PONV). Randomized controlled studies in patients undergoing outpatient anorectal surgery have shown that dexamethasone administered before anesthesia induction significantly reduces PONV, improves time to home readiness, and improves satisfaction without affecting surgical healing.^{11,12}

Perioperative Management

Venous Thromboembolism Prophylaxis

There is a relative paucity of evidence to guide venous thromboembolism (VTE) prophylaxis in outpatient surgery. The overall risk of 30-day VTE in ambulatory surgery ranges from 0.06 to 1.18%. For routine ambulatory anorectal surgery in patients without an elevated risk for VTE, the American College of Chest Physicians evidence-based practice guidelines state that the use of early ambulation alone is adequate for VTE prophylaxis.¹³ The use of pharmacologic agents such as unfractionated or low-molecular-weight heparin is not indicated for this group, and neither are forms of mechanical prophylaxis including compression stockings and sequential compression devices.

Enhanced techniques for VTE prophylaxis may be appropriate in individuals with increased overall risk, taking into consideration the risk of bleeding, the magnitude and type of surgery being performed, and the personal history of the patient.^{14,15} Risk factors for VTE for outpatient surgery based on the American College of Surgeons National Surgical Quality Improvement Program include pregnancy, cancer, increased age, increased body mass index, and operative time of 120 minutes or greater.¹⁴ Overall thromboembolic risk can also be assessed by tools such as the Caprini score.¹³ To reduce confusion, ambulatory anorectal surgery patients may benefit from the use of standardized, institution-wide protocols for VTE prophylaxis based on risk.

Antibiotics

Rates of surgical site infection (SSI) after ambulatory anorectal surgery are extremely low. Routine perioperative use of prophylactic oral or intravenous antibiotics is not warranted for anorectal surgery. A retrospective review of 852 patients undergoing closed hemorrhoidectomy showed an SSI incidence of 1.4%. In this cohort, the use of antibiotics did not decrease SSI.¹⁶ A randomized, controlled trial of 100 patients undergoing Milligan–Morgan hemorrhoidectomy also showed no reduction in SSI or wound healing with antibiotic administration.¹⁷

Another area of controversy is the use of postoperative antibiotics after incision and drainage of anal abscesses. In 2011, a randomized, placebo-controlled, double-blind multicenter trial evaluated the effect of postoperative amoxicillin/clavulanate on anal fistula formation on 151 patients following drainage of an anal abscess. This study found no difference in rates of fistula formation between the placebo and antibiotic groups.¹⁸ Postoperative antibiotics after anorectal abscess drainage should be reserved for patients with diabetes and immunocompromised states, and those with significant cellulitis and sepsis.¹⁹ In addition, cultures collected at the time of abscess drainage are unlikely to change management and should probably be reserved for immunocompromised or severely ill patients and those at risk for unusual organisms.²⁰

Bowel Preparation and Bowel Regimen

A full, mechanical bowel prep (MBP) is rarely warranted for routine anorectal surgery. A randomized clinical trial addressed this issue in patients undergoing hemorrhoidectomy, and failed to demonstrate any benefit of MBP with regard to operative time, pain, visualization, or complications.²¹ Prior to anorectal surgery, patients are usually instructed to perform a cleansing enema to maximize visualization. However, this does not affect rates of infection, and can be omitted if the patient's pain is too great to undergo enema.

Positioning for Surgery

Patient positioning in anorectal surgery should facilitate optimal visualization of pathology and expedient performance of the procedure. The three primary positions used in anorectal surgery include dorsal lithotomy, left lateral decubitus, and prone.²² Of note, all three described positions for anorectal surgery are well tolerated with a very low rate of associated complications. In general, positioning is determined by the orientation of the pathology within the anal canal, as well as surgeon preference.

The lithotomy position involves a supine patient with the lower extremities flexed and in stirrups. Its advantages include excellent visualization of low posterior lesions, less patient manipulation, and a more accessible airway for anesthesia. However, the lithotomy position may be detrimental for visualization of anterior pathology and for complicated hemorrhoids in all quadrants.

