

## Setting 3: Inpatient Facilities

You have general admitting privileges to the hospital. You may see patients in the critical care unit, the pediatrics unit, the maternity unit, or recovery room. You may also be called to see patients in the psychiatric unit. A short-stay unit serves patients who are undergoing same-day operations or who are being held for observation. There are adjacent nursing home/extended-care facilities and a detoxification unit where you may see patients.

101. A 3-day-old male infant is transferred to the newborn intensive care unit from an outside facility with abdominal distention, bilious emesis, and failure to pass meconium. You evaluate the infant and, after obtaining a contrast enema (Figure 101A), determine that he has meconium ileus. Which other condition is this child at risk for having?



Figure 101A • Image courtesy of the University of Utah School of Medicine, Salt Lake City, Utah.

- A. Budd-Chiari syndrome
- B. Down syndrome
- C. von Hippel-Lindau syndrome
- D. Eaton-Lambert syndrome
- E. Cystic fibrosis

102. You are called to the newborn intensive care unit to evaluate a 36-hour-old infant whose abdomen has become distended, associated with bilious emesis. After performing your history and physical exam, you obtain an abdominal x-ray (Figure 102A). What is the most likely diagnosis in this case?

- A. Midgut volvulus
- B. Hypertrophic pyloric stenosis
- C. Duodenal atresia
- D. Intestinal malrotation
- E. Hirschsprung's disease

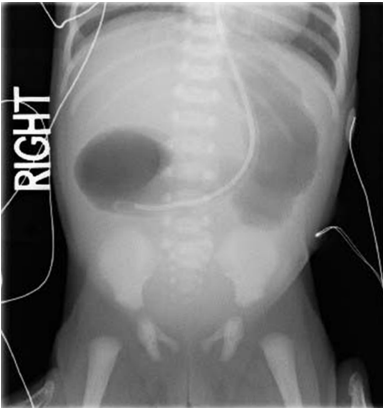


Figure 102A • Image courtesy of the University of Utah School of Medicine, Salt Lake City, Utah.

**The next three questions (items 103–105) correspond to the following vignette.**

A 50-year-old female patient scheduled to be discharged from the hospital the next day is suffering from an unrelated 2-week history of extreme pain upon defecation. The patient denies any associated abdominal pain, nausea, vomiting, fever, or chills. She reports a long history of constipation, which has been severe lately. She has also noticed slight spotting of blood on tissue paper, but denies any anal drainage, bright red blood per rectum, or melena.

103. On examination, what is the most likely physical finding in this patient?
- Disruption of anoderm in the posterior midline.
  - Protrusion of an internal hemorrhoid
  - Fistula in ano
  - Perirectal abscess
  - Anal condyloma
104. What is the best initial therapy for this patient?
- Surgical treatment
  - 0.2% nitroglycerin topical ointment
  - Stool softeners, bulking agents, and sitz baths
  - Botulinum toxin
  - No treatment is necessary
105. The patient returns to your outpatient office with the same complaints and physical findings 6 weeks after completing initial management. What is the next best step in the management of this patient's problem?
- Diverting colostomy
  - Lateral internal anal sphincterotomy
  - Low anterior resection
  - Incision and drainage
  - Hemorrhoidectomy

**End of set**

101. E. Meconium ileus is an obstruction of the distal ileum from inspissated meconium and is often associated with cystic fibrosis. Approximately 10% to 15% of infants with meconium ileus have cystic fibrosis. Meconium ileus presents with failure to pass meconium within 48 hours of birth in conjunction with progressive abdominal distention and bilious emesis. Abdominal films show the classic “soap bubble” appearance in the proximal colon, and a contrast enema shows a microcolon with small plugs of meconium (note the arrows in Figure 101B).

A. Budd-Chiari syndrome is hepatic veno-occlusive disease, mostly seen in adults and not associated with meconium ileus.

B. Down syndrome (trisomy 21) is most often associated with cardiac and renal abnormalities. Associated abdominal abnormalities include imperforate anus, duodenal or jejunal atresia, duodenal or jejunal stenosis, and Hirschsprung’s disease.

C. Von Hippel-Lindau syndrome is associated with pancreatic, central nervous system, and renal tumors in adults.

D. Eaton-Lambert syndrome is a paraneoplastic neurologic-myopathic syndrome that presents with symptoms similar to myasthenia gravis.

