

# GIT Surgery + Paeds Surgery + Multisystem

Comprehensive Bailey & Love Coverage • KMU Final Year MBBS • High-Yield Tabulated Notes

22 MCQS • TABULATED • EXAM TRAPS • HIGH-YIELD POINTS

BAILEY & LOVE SURGERY 28TH EDITION

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## GIT SURGERY / PAEDS SURGERY (17 MCQS)

### 71. DYSPHAGIA

Bailey Ch. 66

CLASSIFICATION	FEATURES	COMMON CAUSES
Oropharyngeal (Transfer Dysphagia)	Difficulty initiating swallow, nasal regurgitation, aspiration, coughing	Neuromuscular (stroke, PD, MND), Zenker's diverticulum, myasthenia gravis
Esophageal (Transport Dysphagia)	Sensation of food stuck, retrosternal discomfort	Mechanical or Motility disorders

KEY DECISION	CLUE	DIAGNOSIS
Solids only vs Solids + Liquids	Solids only = Mechanical Solids + Liquids = Motility	Stricture/Cancer vs Achalasia/Spasm
Progressive vs Intermittent	Progressive solids → liquids Weight loss + age >50	Esophageal cancer until proven otherwise

#### ▼ Investigation Algorithm (Bailey Protocol)

SCENARIO	FIRST INVESTIGATION	NEXT STEP
Red flags (weight loss, anemia, age >50)	Endoscopy + Biopsy	CT/PET for staging if malignant
Suspected motility disorder	Barium swallow	Manometry (gold standard)
Oropharyngeal symptoms	Video fluoroscopic swallowing study (VFSS)	Speech therapy assessment
Structural lesion suspected	Endoscopy	EUS for staging depth

#### ▼ Achalasia - Key Points

FEATURE	DETAIL
Pathophysiology	Loss of ganglion cells in myenteric plexus → failure of LES relaxation
Barium findings	Bird's beak appearance, dilated esophagus, absent peristalsis
Manometry	Gold standard - incomplete LES relaxation, absent peristalsis
Treatment options	Pneumatic dilation, Heller's cardiomyotomy (laparoscopic), POEM

FEATURE	DETAIL
Key risk	Squamous cell carcinoma (3-5% lifetime risk)

#### BAILEY MANAGEMENT PEARL

**Mechanical obstruction:** Treat cause (dilation for benign stricture, surgery/oncology for malignancy).  
**Motility disorders:** Achalasia - graded pneumatic dilation (best balance), Heller myotomy (young patients), POEM (newer), Botulinum toxin (frail only).

#### KMU EXAM TRAPS - DO NOT MISS

- **Progressive dysphagia + weight loss + age >50:** DO NOT pick barium first. Endoscopy with biopsy is mandatory to rule out malignancy.
- **Solid food dysphagia only:** Mechanical obstruction (cancer/stricture/ring) until proven otherwise.
- **Intermittent dysphagia to solids:** Think esophageal web (Plummer-Vinson) or Schatzki ring.
- **Regurgitation of undigested food + halitosis:** Zenker's diverticulum (cricopharyngeal dysfunction).

Reference: Bailey & Love 28th Ed., Chapter 66 - The Oesophagus, Stomach and Duodenum

### 72. OBSTRUCTIVE JAUNDICE

Bailey Ch. 70

High Yield

FEATURE	BENIGN (CHOLEDOCHOLITHIASIS)	MALIGNANT (CHOLANGIO/PANCREATIC/PERIAMPULLARY)
Pain	Colicky RUQ pain (biliary colic)	Painless progressive jaundice (classical)
Fever	Charcot's triad if cholangitis	Usually absent early
Pruritus	Present (cholestasis)	Severe, early
Gallbladder	Not palpable (fibrotic from chronic cholecystitis)	Palpable, distended (Courvoisier's sign - NOT ironclad)
Liver	May be tender	Enlarged, smooth
Weight loss	Absent	Present
Stool color	Pale if complete obstruction	Silver stools (acholic) + palpable GB = malignant

#### ▼ Investigation Pathway (Bailey Stepwise Approach)

STEP	INVESTIGATION	FINDING	CLINICAL USE
1	Ultrasound	Dilated ducts (>6mm CBD), stones, mass, liver mets	Screening - first line
2a	MRCP	Detailed biliary tree anatomy, level of obstruction	Non-invasive mapping
2b	CT Abdomen	Mass, vascular involvement, staging	If malignancy suspected
3	ERCP	Direct visualization, brush cytology, stenting	Therapeutic + diagnostic
4	EUS	Fine needle aspiration, local staging	Pancreatic head lesions
5	PTC	Proximal dilated ducts	If ERCP fails/proximal obstruction

### ▼ Cholangitis - Emergency Management

ASPECT	DETAIL
Charcot's Triad	Fever + RUQ Pain + Jaundice (70%)
Reynolds' Pentad	+ Hypotension + Altered consciousness (severe)
Primary treatment	IV Antibiotics (cover Gram-ve + anaerobes) + Urgent Biliary Drainage
Drainage method	ERCP with sphincterotomy and stone extraction/stent
If ERCP fails	PTC drainage or open surgery (rarely)
Mortality	5-10% if treated; 50% if severe/unreated

### COURVOISIER'S LAW (MODIFIED)

In presence of painless jaundice, if gallbladder is palpable and distended, cause is unlikely to be stone (as GB would be fibrotic from chronic inflammation). **However:** Not absolute - stones can coexist with malignancy, and Courvoisier's sign has false positives/negatives.