The left lateral position, or modified Sims position, is a comfortable position for office examination or surgery and entails placing the left side down with the left leg extended straight and the right leg flexed toward the chest. A variation of this involves flexing both legs into a knee-chest position. There is particular benefit with this position for patients late in pregnancy whenever office examination or anorectal surgery is required.²²

The prone position is frequently used in the operating room in anorectal surgery. After protecting the bony ventral surfaces of the body and positioning on a hip roll with care to protect the genitalia, the buttocks can easily be taped apart. Special care should also be taken to protect the face, chest, and breasts with strategically placed cushions and chest rolls. Pressure point protection of the cephalad extended arms

should also be performed. Complicated anorectal anatomy such as hemorrhoids and anterior lesions may be better visualized by the surgeon and assistants in the prone position. The tradeoff of this exposure is potential difficulty from an anesthesia viewpoint with ventilation. Patients may also report discomfort over the pubis.²²

Fluid Management

Urinary retention is a common complication following anorectal surgery, occurring in up to 34% of patients undergoing complex anorectal surgery.^{23,24} It is most frequent after hemorrhoidectomy.²⁵ The number of quadrants excised during hemorrhoidectomy, analgesia requirements, patient age, and aggressive intravenous fluid administration are all risk factors for urinary retention. Multiple synchronous anorectal procedures have also been associated with urinary retention.²⁴

The cause of urinary retention is thought to be swelling and spasm within the anal canal, with subsequent contraction of the bladder neck. If high volumes of intravenous fluids are administered, the bladder becomes overdistended, atonic, and difficult to empty. One of the main interventions to combat this issue is the restriction of perioperative intravenous fluids. This allows time for the swelling to decrease prior to attempts to void, and prevents overdistention of the bladder. Intravenous fluids should be given at the lowest rate considered safe intraoperatively with less than 750 mL recommended for most patients.²⁴ Intravenous fluids should usually infuse at 50 mL/h or less postoperatively and should be discontinued as soon as patients are awake and able to start oral intake.²⁶ A large randomized study demonstrated the value of restricting postoperative fluid administration to 250 mL or less to prevent urinary retention. This study also highlighted less urinary retention with improved patient and nursing education.²³

If urinary retention does develop, the best initial step is to have the patient bathe in a warm water bath filled above the waist, which often facilitates bladder emptying. If this intervention is unsuccessful, the patients occasionally require temporary catheterization. It should be noted that the ongoing or worsening inability to urinate is also associated with perianal sepsis, and the clinician should not immediately dismiss this phenomenon as related to swelling alone.

Anesthesia

Local Anesthesia

Local anesthetic injection during anorectal surgery is a common technique that can provide effective pain control and assist in lowering the need for postoperative narcotics. A field block can help to achieve effective anesthetic blockade of the perianal tissues including the anal sphincter and circumferentially in the anal canal.²² Our approach includes the use of either lidocaine 1% or bupivacaine 0.25% combined with epinephrine 1:200,000 for the purpose of vasoconstriction. The perianal skin is infiltrated in a circumferential manner, after which a submucosal injection of anesthetic is made circumferentially within the anal canal. A total volume of 20

to 40 mL is usually adequate to obtain proper analgesia. A pudendal nerve block may also be added, and it has been shown to reduce postoperative urinary retention compared with spinal anesthesia for hemorrhoidectomy, with improved potential for expedient discharge.²⁷

Liposomal Bupivacaine

Bupivacaine is an effective medication for local analgesia, but its effects typically wear off within 10 to 12 hours.^{28,29} Extended release liposomal bupivacaine (Exparel, PACIRA Pharmaceuticals, Parsippany, NJ) is a promising new agent for local analgesia, advertising a 72-hour period of efficacy due to its molecular design. Among patients undergoing hemorrhoidectomy, this local agent has been shown to reduce postoperative pain over 72 hours, decrease narcotic needs, and improve patient satisfaction when compared with placebo.³⁰ While it appears to be superior to placebo, it is relatively expensive, and it has not been definitively shown to be superior to conventional local anesthesia. However, there is a single randomized controlled trial comparing liposomal bupivacaine with bupivacaine HCl for 100 patients undergoing hemorrhoidectomy. In this study, the liposomal bupivacaine group had lower cumulative pain scores and cumulative narcotic consumption at 72 hours after surgery.³¹ More studies are necessary prior to determining the true role of liposomal bupivacaine in anorectal surgery.

