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Evaluation & Management of a Patient with an Abdominal Wall Hernia

Description of the Activity	Patients with abdominal wall bulging or abdominal wall hernias are frequently referred to general surgeons. The general surgeon must be able to evaluate patients presenting with these conditions and provide operative and nonoperative management. Surgeons should collaborate with anesthesia staff, nursing staff, and other perioperative health care professionals to create and maintain an environment that promotes patient-centered care.
Functions	❖ Nonoperative/Preoperative ➢ Perform a focused history and physical examination, including prior abdominal operations, important comorbid conditions, and pertinent positive and negative signs and symptoms. ▪ Consider history and comorbidities that can modify patient care: • Prior abdominal hernia repairs • Cancer diagnoses or operations • Comorbid conditions that affect surgical risk: ♦ Cirrhosis ♦ Diabetes mellitus (DM) ♦ Major cardiac or pulmonary disease ♦ Obesity • Modifiable behaviors ♦ Alcohol use ♦ Smoking ➢ Determine if additional information or diagnostic evaluation should be obtained. ▪ Operative reports of prior abdominal wall surgery if not already available ▪ Ultrasound or cross-sectional imaging for diagnostic confirmation or delineation of hernia anatomy or prior mesh position ▪ Cancer screening or surveillance in patients at risk ➢ Evaluate a patient for any conditions that may require concomitant surgical intervention, and assess their effect on the hernia repair strategy: ▪ Colostomy or ileostomy closure ▪ Enterocutaneous fistula ▪ Symptomatic gallbladder disease ➢ Evaluate a patient's perioperative risk, and ensure the patient's comorbid conditions are adequately optimized before surgery, allowing for urgency of intervention. Conditions requiring consultation and management include: ▪ Cirrhosis ▪ Immunosuppression ▪ Obesity ▪ Poorly controlled DM ▪ Smoking and alcohol use ▪ Symptomatic cardiopulmonary disease

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- Identify the significance of chronic steroid use in the perioperative period, and apply an algorithm for intraoperative and postoperative management.
- Identify the effects of malnutrition.
- Identify the multisystemic effects of tobacco use and cessation timing as they relate to perioperative outcomes, including postoperative pulmonary complications and wound healing.
- Use adjunctive tools to assess common medical comorbidities and evaluate perioperative risks, including:
  - Assessment of preoperative nutritional status via laboratory testing and appreciation of its effect on postoperative healing and recovery
  - Cardiac risk stratification using echocardiography and the Revised Cardiac Risk Index (RCRI) as they pertain to the patient's cardiac history
  - Functional risk stratification via quantifying metabolic equivalents (METs) and the Frailty Index
  - Pulmonary function tests for patients with limited pulmonary reserve
- Identify variables that contribute to the proper timing of surgery (eg, status post myocardial infarction, poorly controlled DM, recent stent, electrolyte abnormalities, coagulopathy).
- Consider the role of prehabilitation.
- Synthesize information from the patient's history, physical examination, diagnostic evaluation, and risk assessment to determine if hernia surgery is indicated.
  - Determine the urgency of surgery based on presentation, identifying a patient with indications for emergency hernia management.
  - Identify a patient who should be referred to a hernia specialist for intervention.
- Develop an operative approach that integrates a patient's history, physical examination, prior surgeries, imaging findings, and concomitant disease.
  - Laparoscopic/minimally invasive (MIS) versus open approach
  - Need for use of mesh
  - Mesh type selection
  - Incorporation of patient preferences into the operative plan
- Obtain informed consent with cultural humility.
  - Describe the indications, risks, benefits, alternative therapies, and potential complications of the planned procedure, and incorporate a discussion of the goals of care.
  - Ensure patient/caregiver comprehension using applicable language services and audio/visual aids.
  - Ensure that the patient/caregiver(s) can ask questions, and address any expressed concerns, taking patient/caregiver preferences into account.
  - Document the consent discussion.

❖ Intraoperative

- Manage the perioperative environment, including room setup, equipment check, preprocedural time-out, specimen processing, counts, wound classification, and debriefing functions.
- Position the patient to expose the operative field, taking precautionary measures to prevent iatrogenic injury.