### KMU EXAM TRAPS - CRITICAL

- Cholangitis:** Antibiotics alone are NOT definitive therapy. Biliary drainage (ERCP/PTC) is ESSENTIAL within 24-48 hours.
- Painless jaundice:** Pancreatic head cancer until proven otherwise. Pancreatic cancer in head → obstructive jaundice early; body/tail → late presentation.
- ERCP before MRCP:** Do ERCP first only if cholangitis/sepsis needs urgent drainage. Otherwise, MRCP first (non-invasive).
- Periampullary carcinoma:** Includes pancreatic head, bile duct, ampulla, duodenum. Best prognosis = ampullary carcinoma.
- Double duct sign:** Dilated CBD + PD = pancreatic head mass (resect if no vascular invasion).

Reference: Bailey & Love 28th Ed., Chapter 70 - The Gall Bladder and Bile Ducts

## 73. ACUTE APPENDICITIS

Bailey Ch. 68      Most Common Surgical Emergency

STAGE	SYMPOMTS	SIGNS	PATHOLOGY
1. Luminal obstruction	Periumbilical pain (visceral), anorexia, nausea	Minimal tenderness, localised perumbilical	Obstruction by fecolith/lymphoid hyperplasia
2. Mucosal ischemia	Pain shifts to RIF (somatic innervation)	McBurney's tenderness, guarding, Rovsing's sign	Edema, bacterial invasion
3. Gangrene/Perforation	Sudden pain relief then worsening diffuse pain	Generalised peritonitis, rigidity, silent abdomen	Full-thickness necrosis, contamination
4. Abscess formation	Persistent fever, localized RIF mass	Palpable mass, localized guarding	Contained perforation (omentum/walls off)

### ▼ Special Signs & Diagnostic Maneuvers

SIGN	TECHNIQUE	INDICATION
McBurney's point tenderness	2/3 along line from umbilicus to ASIS	Localized peritoneal irritation
Rovsing's sign	Palpate LIF → pain in RIF	Referred tenderness (peritoneal irritation)

SIGN	TECHNIQUE	INDICATION
Psoas sign	Extend hip or passive flexion against resistance	Retrocecal appendix
Obturator sign	Internal rotation of flexed hip	Pelvic appendix
Rectal exam	Tenderness on right side	Pelvic/subcecal appendix
Dunphy's sign	Cough tenderness	Localized peritonitis

### ▼ Investigation Strategy

PATIENT GROUP	INVESTIGATION	KEY POINT
Typical presentation (Mantrels)	Clinical diagnosis only	Score ≥7: high probability, proceed to OR
Atypical/M equivocal	CT Abdomen (contrast)	Highest sensitivity/specificity (>95%)
Children/Pregnancy	Ultrasound first	Avoid radiation if possible
Women of childbearing age	Pregnancy test + Pelvic US	Rule out ectopic, ovarian torsion, PID
Alvarado Score	Symptoms + Signs + Labs	≥7: Appendicitis likely; <4: Unlikely

### MANAGEMENT ALGORITHM

- NBM, IV fluids, analgesia
- IV antibiotics (if perforation suspected)
- Appendectomy (Open vs Laparoscopic)
- Laparoscopic: Gold standard now
- Perforation: Lavage + drain
- Abscess: Percutaneous drainage + interval appendectomy

### MANTRELS/ALVARADO SCORE

- Symptoms: Mig. pain (1), Anorexia (1), N/V (1)
- Signs: Tend RIF (2), Rebound (1), Fever (1)
- Labs: Leukocytosis (2), Shift left (1)
- Total 10: ≥7 = Surgical exploration

### KMU EXAM TRAPS - LIFE SAVING

- Do NOT delay surgery for imaging** in classic presentation. Unnecessary CT increases cost and radiation.
- Sudden relief of pain** followed by diffuse pain = Perforation (not improvement).
- Elderly patients:** Higher perforation risk due to delayed presentation and attenuated immune response. Low threshold to image.
- Children:** Perforation occurs within 24-48 hours. Earlier surgery than adults.
- Retrocecal appendix:** Psoas sign positive, less anterior tenderness, higher perforation risk (delayed diagnosis).
- Appendix mass vs abscess:** Mass (phlegmon) - conservative; Abscess - drain then interval appendectomy.

Reference: Bailey & Love 28th Ed., Chapter 68 - The Vermiform Appendix

## 74. PAIN ABDOMEN - SYSTEMATIC APPROACH

Bailey Ch. 63, 67

PAIN PATTERN	DIAGNOSIS	KEY FEATURES	FIRST INVESTIGATION
Sudden severe + rigid abdomen	Peritonitis	Perforation, ischemia, ruptured AAA	Erect CXR (free air), CT, immediate resus
Colicky + vomiting + distension	Intestinal obstruction	Absolute constipation, borborygmi	AXR (dilated loops), CT abdomen

PAIN PATTERN	DIAGNOSIS	KEY FEATURES	FIRST INVESTIGATION
RUQ post-fatty meal	Biliary colic/cholecystitis	Murphy's sign, radiation to scapula	US abdomen
Epigastric → back	Pancreatitis	Alcohol/gallstones, Grey Turner's/Cullen's	Amylase/Lipase, CT severity index
LIF + altered bowel habit	Diverticulitis	Elderly, fever, localized tenderness	CT abdomen
Diffuse + GI bleeding	IBD/ischemic colitis	Bloody diarrhea, urgency	Colonoscopy (when safe)
Flank → groin	Ureteric colic	Hematuria, restlessness	CT KUB (non-contrast)
Suprapubic + dysuria	UTI/Pyelonephritis	Fever, frequency, urgency	Urinalysis, culture