Nonsteroidal Anti-Inflammatory Drugs

Nonsteroidal anti-inflammatory drugs (NSAIDs) are another useful adjunct to patient analgesia. Patients are often given a single dose of intravenous ketorolac during the perioperative period to augment their analgesia. This can be given intraoperatively or prior to dismissal. This practice is supported by a prospective, randomized trial comparing perioperative ketorolac to placebo for anorectal surgery, where the ketorolac group was shown to have reduced postoperative pain and decreased postoperative oral analgesic requirements.³² Of note, ketorolac should only be used in healthy individuals without a history of renal insufficiency.

Monitored Anesthesia Care

Intravenous anesthesia with propofol is commonly used in conjunction with local anesthesia during anorectal surgery. Intravenous anesthesia, whether administered as conscious sedation, monitored anesthesia care, or total intravenous anesthesia for these procedures, is usually performed by the anesthesiologist. However, for some ASA I or II patients and procedures, surgeon-administered conscious sedation with fentanyl and midazolam appears to be safe and to have high patient satisfaction.³³ The combination of intravenous and local anesthesia appears to be an efficient modality for ambulatory anorectal surgery that is beneficial in reducing postoperative analgesic requirement and expedites the recovery process.³⁴

General Anesthesia

General anesthesia is another option in the ambulatory anorectal setting that may be preferred for lengthier and

complicated anorectal procedures. However, ventilation in the prone position may be difficult in certain cases such as obesity and chronic obstructive pulmonary disease.²² General anesthesia can also be routinely combined with perianal infiltration of local anesthetic at the time of anorectal surgery to improve postoperative pain control.³⁰

Regional Anesthesia

Regional anesthesia techniques including epidural and spinal blockade are also available in addition to effective methods of surgical anesthesia in anorectal surgery. These techniques have traditionally been associated with higher rates of postoperative urinary retention, but some debate exists within the literature.

In 2000, a three-arm randomized clinical trial was conducted comparing the following methods of anesthesia for anorectal surgery: (1) local anesthetic infiltration along with intravenous sedation, (2) spinal subarachnoid block with sedation, and (3) general anesthesia with local infiltration. In this study, the combination of local and intravenous anesthesia had significantly decreased intraoperative and recovery costs, decreased anesthesia time, and decreased time to discharge. There was no difference in postoperative side effects or need for admission between the three groups, and patients receiving local with intravenous anesthesia were the most satisfied.³⁵ Other prospective studies have replicated superior cost savings and decreased recovery room time for combined use of perianal block with local anesthesia and intravenous anesthesia using propofol over regional anesthesia.³⁴

Overall, many options exist for perioperative anesthesia and analgesia, and the surgeon should tailor the techniques to fit the anatomy, pathology, and comorbidities of the patient.

Postoperative Pain Management

Oral Analgesia

Postoperative pain control in the ambulatory surgical patient often involves a multimodality approach. Acetaminophen in conjunction with NSAIDs such as ketorolac and ibuprofen can be an effective narcotic-sparing approach to pain control.³⁶ That being said, narcotics also are commonly used following anorectal procedures.³⁷ Oral narcotics should be reserved for breakthrough pain and in combination with other agents to minimize the constipation associated with these agents, which can often ultimately exacerbate pain symptoms.

Gabapentin is another nonnarcotic oral agent that can be used for postoperative pain. A prospective, open-label study recruited hemorrhoid surgery patients to receive gabapentin or not along with other standard treatments. Daily use of gabapentin was noted to significantly decrease postoperative pain at 1, 7, and 14 days compared with standard treatment. However, this study was not blinded and a bias effect could not be ruled out and further evidence for its use is needed.³⁸

Oral metronidazole has long been advocated as another useful adjunct to postoperative analgesia. A small randomized controlled trial in 1998 showed decreased pain in a group of patients who were given postoperative oral metro-

nidazole when compared with those on placebo.³⁹ Surgeons would sometimes quote this study tongue-in-cheek as an excuse to give postoperative antibiotics. However, a second trial with similar design in 2002 showed no difference in postoperative pain.⁴⁰ A 2008 study focusing on pain after sphincterotomy also failed to show benefit.⁴¹ Currently, the role of oral metronidazole for postoperative analgesia is unclear.