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- Confirm the availability of necessary equipment and mesh.
- Collaborate with other perioperative health care professionals to create and maintain an intraoperative environment that promotes safe patient care.
- Perform abdominal wall hernia repair:
- Laparoscopic hernia repair (intraperitoneal onlay mesh)
  - Safely access the abdominal cavity using the Veress or Hassan technique, and establish pneumoperitoneum.
  - Select and position working ports.
  - Perform lysis of adhesions without injury to bowel or other structures.
  - Ensure the abdominal wall around the hernia is cleared to place the mesh with sufficient overlap.
  - Reduce all hernia contents, and assess the hernia defect size.
  - Integrate new information discovered intraoperatively to modify the surgical plan/technique as necessary (eg, bowel ischemia [incarcerated hernia], bowel injury, defect size, additional defects).
  - Decide whether (and how) to close the primary defect.
  - Select the type and size of mesh required for hernia repair.
  - Position, orient, and fixate the mesh.
- Open hernia repair
  - Safely access the abdominal cavity.
  - Expose the hernia sac and neck at the abdominal wall fascial plane.
  - Perform lysis of adhesions without injury to bowel or other structures.
  - Assess hernia size.
  - Identify fascial and peritoneal planes to select the location of mesh placement.
  - Identify fascial planes for anterior component separation and for peritoneal dissection for posterior component release and preperitoneal mesh placement.
  - Integrate new information discovered intraoperatively to modify the surgical plan/technique as necessary (eg, bowel ischemia [incarcerated hernia], bowel injury, defect size, additional defects).
  - Determine if mesh is needed, and select the type and size required for hernia repair in light of intraoperative factors.
  - Position, orient, and fixate the mesh in the selected anatomic position.
  - Select sutures and measure wound length ratios for stitch spacing to close the anterior fascia.
  - Use surgical drains to prevent complications (seroma/hematoma) based on intraoperative conditions.

❖ Postoperative

- Communicate a postoperative plan to a patient/caregiver(s) and other health care team members that considers location, postoperative needs, outcome expectations, and follow-up.
- Develop a follow-up plan that considers patient-specific barriers to care.
- Recognize and manage the most common complications after operative management of abdominal wall hernia, such as:
  - Acute early hernia recurrence (within 7 days) and early fascial dehiscence with or without bowel obstruction
  - Early mesh infection
  - Hematoma and seroma formation

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	▪ Prolonged postoperative ileus ▪ Superficial and deep wound space infections ▪ Unrecognized visceral injury ➢ Provide follow-up in clinic to include proper timing of drain removal and patient precautions for resumption of activities to prevent complications and early hernia recurrence.
Scope	❖ In scope ➢ Incisional hernia ➢ Laparoscopic/MIS repair ➢ Open hernia repair ➢ Primary umbilical hernia repair/ventral hernia repair ➢ Recurrent incisional hernia ❖ Out of scope ➢ Complex abdominal wall reconstruction ➢ Parastomal hernia ➢ Rare abdominal wall hernias (eg, Spigelian)

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1 **Limited Participation** Demonstrates understanding of information and has very basic skills **Framework:** What a learner directly out of medical school should know The attending can show and tell.	• Obtains an H&P inclusive of hernia-specific symptoms with cultural humility but may not ask about modifiable risk factors • Respectfully communicates basic facts about the condition to a patient/caregiver(s) but inconsistently uses applicable language services and audio/visual aids • Displays limited understanding of abdominal wall hernia repair options, including use of MIS and mesh • Identifies evidence regarding the best approach to abdominal wall hernia repair	• Assists with surgical positioning and preparation of a patient (Both) • Maintains a sterile field (Both) • Identifies tissue planes with active guidance and retraction (Both) • Requires active instruction to move the operation forward (Both) • Performs superficial wound closure (Both) • Assists with adequate exposure by retracting (Open) • Follows intraoperative directions; demonstrates basic skills but is inefficient with them (suturing and knot tying); displays limited ability to reduce a hernia or lyse adhesions (Open) • Handles instruments inefficiently and with limited dexterity; displays incomplete understanding of correct tissue handling (Open) • Handles instruments and the camera safely but often tentatively and demonstrates a lack of coordination between both hands (MIS) • Displays coordinated hand movements for simple maneuvers under direct instruction but does so inefficiently (MIS) • Needs help to obtain abdominal access using the Veress or Hasson technique; places ports with guidance but cannot select port location (MIS) • Centers the operative field (anatomy and instruments) with the camera but needs frequent adjustments and reminders (MIS)	• Communicates basic aspects of the operative procedure and ongoing management plan to a patient/caregiver(s) but needs prompting to clarify expected outcomes and the overall anticipated treatment course • Evaluates simple postop problems, such as fever, wound erythema hypotension, PONV, or wound hematoma, but requires direction to manage them
2 **Direct Supervision** Demonstrates understanding of the steps of the operation but requires direction	• Evaluates a patient with an abdominal wall hernia and identifies modifiable risk factors (eg, smoking, obesity); needs guidance to manage comorbid risks like lung or liver disease or steroid use • Requests and interprets imaging studies with assistance; obtains prior	• Performs some steps of simple abdominal wall hernia repair (eg, open umbilical hernia repair) with minimal assistance but cannot perform the whole operation (Both) • Initiates dissection of the hernia sac but requires frequent prompting to stay in the correct plane and avoid entering the hernia sac (Both)	• Communicates details of the operative procedure and ongoing management plan to a patient/caregiver(s) but omits some elements when discussing expected outcomes and the overall anticipated treatment course