#### ► Surgical vs Non-Surgical Abdomen (Bailey Criteria)

##### KMU EXAM TRAPS - MUST NOT MISS

- Mesenteric ischemia:** Pain out of proportion to tenderness + atrial fibrillation/valve disease = acute mesenteric ischemia. Immediate CT angiography.
- Ruptured AAA:** Hypotension + pulsatile abdominal mass + pain = surgery, not CT.
- Elderly with minimal tenderness:** High suspicion for ischemia/colon cancer perforation despite soft abdomen.
- Testicular torsion:** Can present as lower abdominal pain. Always examine external genitalia in males.
- Ectopic pregnancy:** Amenorrhea + pain + shock = resuscitate and urgent surgery (not CT).

Reference: Bailey & Love 28th Ed., Chapter 63 - The Acute Abdomen; Chapter 67 - The Small and Large Intestines

## 75. INTESTINAL OBSTRUCTION

Bailey Ch. 67

FEATURE	SMALL BOWEL OBSTRUCTION (SBO)	LARGE BOWEL OBSTRUCTION (LBO)
Vomiting	Early, profuse, feculent (late)	Late (if ileocecal valve competent)
Distension	Moderate, central	Marked, peripheral (frame-like)
Constipation	Late (distal ileum)	Early (obstipation)
Colicky pain	Prominent	Less prominent
Common causes	Adhesions (60%), hernia, Crohn's	Cancer (60%), volvulus, diverticular stricture
AXR findings	Central valvulae conniventes (complete)	Peripheral haustra (incomplete)

#### ▼ Closed Loop vs Simple vs Strangulated Obstruction

TYPE	MECHANISM	FEATURES	TREATMENT
Simple	Lumen blocked, blood supply intact	Colicky pain, no peritonism	Conservative (NG, fluids) ± surgery
Strangulated	Blood supply compromised	Constant pain, fever, tachycardia, leukocytosis, metabolic acidosis	Urgent surgery (bowel necrosis risk)
Closed loop	Obstruction at two points (e.g., volvulus)	Rapid progression, high intraluminal pressure	Emergency surgery

#### ▼ Management Algorithm (Bailey)

STEP	ACTION	DETAILS
1. Resuscitation	IV fluids, electrolytes, Foley catheter	Monitor urine output (>0.5ml/kg/hr)
2. Decompression	NG tube	Ward's decompression, check placement
3. Analgesia	Opioids (morphine)	No longer contraindicated (improves diagnosis)
4. Antibiotics	Broad spectrum	If strangulation/perforation suspected
5. Imaging	CT abdomen	Transition point, cause, strangulation signs
6. Conservative	Trial 48-72 hrs	If partial, no peritonism, resolving
7. Surgery	Laparotomy/laparoscopy	Complete, strangulated, failed conservative

#### STRANGULATION CLUES (BAILEY)

**Clinical:** Constant pain (not colicky), fever, tachycardia, leukocytosis.

**Metabolic:** Metabolic acidosis, raised lactate, hyperkalemia.

**CT Signs:** Mesenteric edema, pneumatosis intestinalis, portal venous gas, absent bowel wall enhancement.

#### KMU EXAM TRAPS - EMERGENCY

- Never give oral laxatives in suspected obstruction - risk of perforation.
- Sigmoid volvulus:** Coffee bean sign on AXR; initial decompression with rigid sigmoidoscopy + flatus tube, then definitive surgery.
- Cecal volvulus:** Kidney-shaped cecum on AXR; always surgical (right hemicolectomy).
- Richter's hernia:** Only part of bowel circumference trapped - may not obstruct but strangulates easily.
- Gallstone ileus:** Rigler's triad (SBO, ectopic gallstone, pneumobilia); enterolithotomy (not cholecystectomy).

Reference: Bailey & Love 28th Ed., Chapter 67 - The Small and Large Intestines

## 76. INTESTINAL PERFORATION

Bailey Ch. 63, 67   Surgical Emergency

SOURCE	CLINICAL FEATURES	BEST INVESTIGATION	IMMEDIATE MANAGEMENT
Peptic ulcer (Duodenal > Gastric)	Sudden epigastric pain → diffuse, rigid abdomen	Erect CXR (free air under diaphragm)	Resus + Repair (Graham patch for duodenal)
Appendiceal	Appendicitis history, pain then diffuse peritonitis	CT abdomen	Appendectomy + washout
Typhoid ileal (Developing world)	Enteric fever history, RLQ pain, ileal ulcers	Clinical + culture	Resus + Ileostomy (high risk anastomosis)
Diverticular (Colonic)	LLQ pain (usually), elderly	CT abdomen	Hartmann's procedure (usually)
Traumatic	History of trauma, seat-belt sign	CT or DPL	Laparotomy, repair/resection
Iatrogenic (Endoscopic/Operative)	Post-procedure pain, fever	CT with oral contrast	Conservative vs surgical depending on leak