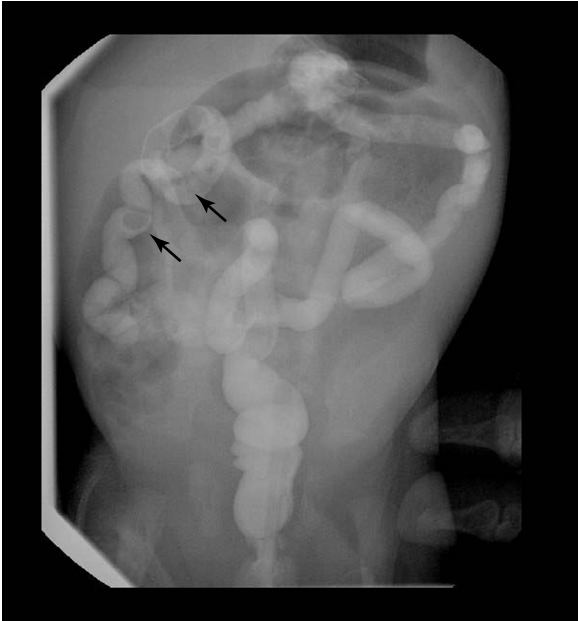


Figure 101B • Image courtesy of the University of Utah School of Medicine, Salt Lake City, Utah.

102. C. Bilious emesis in a newborn should be evaluated immediately to rule out malrotation and midgut volvulus. The “double bubble” sign seen in Figure 102B (note the arrows) is associated with duodenal atresia. Duodenal atresia is frequently associated with other anomalies such as anal atresia, tracheoesophageal fistula with esophageal atresia, and vertebral defects. Duodenal obstruction can be due to a duodenal web, duodenal atresia, duodenal stenosis, or annular pancreas.

A. A midgut volvulus is a surgical emergency due to compromised blood supply to the bowel and increases the risk for developing ischemic bowel. It is part of the differential diagnosis for newborns with bilious emesis, but a “double bubble” sign is virtually pathognomonic for duodenal atresia.

B. Pyloric stenosis presents as rapid, nonbilious projectile vomiting of feeding in infants approximately 6 to 8 weeks of age. It is more common in males than in females (4:1 ratio), and is most common in first-born males.

D. Meconium ileus is a distal ileal obstruction caused by thick, inspissated meconium. It is frequently associated with cystic fibrosis. X-ray findings include dilated loops of bowel and a ground-glass appearance of meconium mixed with air in the right lower quadrant (soap bubble sign).

E. Hirschsprung’s disease involves an aganglionic colonic segment with secondary colonic obstruction. It is not associated with bilious emesis.

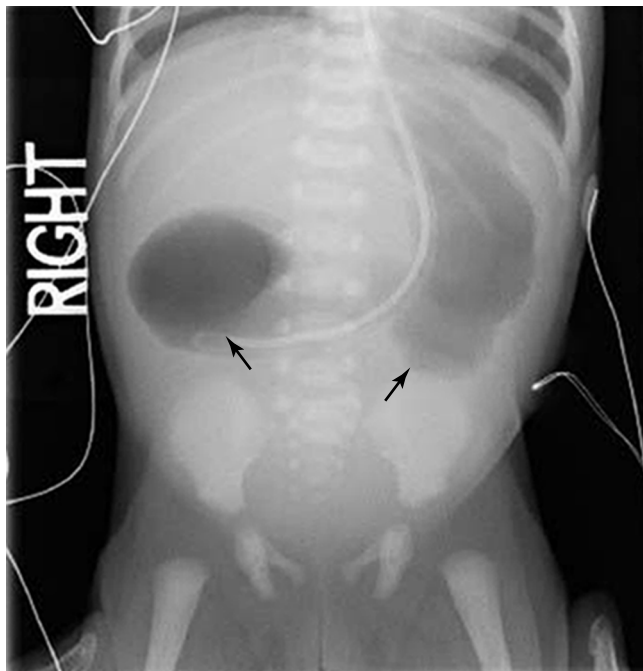


Figure 102B • Image courtesy of the University of Utah School of Medicine, Salt Lake City, Utah.