Sitz Baths

Sitz baths are another commonly offered adjunct for pain control and comfort following anorectal surgery. The evidence supporting sitz baths is modest, but randomized trials suggest that sitz baths may improve anal burning and patient satisfaction after sphincterotomy, although actual pain relief may not be significantly decreased.^{42,43} In our opinion, the use of sitz baths remains a worthwhile potential adjunct with little associated risk. Ambulatory anorectal surgery order sets commonly include the use of sitz baths or showers starting within 24 hours of the operation and performed three times per day and after bowel movements for comfort and cleanliness.

Topical Agents

Topical anesthetics are commonly used as additional agents for home pain relief following anorectal surgery. Topical lidocaine ointment can be used alone or in conjunction with other agents. For example, lidocaine and prilocaine (EMLA, AstraZeneca, Wilmington, DE) ointment can provide supplemental pain relief and spare narcotic use over placebo even when local anesthetics are injected intraoperatively.⁴⁴

Spasm of the internal anal sphincter after hemorrhoidectomy has been suggested to be a contributory factor in pain and to be an inhibitor of healing, and so topical agents used for anal fissures have also been suggested for use in postoperative pain. A meta-analysis of hemorrhoidectomy supported the use of glyceryl trinitrate (GTN) ointment for improving pain control for 3 to 7 days after surgery with improved healing, although the side effect of headache was a limiting factor.⁴⁵ Many of the clinical trials included in this meta-analysis had a small number of patients and appeared to have heterogenous results. Topical diltiazem after hemorrhoidectomy has also been shown to decrease reports of pain, but does not spare narcotic use.⁴⁶ Overall, these less commonly used agents require further evidence to validate the benefit of their potential inclusion in a standardized pain control regimen for outpatient anorectal surgery.

Another promising analgesic is topical sucralfate. A 7% sucralfate ointment was compared with placebo in a double-blind randomized controlled trial of patients undergoing anal fistulotomy, where it was associated with higher rates of wound healing and decreased postoperative pain.⁴⁷ Another blinded, randomized controlled trial from the same author compared sucralfate ointment to placebo for hemorrhoidectomy, and demonstrated significantly better wound healing, lower pain scores, and less narcotic consumption.⁴⁸

Topical metronidazole 10% ointment has also been suggested to be a potential adjunct in postoperative pain

management following anorectal surgery, although randomized trials for metronidazole in this off-label setting of post-anorectal surgery pain control have had mixed results.^{40,49}

Postoperative Bowel Regimens

A postoperative bowel regimen is often recommended following anorectal surgery, with the goal of avoiding constipation and straining that could increase postoperative pain or compromise suture lines. However, there is limited evidence that one specific regimen is superior to others. Most patients are placed on a high-fiber diet with fiber supplementation to help bulk up the stool. A randomized study among patients receiving either wheat fiber or laxatives demonstrated that the fiber group had a shorter hospital stay, less pain after defecation, and less fecal leakage.⁵⁰

Summary and Recommendations for Postoperative Analgesia

In summary, a multimodality approach to pain management appears to be essential following anorectal surgery to facilitate discharge, minimize urinary retention, and reduce the need for admission. Local blockade, preferably using longer-acting anesthetic agents, should be placed at the time of surgery. Oral narcotics can be offered but should be minimized as much as possible with the concomitant use of NSAIDs and acetaminophen to control pain. Sitz baths remain a well-tolerated adjunct to pain control. Accompanying use of topical anesthetics postoperatively may also improve pain. The addition of other agents to the routine postoperative anorectal pain control armamentarium such as sucralfate, gabapentin, GTN, and metronidazole has uncertain utility for pain control and further studies are needed.

Cost and Safety of Ambulatory Anorectal Surgery

A combination of factors has contributed to the increased use of ambulatory surgery.⁵¹ Factors appealing to patients and physicians have been reported to include the relative ease of scheduling cases and the advantage of avoiding a hospital stay and early return to the comfort of the home environment. In addition, significant cost savings have been reported to drive a large part of the movement toward ambulatory surgery in general.⁵² Ambulatory surgery appears to be more cost effective than inpatient procedures. Numerous charges are avoided with ambulatory surgery including the cost of admission, use of ward-based supplies, respiratory therapy, increased medication costs, and laboratory charges.^{3,53} It has been suggested that cost savings of 25 to 50% may come from ambulatory surgery compared with the inpatient setting without worsened outcomes.⁵⁴