#### ▼ First 60 Minutes Management (Bailey Protocol)

ACTION	DETAILS
1. Airway + Oxygen	High flow O2, monitor SpO2
2. Two large bore IV lines	14-16G, start crystalloid resuscitation
3. Blood tests	FBC, U&E, LFT, clotting, crossmatch 4 units
4. Antibiotics	Broad spectrum (cover aerobes + anaerobes)
5. NG tube	Decompress stomach, reduce contamination
6. Urinary catheter	Monitor urine output
7. Analgesia	IV opioids titrated
8. Imaging	Erect CXR (sitting) - free air in 70%
9. Surgical review	Early consultant involvement
10. Prep for theatre	Consent, antibiotics within 1 hour

#### FREE AIR WITHOUT PERITONITIS?

**Benign pneumoperitoneum:** Post-laparoscopic (absorbs in 3-4 days), post-CPR, barotrauma, vaginal insufflation.

**Key distinction:** Clinical condition determines management, not just presence of free air.

#### KMU EXAM TRAPS - PERFORATION

- **Free air under diaphragm:** NOT treated with PPIs and observation alone (unless sealed perforation with abscess on CT - rare).
- **Elderly/immunocompromised:** May not show classic signs of peritonitis. High index of suspicion needed.
- **Boerhaave syndrome:** Esophageal rupture post-vomiting → mediastinal air (Hamman's crunch). Mediastinitis = high mortality.
- **Steroid users:** Peritonitis may be masked. Watch for hemodynamic changes.
- **False negative CXR:** If doubt, left lateral decubitus film or CT abdomen.

Reference: Bailey & Love 28th Ed., Chapter 63 - The Acute Abdomen; Chapter 65 - The Stomach and Duodenum

## 77. HERNIAS

Bailey Ch. 67

TYPE	ANATOMY	PATIENT	KEY FEATURE	STRANGULATION RISK
Indirect Inguinal	Deep ring → Scrotum (lateral to inferior epigastric)	Young males, congenital	Descends to scrotum, ring occlusion test reduces then reappears on cough	Moderate (20%)
Direct Inguinal	Hesselbach's triangle (medial to inferior epigastric)	Older men (>40), acquired	Doesn't enter scrotum, immediate cough impulse	Low (rare)
Femoral	Femoral canal (below and lateral to pubic tubercle)	Women (female:male 3:1)	Small, irreducible, below inguinal ligament	<b>Highest (40%)</b>
Umbilical	Umbilical ring defect	Infants, obese, pregnancy	Covered by skin, often reducible	Low unless strangulated
Incisional	At surgical scar	Post-op (10-15%)	Defect in fascia, wide neck	Low but high recurrence

TYPE	ANATOMY	PATIENT	KEY FEATURE	STRANGULATION RISK
Paraumbilical	Paraumbilical (adult)	Obese, middle-aged	Defect in linea alba above/below umbilicus	Moderate

#### ▼ Strangulated vs Incarcerated Hernia

FEATURE	INCARCERATED/IRREDUCIBLE	STRANGULATED
Definition	Cannot reduce, no vascular compromise	Blood supply compromised
Pain	Achy, discomfort	Severe, constant pain
Tenderness	Mild	Marked
Skin changes	Normal	Erythema, edema
Systemic	Normal vitals	Fever, tachycardia, toxicity
Bowel obstruction	May be absent	Often present
Treatment	Elective surgery (reduce first if no signs of strangulation)	Emergency surgery

#### ▼ Surgical Repair Types

TECHNIQUE	INDICATION	PROS/CONS
Lichtenstein (Tension-free)	Open inguinal hernia	Mesh, low recurrence, local anesthetic
Laparoscopic (TAPP/TEP)	Bilateral, recurrent, young active	Less pain, faster return, general anesthetic
Shouldice	Direct hernia	Non-mesh, tissue repair
Mesh Plug	Femoral hernia	Low recurrence

#### BAILEY KEY POINTS

- All symptomatic hernias should be repaired (risk of strangulation)
- Femoral hernia: Always repair - high strangulation risk
- Umbilical hernia in children: Mostly close by age 5; repair if persists >5 years or symptomatic
- Spigelian hernia: Through linea semilunaris, difficult to diagnose, high strangulation risk

#### KMU EXAM TRAPS - HERNIA

- **Femoral hernia strangulation:** Highest risk. Always choose emergency repair if suspected.
- **Richter's hernia:** Only part of bowel wall incarcerated - no obstruction but strangulates. Common in femoral/parastomal hernias.
- **Amyand's hernia:** Appendix in inguinal hernia sac. If inflamed - appendectomy + hernia repair.
- **Littre's hernia:** Meckel's diverticulum in hernia sac.
- **Sliding hernia:** Part of wall is retroperitoneal organ (cecum, sigmoid, bladder). Careful dissection needed.
- **Irreducible ≠ Strangulated:** Look for systemic signs and constant pain.