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through principles and does not know the nuances of a basic case **Framework:** The learner can use the tools but may not know exactly what, where, or how to do it. The attending gives active help throughout the case to maintain forward progression.	operative reports and determines a patient's cancer screening status • Demonstrates understanding of basic approaches to hernia repair but does not consider hernia characteristics, comorbid conditions, or patient preferences to select an optimal hernia repair strategy; displays limited knowledge of advanced hernia repair techniques such as component separation • Respectfully communicates basic facts about the diagnosis to a patient/caregiver(s), customizing communication to overcome barriers and cultural differences and using applicable language services and audio/visual aids • Communicates the elements that constitute an informed consent discussion in a straightforward case but is unable to lead a discussion about risk factor modification • Applies evidence when planning a hernia repair strategy • Discerns incarcerated and reducible hernias and demonstrates understanding of nonoperative and operative strategies for abdominal wall hernia repair	• Uses surgical energy safely throughout the case (Both) • Needs prompting to use surgical drains for large potential spaces (Both) • Requires assistance to dissect the planes needed in a component separation or retrorectus repair (Open) • Performs straightforward abdominal closure with minimal assistance (Open) • Handles instruments safely but tentatively; struggles with 2-handed operating and operating against the camera (MIS) • Gains abdominal access with the Veress or Hasson technique; places working ports, though the ports are sometimes too lateral or close to the hip and limit dissection; demonstrates understanding of the concept of triangulation but does not always achieve it with port placement (MIS) • Anticipates some next steps in the operation and necessary instruments (MIS) • Places subsequent laparoscopic trocars after initial entry and closes skin independently (MIS) • Reduces a simple hernia without help but needs assistance if significant adhesions are involved and cannot reliably excise a hernia sac without assistance (MIS) • Sizes intraperitoneal mesh but needs help to position/fix the mesh (MIS)	• Evaluates a patient with a complex postop problem (eg, sepsis, anastomotic leak) but needs help to develop a management plan • Manages simple postop problems (eg, fever, pain, oliguria)
3 **Indirect Supervision** Can do a basic operation but will not	• Develops a plan for managing a healthy patient with a primary hernia, considering all operative approaches and the use of mesh as indicated	• Identifies tissue planes that have not been previously dissected but may need help to identify/manage variable anatomy or identify tissue planes in a reoperative field to prevent iatrogenic injuries (Both)	• Proactively explains customized postop instructions and updates to a patient/caregiver(s) using a variety of methods to ensure understanding; discusses