Ambulatory anorectal surgery also appears to be safe.⁵⁵ Death is extremely rare as are significant complications which appear to be related to underlying patient comorbidities rather than the specific procedure being performed.⁵⁶ The American Association for Accreditation of Ambulatory Surgery Facilities reported 23 deaths out of 1,141,418 ambulatory surgical procedures performed.⁵⁷ Large prospective cohort studies have reported low readmission rates in the range of 1% following general anorectal surgery, although this rate is

variable by comorbidity and specific anorectal procedure. Most ambulatory anorectal surgery patients should expect prompt and efficient discharge, although consideration of exclusion from the ambulatory setting should be given to the presence of significant medical comorbidities or certain emergency presentations.⁵⁸

A study of 969 patients undergoing ambulatory anorectal surgery also found the complication rate to be low (3.9%).⁵⁶ Among the reported complications, 82% were minor and included urinary retention, wound infection, or minor bleeding. The majority of these complications were recognized in the outpatient setting. A prospective study of 1,269 patients after anorectal surgery specifically assessed postoperative bleeding. Seventy-eight patients (6%) were found to have postoperative bleeding events, which were managed in the following fashion: 22% were managed conservatively at home, 51% required hospitalization with observation alone, and 27% were severe enough to require transfusion or reoperation. Risk of readmission after anorectal surgery was best predicted by hemorrhoidopexy procedure and the need for anticoagulation.⁵⁹

Major complications after anorectal surgery appear to be related to major concomitant illnesses instead of directly to the procedure itself.⁵⁶ This again stresses preoperative evaluation as a guide in selecting candidates for ambulatory surgery.

Efficient and Safe Discharge

The key to ambulatory anorectal surgery is the ability to safely and efficiently move patients through the recovery process. The Aldrete score is a tool that helps to assess patient recovery from anesthesia. This score has been used to guide discharge from the postanesthesia care unit based on parameters of activity, respiration, circulation, consciousness, and oxygen saturation.⁶⁰ Other objective assessments of home discharge safety after ambulatory surgery include tools like the postanesthesia discharge scoring system.^{61,62} This tool uses vital signs, activity, vomiting, pain, and bleeding to determine readiness for transition from Phase II recovery to home.

Other key elements that appear to facilitate successful ambulatory surgery include routine use of standardized postoperative order sets and follow-up instructions. Standardized order sets should help provide comprehensive and legible orders leading to reproducible results that can be efficiently presented to the patient and family for review at the time of discharge and thereafter. While there is no high-level evidence for this process, reports suggest positive reviews and improved satisfaction from nursing staff and patients regarding their understanding of orders and instructions as well as improved efficiency for surgeons.⁶³

Patient Satisfaction

Patient satisfaction is an important outcome in the present health care environment. Ambulatory anorectal surgery can be performed with low complication rates and high patient acceptance and satisfaction.⁶⁴ Patient satisfaction does not appear to decrease after ambulatory anorectal procedures compared with inpatient procedures in spite of the decreased

contact time with the facility staff.⁶⁵ Patients should anticipate improved quality of life and high satisfaction after ambulatory anorectal surgery in association with the use of efficient perioperative pain management.⁶⁶ Besides predicting readiness for discharge, measurements for the quality of recovery effectively predict patient satisfaction.⁶⁷

Preoperative patient education and the setting of expectations is another key element in the success of ambulatory anorectal surgery management. Training physicians to obtain adequate informed consent and setting realistic patient expectations have been shown to improve patient satisfaction.⁶⁸

Improved nursing education and written discharge instructions provided to patients after hemorrhoidectomy have also been shown to improve patient satisfaction and to decrease the need for patients to seek additional medical attention postoperatively.⁶⁸ Follow-up telephone calls after ambulatory surgery can also help to decrease the need for follow-up appointments.⁶⁹ These factors likely affect readmission rates and overall patient satisfaction with the ambulatory anorectal surgery process.

Conclusion

Ambulatory surgery is a safe and cost-effective approach to the management of common anorectal conditions. Many anorectal procedures can be performed using locally infiltrated anesthetic agents and intravenous anesthesia to facilitate rapid recovery and satisfaction. A multimodality approach to pain control is also essential to support successful ambulatory anorectal surgery. An efficient system that safely moves patients through the recovery phases of ambulatory anorectal surgery can help to achieve high patient satisfaction and excellent clinical results.

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