Reference: Bailey & Love 28th Ed., Chapter 67 - The Abdominal Wall, Umbilicus and Groin

## 78. CONSTIPATION

CATEGORY	FEATURES	CAUSES/EXAMPLES	INVESTIGATION
Acute Constipation (New onset)	Recent change, red flags	Obstruction, cancer, medications (opioids)	Colonoscopy, CT if obstructed
Chronic Constipation	Rome IV criteria (>3 months)	Functional (IBS-C), slow transit, outlet dysfunction	Transit studies, defecography
Neonatal/Infantile	Delayed meconium (>48h), distension	Hirschsprung, meconium plug, anorectal malformations	Contrast enema, rectal biopsy
Obstipation	No stool + No flatus	Complete intestinal obstruction	Emergency imaging

#### ▼ Red Flags in Constipation (Bailey)

RED FLAG	SUSPICION	ACTION
Age >50 with new onset	Colorectal cancer	Colonoscopy mandatory
Weight loss	Malignancy, IBD	CT + colonoscopy
Rectal bleeding	Cancer, polyp, diverticular	Colonoscopy
Anemia	Right-sided colon cancer	Gastroscopy + colonoscopy
Family history CRC	Hereditary cancer	Genetic counseling + early colonoscopy
Vomiting + distension	Obstruction	CT abdomen
Pain with defecation	Anal fissure, abscess	Exam under anesthesia if needed

#### ▼ Management Ladder (Bailey Protocol)

STEP	INTERVENTION	DETAILS
1. Lifestyle	Dietary fiber (20-30g/day), fluids (2L/day), exercise, toilet routine	First line for functional constipation
2. Bulk laxatives	Ispaghula husk, methylcellulose	Need adequate fluids
3. Osmotic laxatives	Lactulose, macrogol (PEG)	First line for chronic, safe long-term
4. Stimulant laxatives	Senna, bisacodyl, sodium picosulfate	Rescue therapy, avoid long-term dependence
5. Rectal agents	Glycerin suppository, phosphate enema	Fecal impaction, outlet dysfunction
6. Newer agents	Lubiprostone, linaclotide, prucalopride	Refractory chronic constipation
7. Surgery	Subtotal colectomy (rare)	Colonic inertia, failed all medical

#### KMU EXAM TRAPS - CONSTIPTION

- New constipation in elderly:** Never attribute to age alone. Rule out colon cancer with colonoscopy.
- Opioid-induced constipation:** Prophylactic laxatives must be co-prescribed (stimulant ± stool softener).
- Hirschsprung enterocolitis:** Toxic megacolon in Hirschsprung - explosive diarrhea, fever, shock. Emergency.
- Anal fissure:** Pain causes constipation (withholds stool). Treat fissure to break cycle.
- Fecal impaction:** Can cause overflow diarrhea (pseudo-diarrhea). Digital examination essential.

## 79. ULCERATIVE COLITIS

FEATURE	ULCERATIVE COLITIS	CROHN'S DISEASE (CONTRAST)
<b>Distribution</b>	Colon only, rectum always involved, continuous	Any GI segment (mouth-anus), skip lesions
<b>Depth</b>	Mucosa and submucosa only	Transmural (full thickness)
<b>Bleeding</b>	Common, gross blood	Rarely gross blood
<b>Diarrhea</b>	Bloody mucoid diarrhea	Non-bloody, may be steatorrhea
<b>Pain</b>	Colicky, relieved by defecation	RLQ pain (terminal ileum)
<b>Perianal disease</b>	Rare (except post-op)	Common (fissures, fistulas, abscesses)
<b>Complications</b>	Toxic megacolon, CRC risk, strictures rare	Fistulas, abscesses, strictures common
<b>Smoking</b>	Worsens disease	Paradoxically protective
<b>Endoscopy</b>	Continuous ulceration, pseudopolyps, loss of vascular pattern	Cobblestoning, aphthous ulcers, skip areas

#### ▼ Montreal Classification of UC Severity

CLASSIFICATION	STOOLS/DAY	BLOOD	PULSE	TEMP	ESR	TREATMENT
S1 - Mild	<4	±	Normal	Normal	Normal	5-ASA (oral + topical)
S2 - Moderate	4-6	+	Normal	Normal	Elevated	Steroids if 5-ASA fails
S3 - Severe	>6	++	>90	>37.5	>30	IV steroids, hospital

#### ▼ Management Strategy (Bailey & ECCO Guidelines)

SEVERITY	INDUCTION	MAINTENANCE	NOTES
Mild	5-ASA (oral + rectal)	5-ASA (lifelong)	Reduces relapse and CRC risk
Moderate	Oral steroids (prednisolone 40mg)	Thiopurines	If frequent relapses
Severe	IV hydrocortisone or methylpred	Anti-TNF	Infliximab/Adalimumab
Steroid refractory	Azathioprine/6-MP or biologics	Vedolizumab	Gut-selective biologic

#### ▼ Complications - Emergency Recognition

COMPLICATION	FEATURES	MANAGEMENT
Toxic Megacolon	Colonic dilation (>6cm) + toxicity (fever, tachycardia, anemia, dehydration)	IV steroids, antibiotics, NBM, serial X-rays. Surgery if no improvement in 24-48h
Perforation	Sudden deterioration, peritonism, free air	Emergency colectomy
Massive Hemorrhage	Transfusion requirement (>6 units/24h)	Emergency colectomy

COMPLICATION	FEATURES	MANAGEMENT
Colorectal Cancer	Risk 2%/year after 10 years (pancolitis)	Annual colonoscopy after 10 years

#### SURGICAL INDICATIONS (BAILEY)

**Emergency:** Toxic megacolon, perforation, hemorrhage, obstruction (rare).

**Elective:** Failed medical therapy, dysplasia/cancer, growth retardation (children), unacceptable steroid side effects.

#### KMU EXAM TRAPS - UC

- Severe colitis criteria: >6 stools/day + systemic upset. These patients need admission + IV steroids.
- Never give anti-motility agents (loperamide) in acute severe colitis - risk of toxic megacolon.
- Backwash ileitis: Mild inflammation of terminal ileum in UC (vs Crohn's which can be severe).
- Primary sclerosing cholangitis (PSC): Associated with UC (5%). Increases CRC and cholangiocarcinoma risk.
- Surgery is curative for UC: Total proctocolectomy removes all disease (unlike Crohn's).