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recognize abnormalities and does not understand the nuances of an advanced case **Framework:** The learner can perform the operation in straightforward circumstances. The attending gives passive help. This help may be given while scrubbed for more complex cases or during a check-in for more routine cases.	• Develops an evidence-based plan for a patient with a recurrent or complex hernia, considering hernia characteristics, comorbid conditions, and patient preferences • Identifies an unusual hernia type such as a flank or Spigelian hernia and selects a repair strategy • Respectfully communicates a patient's medical condition barriers and cultural differences; discusses modification of risk factors and comorbid conditions to elicit a personalized care plan for a straightforward presentation in a shared decision-making process • Conducts an informed consent discussion for operative management of an abdominal wall hernia with cultural humility and completely documents the discussion	• Smoothly dissects a hernia sac and enters the abdomen of a patient with prior operations with minimal assistance (Both) • Needs faculty input for decisions about drain use and positioning (Both) • Performs an open umbilical or epigastric hernia repair with minimal assistance (Open) • Demonstrates understanding of the planes of anterior and posterior component separation but needs help to develop these planes and position the mesh for TAR repair (Open) • Obtains abdominal access and places ports in an effective position without assistance (MIS) • Performs laparoscopic enterolysis and reduces hernia contents safely and with minimal assistance (MIS) • Clears an appropriate extent of abdominal wall for mesh placement without assistance(MIS) • Excises the hernia sac without assistance; closes a small hernia defect independently but requires help with a large hernia defect (MIS) • Handles laparoscopic instruments smoothly and begins to work effectively against the camera (MIS) • Sizes mesh for IPOM repair but needs help to position/affix large pieces of mesh (MIS)	unexpected findings or changes to the intended plan with cultural humility • Formulates a postop plan for a patient with a ventral hernia, including drain management and activity limitations • Evaluates and manages a patient with a complex postop problem after hernia repair (eg, sepsis, anastomotic leak)
4 **Practice Ready** Can manage more complex patient presentations and operations and take care of most cases	• Manages a complex patient with an abdominal wall hernia (eg, concomitant fistula, infected mesh, parastomal hernia) • Develops a treatment plan that accounts for hernia characteristics and a patient's comorbid conditions • Discusses nuances of hernia repair, including futility, use of mesh, and need for management of (modifiable) risk factors and comorbid conditions with a patient/caregiver(s) across	• Anticipates challenges in a difficult case (eg, reoperative surgery) and asks for assistance as needed (Both) • Identifies the need for mesh and selects the type and size required for hernia repair (Both) • Uses surgical drains for prevention of complications (seroma/hematoma) based on intraoperative conditions (Both) • Identifies the need to change the operative approach based on intraoperative findings such as enteric contamination (Both)	• Customizes emotionally difficult news (eg, changes to the operative plan, adverse outcome, end-of-life discussion) to a patient/caregiver(s) in a culturally dexterous and caring manner • Anticipates complications after hernia repair (eg, superficial and deep wound space infections, early mesh infection, hematoma/seroma formation, prolonged postop ileus, unrecognized visceral injury, acute

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Framework: The learner can treat all straightforward abdominal wall hernias and has a strong understanding of surgical options and techniques for less common scenarios. The attending is available at the request of the learner but is not routinely needed for common presentations, though input may be needed for more complex presentations	barriers and cultural differences; negotiates and manages conflict between a patient, caregivers, and the health care team • Conducts an informed consent discussion for complex abdominal wall repair with cultural humility, eliciting patient preferences and documenting risks and benefits individualized to the patient • Critically appraises and applies evidence but can adjust for a more complex and nuanced hernia presentation and tailor the plan to a patient's situation • Identifies the need to coordinate another intra-abdominal operation with hernia repair • Addresses modifiable risk factors before surgery; optimizes comorbid conditions before elective surgery	• Minimizes potentially preventable complications, such as iatrogenic enterotomies or serosal injuries (Both) • Independently performs the technical aspects of abdominal wall hernia repair (mobilization of fascia, development of flaps, selection of mesh) (Open) • Independently exposes the fascial planes for anterior component separation and for peritoneal dissection for posterior component release and preperitoneal mesh placement (Open) • Selects the correct suture for mesh fixation; correctly measures a wound length ratio for stitch spacing to close the anterior fascia (Open) • Independently identifies and dissects the hernia sac, lyses adhesions, and delineates defects; obtains abdominal wall access for repair (MIS) • Selects appropriate mesh and size based on intraoperative factors and evidence-based recommendations (MIS) • Independently positions and fixates the mesh (MIS) • Identifies the need for conversion to open repair in the face of unexpected intraoperative findings without assistance (MIS)	early hernia recurrence [within 7 days], early fascial dehiscence with/without bowel obstruction) and manages them independently