103. **A.** An anal fissure is a disruption of the anoderm. It most commonly occurs in the posterior midline as a result of forceful dilatation of the anal canal, most often during defecation. Initially it is felt as a tearing pain upon defecation. This pain causes the patient to ignore the urge to defecate, resulting in constipation and further disruption to the anoderm upon defecation. A cycle of pain, poor sphincteric relaxation, and reinjury occurs. The patient presents with pain upon defecation and minimal bleeding noted on tissue with stool. Physical exam by simply separating the buttocks will reveal a tear in the anoderm in the posterior midline.
- B.** Protrusion of an internal hemorrhoid usually results in anal fullness and discomfort along with bright red blood per rectum. Occasionally, an internal hemorrhoid can prolapse through the anus and incarcerate, requiring surgical intervention. Hemorrhoids can usually be distinguished from a fissure on physical exam.
- C.** A fistula in ano presents as a draining site on the buttock skin, usually as a complication of an anorectal abscess. It presents with drainage, not extreme pain.
- D.** Perirectal and anorectal abscesses most often arise from obstruction of an anal gland that subsequently becomes infected and overgrown with bacteria. These glands are located between the internal and external anal sphincters. If the infection tracks down this space toward the skin, an anorectal abscess occurs.
- E.** Anal condylomas are caused by infection with human papillomavirus (HPV) types 6 and 11. Patients complain of a perianal growth that appears as a cauliflower-like lesion on physical exam. Minimal disease may be treated in the office with bichloroacetic acid or podophyllum. Larger lesions may require surgical excision.
104. **C.** Initial treatment with stool softeners, bulking agents, and sitz baths will heal 90% of all anal fissures. A second episode may be treated in the same manner with a 70% success rate.
- A.** Surgical treatment is reserved for patients who fail conservative management.
- B.** A 0.2% nitroglycerin topical ointment is an effective treatment, although some studies call its use into question. Side effects may include headaches and tachyphylaxis.
- D.** Botulinum toxin has been found to be an effective treatment in the healing of anal fissures. However, due to its expense and concerns about paralysis of the anal sphincter, it has not been widely accepted as a therapy for this indication.
- E.** Patients with this disorder are very uncomfortable and require treatment.
105. **B.** Lateral internal anal sphincterotomy is the procedure of choice after failure to respond to medical management. Patients with fissures of the anus persisting for longer than 1 month as well as patients with chronic, recurring fissures should be considered candidates for surgery. In this procedure, the internal anal sphincter is divided, relieving the spasm that causes the pain and limits the healing. Fecal continence is maintained by the external anal sphincter. This procedure has a success rate exceeding 90%.

- A. Although a diverting colostomy would allow the anal fissure to heal, it is a drastic measure and not appropriate in this patient.
- C. A low anterior resection is used to treat rectal tumors that are located more than 5 cm from the anal verge.
- D. Incision and drainage are more appropriate in the treatment of a perianal abscess.
- E. Hemorrhoidectomy would be appropriate for the treatment of hemorrhoids.

106. **B.** This patient has developed severe heart failure and will likely need a transplant to survive. Assist devices are intended as a bridge to transplant. A left ventricular assist device (LVAD) is used for left heart failure, and a right ventricular assist device (RVAD) is used for right heart failure. A biventricular assist device is the best choice in this scenario because the patient has developed bilateral heart failure.

- A. The patient's aortic valve is unlikely to be contributing to her condition, and its replacement would not help the situation. The patient is suffering from a severe dilated cardiomyopathy, which will likely be definitively cured only with a heart transplant.
- C. A coronary artery bypass graft is performed for ischemic myocardium, which is not the case here.
- D. ECMO is used most commonly in children as a means of delivering oxygen to the circulation and removing carbon dioxide in pulmonary or cardiopulmonary failure.
- E. This patient's medical management has already been maximized.

107. **B.** An intra-aortic balloon pump decreases afterload by deflating during systole, and by decreasing both the pressure against which the left ventricle must pump and the work of the heart during systole. The balloon inflates during diastole, increasing aortic pressure, which augments coronary and visceral perfusion.

- A. A balloon pump deflates during systole.
- C. A balloon pump is contraindicated in aortic regurgitation.
- D. Use of a balloon pump increases mesenteric flow by inflating during diastole.
- E. Although bleeding is always a concern when placing an intra-aortic balloon pump, this alone would not prevent its use.

108. **A.** This patient has pseudo-obstruction (Ogilvie syndrome), which is a paralytic ileus of the large intestine. Painless distention is a common presenting finding. Risk factors include severe blunt trauma, orthopedic trauma or procedures, cardiac disease, acute neurologic disease, and acute metabolic derangements. This condition is dangerous, because the cecum can expand to as much as 10 to 12 cm and possibly perforate.

**B, C, D, E.** Acute SBO, toxic megacolon, *C. difficile* colitis, and mesenteric ischemia are all possibilities, but are inconsistent with this patient's clinical presentation.