Reference: Bailey & Love 28th Ed., Chapter 67 - The Small and Large Intestines

## 80. CROHN'S DISEASE

Bailey Ch. 67

Transmural IBD

FEATURE	DETAILS
Pathology	Transmural inflammation, skip lesions, non-caseating granulomas (50%)
Distribution	Ileum 30%, Colon 20%, Ileocolonic 40%, Upper GI 10%
Clinical features	RLQ pain, weight loss, non-bloody diarrhea, fatigue, growth retardation (children)
Extra-intestinal	Arthritis, erythema nodosum, pyoderma gangrenosum, uveitis, PSC, osteoporosis
Perianal	Tags, fissures, fistulas (perianal/skin), abscesses - present in 30%

#### Montreal Classification

AGE	LOCATION	BEHAVIOR
A1: <17 years	L1: Ileal	B1: Non-stricturing
A2: 17-40	L2: Colonic	B2: Stricturing
A3: >40	L3: Ileocolonic	B3: Penetrating
	L4: Upper GI	p: Perianal

#### Complications Specific to Crohn's

COMPLICATION	FEATURES	MANAGEMENT
Fistulas	Entero-enteric, enterocutaneous, perianal, vesical	Anti-TNF (Infliximab), drainage if abscess, surgery if refractory
Abscesses	Intra-abdominal or perianal, fever, localized pain	Drainage (radiological or surgical) BEFORE biologics
Strictures	Small bowel most common, obstruction	Endoscopic dilation vs stricturoplasty vs resection

COMPLICATION	FEATURES	MANAGEMENT
Malnutrition	Deficiencies (B12, iron, D), weight loss	Nutritional support, exclusive enteral nutrition
Cancer risk	Increased in colon (less than UC), small bowel adenocarcinoma (rare)	Surveillance colonoscopy

#### Management Strategy

SCENARIO	INDUCTION	MAINTENANCE
Mild-moderate ileal	Budesonide (ileal release) or 5-ASA (colon)	Azathioprine/6-MP if steroid-dependent
Moderate-severe	Prednisolone or Exclusive Enteral Nutrition (EEN)	Immunomodulators or Biologics
Severe/Complicated	Anti-TNF (Infliximab) ± Methotrexate	Continue biologics ± immunomodulators
Perianal disease	Metronidazole/Cipro + drainage of abscess	Anti-TNF (Infliximab best evidence)

#### EXCLUSIVE ENTERAL NUTRITION (EEN)

**Indication:** First-line for active Crohn's in children (induces remission in 80%, promotes growth).

**Mechanism:** Elemental/semi-elemental formula for 6-8 weeks (no normal food).

**Advantage:** Avoids steroids, heals mucosa.

#### KMU EXAM TRAPS - CROHN'S

- Surgery is NOT curative:** Recurrence occurs. Surgery reserved for complications (stricture, fistula, abscess, failure of medical therapy).
- Drain abscess before biologics:** Infliximab can seal infection without draining - disaster.
- Skip lesions:** Rectal sparing is characteristic of Crohn's (vs UC where rectum always involved).
- Cobblestone mucosa:** Deep linear ulcers creating cobblestone appearance - pathognomonic.
- B12 deficiency:** Terminal ileum resection/absorption issue - lifelong supplementation needed.
- Gallstones:** Ileal disease/resection → bile salt malabsorption → cholesterol stones.
- Kidney stones:** Oxalate stones (enteric hyperoxaluria) due to fat malabsorption.

Reference: Bailey & Love 28th Ed., Chapter 67 - The Small and Large Intestines

## 81. COLORECTAL CANCER

Bailey Ch. 67

3rd Most Common Cancer

SITE	PRESENTATION	CLINICAL CLUE	5-YEAR SURVIVAL
Right colon (Cecum, ascending)	Occult bleeding, iron deficiency anemia, mass	Weight loss + anemia (no obstruction)	70-80%
Left colon (Descending, sigmoid)	Change in bowel habit, obstruction, bleeding	Alternating constipation/diarrhea, colicky pain	60-70%
Rectum	Tenesmus, fresh bleeding, mucus	"Pencil-thin" stools, rectal mass	50-60%

#### Risk Factors & Screening

CATEGORY	DETAILS
Age	90% >50 years (screening starts 45-50)
Diet	High red/processed meat, low fiber
Genetic	FAP (100% by 40), HNPCC/Lynch, Peutz-Jeghers
IBD	UC > Crohn's, duration >10 years
Previous polyps/cancer	Surveillance colonoscopy
Screening methods	FOBT/FIT, Colonoscopy (gold standard), CT colonography

**Resectable:** Solitary or limited metastases, no extrahepatic disease, adequate future liver remnant.

**Approach:** Liver-first (reverse) approach, synchronous vs staged resection.

**Chemotherapy:** FOLFOX/FOLFIRI with biologicals (Bevacizumab, Cetuximab if RAS wild).

#### KMU EXAM TRAPS - CRC

- Iron deficiency anemia in elderly male:** Colon cancer until proven otherwise. Do NOT just give iron.
- Obstructing right-sided lesion:** Can be resected and primary anastomosis (ileocecal valve allows decompression).
- Obstructing left-sided lesion:** Hartmann's procedure or stent then elective resection (risk of leak if primary anastomosis).
- Synchronous cancers:** 5% have second primary. Full colonoscopy pre-op essential.
- FAP:** Prophylactic total colectomy by age 20-25 (100% cancer risk).
- HNPCC (Lynch):** Amsterdam criteria, right-sided, young, MSI-high. Annual colonoscopy from 25.

Reference: Bailey & Love 28th Ed., Chapter 67 - The Small and Large Intestines

#### ▼ Staging (TNM) - High Yield

STAGE	TNM	DESCRIPTION	TREATMENT
0	Tis N0 M0	Carcinoma in situ	Local excision (TEM)
I	T1-2 N0 M0	Into submucula/muscularis	Surgery alone
II	T3-4 N0 M0	Through wall/local invasion	Surgery ± chemo (high risk)
III	Any T N+ M0	Lymph node positive	Surgery + Adjuvant chemo
IV	Any T Any N M+	Metastatic (liver, lung, peritoneum)	Chemo ± surgery (selective)

#### ▼ Surgical Management by Site

TUMOR LOCATION	PROCEDURE	KEY POINTS
Cecum/ ascending	Right hemicolectomy	Ileocolic vessels ligation
Hepatic flexure	Extended right hemicolectomy	Middle colic vessels
Transverse	Transverse colectomy	Middle colic ligation
Descending	Left hemicolectomy	IMCA ligation
Sigmoid	Sigmoid colectomy	Preserve IMA if possible
Upper rectum	Anterior resection	5cm margin, TME principles
Mid rectum	Low anterior resection	Stapled anastomosis, TME
Lower rectum	Abdominoperineal resection (APR)	Permanent colostomy

#### ▼ Rectal Cancer - Specific Considerations

ASPECT	DETAILS
TME	Total Mesorectal Excision - sharp dissection in holy plane, reduces recurrence
CRM	Circumferential resection margin - must be >1mm
Neoadjuvant	Capecitabine + RT for stage II/III rectal cancer (downstaging)
Sphincter preservation	Goal for mid-high rectal cancer; low requires APR

#### METASTATIC DISEASE - LIVER

## 82. HIRSCHSPRUNG'S DISEASE (PAEDS)

Bailey Ch. 76 Pediatric Surgery

ASPECT	DETAILS
Pathology	Absence of ganglion cells (aganglionosis) in distal bowel → failure of relaxation → functional obstruction
Extent	Rectosigmoid 80%, short segment; long segment; total colonic aganglionosis (rare)
Genetics	RET proto-oncogene (most common), MEN2 association
M:F ratio	4:1 (short segment), 1:1 (long segment)

#### ▼ Clinical Presentation by Age

AGE	PRESENTATION	KEY FINDING
Neonatal	Delayed meconium passage (>48 hours), abdominal distension, bilious vomiting	Explosive stool on rectal examination (squirt sign)
Infancy	Chronic constipation, abdominal distension, poor feeding, failure to thrive	Palpable stool, empty rectum on exam
Childhood	Severe chronic constipation, ribbon stools, abdominal distension	Fecal masses, malnutrition
Enterocolitis	Emergency: explosive diarrhea, fever, sepsis, shock	Life-threatening, 10-30% mortality

#### ▼ Diagnostic Workup

INVESTIGATION	FINDING	ROLE
Contrast enema	Transition zone (narrow aganglionic → dilated normal), sawtooth irregularity	Initial imaging
Anorectal manometry	Absent rectoanal inhibitory reflex (RAIR)	Supportive, non-invasive
Rectal suction biopsy	Absence of ganglion cells, hypertrophic nerve trunks	Gold standard
Full thickness biopsy	If suction inconclusive	Definitive if doubt

INVESTIGATION	FINDING	ROLE
Acetylcholinesterase stain	Increased nerve fibers	Confirms diagnosis

#### ▼ Surgical Procedures

PROCEDURE	TECHNIQUE	NOTES
Swenson	Resection of aganglionic segment + end-to-end anastomosis at anus	Original, risk of incontinence
Duhamel	Retrorectal pull-through, stapled side-to-end anastomosis	Retains part of aganglionic rectum
Soave	Endorectal pull-through, mucosectomy, preserving muscular cuff	Modified Soave - most common now
Laparoscopic-assisted	Laparoscopic biopsies + transanal pull-through	Minimally invasive, early recovery

#### HIRSCHSPRUNG ENTEROCOLITIS - EMERGENCY

**Onset:** Explosive diarrhea (paradoxical), fever, lethargy, abdominal distension.

**Pathophysiology:** Bacterial overgrowth in obstructed bowel → translocation → sepsis.

**Management:** IV fluids, broad-spectrum antibiotics (cover anaerobes), rectal washouts, bowel rest.

**Mortality:** Up to 30% if delayed. This is the most common cause of death in Hirschsprung's.

#### KMU EXAM TRAPS - HIRSCHSPRUNG

- Delayed meconium:** Normal <24 hours; Suspect if >48 hours (especially with distension).
- Rectal exam finding:** Tight anal canal + explosive stool on withdrawal (squirt sign).
- Contrast enema:** Transition zone is diagnostic but may be absent in neonates (not enough time for proximal dilation).
- Suction biopsy:** Must be taken >2cm above dentate line (hypertrophic zone naturally has no ganglia).
- Total colonic aganglionosis:** 10% of cases, more severe, worse prognosis, ileostomy needed.
- Down syndrome:** 5% of Hirschsprung patients have Down syndrome.

Reference: Bailey & Love 28th Ed., Chapter 76 - The Child

## MULTISYSTEM 5 MCQS (SURGERY)

### 83. BARIATRIC SURGERY

Bailey Ch. 12

PROCEDURE	MECHANISM	ADVANTAGES	DISADVANTAGES
Sleeve Gastrectomy (SG)	Restrictive (removes fundus, ghrelin decreases)	Technically easier, no malabsorption, no foreign body	Reflux can worsen, non-reversible, staple line leak risk
Roux-en-Y Gastric Bypass (RYGB)	Restrictive + Malabsorptive	Gold standard, durable weight loss, resolves diabetes	Anastomotic ulcers, dumping, malnutrition risk
One Anastomosis Gastric Bypass (OAGB)	Restrictive + Malabsorptive	Single anastomosis, shorter operative time	Bile reflux, malnutrition risk

PROCEDURE	MECHANISM	ADVANTAGES	DISADVANTAGES
Adjustable Gastric Band	Restrictive (band with port)	Reversible, adjustable, least invasive	Slippage, erosion, less weight loss, declining use
BPD-DS	Most malabsorptive	Best weight loss for super-obese	Highest malnutrition risk, protein deficiency

#### ▼ Complications - Early vs Late

TIMING	COMPLICATION	FEATURES	MANAGEMENT
Early (<30 days)	Staple line leak	Fever, tachycardia, pain, sepsis	CT with contrast, drainage, stent, or surgery
	Bleeding	Hematemesis, melena, drop in Hb	Endoscopy, transfusion, angi-embolization
	DVT/PE	High risk in obese	Prophylaxis essential
	Wound infection	Fever, erythema	Antibiotics, drainage
Late (>30 days)	Marginal ulcer	Epigastric pain, bleeding (at gastrojejunostomy)	PPIs, endoscopy, exclude gastrogastrostomy fistula
	Dumping syndrome	Sweating, palpitations, diarrhea post-meal	Dietary modification, acarbose, somatostatin
	Internal hernia	Intermittent obstruction, pain	CT, surgical closure of mesenteric defects
	Gallstones	Rapid weight loss → cholesterol stones	Ursodeoxycholic acid 6 months post-op

#### ▼ Nutritional Deficiencies Post-Bariatric Surgery

DEFICIENCY	MANIFESTATION	PREVENTION
Thiamine (B1)	Wernicke's encephalopathy, wet/dry beriberi	Supplement, especially if vomiting
Vitamin B12	Megaloblastic anemia, neuropathy	IM B12 monthly (bypass) or oral
Iron	Microcytic anemia, fatigue	Ferrous sulfate + Vitamin C, annual monitoring
Folate	Anemia, neural tube defects (pregnancy)	Supplementation
Calcium/Vitamin D	Osteoporosis, secondary hyperparathyroidism	Calcium citrate + Vit D3
Fat-soluble (A,E,K)	Night blindness, neuropathy, coagulopathy	Routine supplementation
Protein	Edema, hair loss, weakness (BPD-DS)	High protein diet, supplements

#### SELECTION CRITERIA (NICE GUIDELINES)

**BMI:** ≥40, or ≥35 with comorbidity (diabetes, hypertension, sleep apnea).

**Failed conservative:** Diet, exercise, pharmacological management.

**Commitment:** Lifelong follow-up and dietary modification essential.

#### KMU EXAM TRAPS - BARIATRIC

- Early tachycardia + abdominal pain:** Leak until proven otherwise. CT with oral contrast + water soluble (not barium).
- Wernicke's post-bariatric:** Neurological symptoms + vomiting = thiamine FIRST before glucose.
- Marginal ulcer:** At gastrojejunostomy in RYGB. Patient with epigastric pain post-bypass = endoscopy.
- Internal hernia:** Can occur years later. Intermittent obstruction, bilious vomiting. CT may miss; diagnostic laparoscopy.
- Pregnancy:** Delay 12-18 months after surgery. High risk for deficiencies - strict monitoring.

## 84. VITAMIN DEFICIENCIES - SURGERY RELEVANCE

Bailey Ch. 12

High Yield

VITAMIN	KEY FUNCTIONS	DEFICIENCY MANIFESTATIONS
Thiamine B1	Energy metabolism (PDH, $\alpha$ -KGDH, TPP)	Wernicke's triad, Beriberi
Pyridoxine B6	Transamination, neurotransmitter synthesis	Neuropathy, sideroblastic anemia, seizures
Cobalamin B12	DNA synthesis, myelin maintenance	Megaloblastic anemia, neuropathy
Vitamin A	Vision, immunity, epithelial integrity	Night blindness, xerophthalmia
Vitamin D	Calcium absorption, bone health	Rickets, osteomalacia, hypocalcemia
Vitamin E	Antioxidant, cell membrane stability	Neuropathy, hemolytic anemia
Vitamin K	Coagulation factors II, VII, IX, X	Coagulopathy, bleeding, raised INR

### ▼ Thiamine Deficiency - Wernicke-Korsakoff

FEATURE	DETAILS
Wernicke's Triad	Confusion, Ataxia, Ophthalmoplegia (nystagmus, ptosis, lateral gaze palsy)
Risk Factors	Alcoholism, malnutrition, hyperemesis gravidarum, bariatric surgery, malignancy, dialysis
Pathophysiology	High metabolic demand tissues affected first (brain, heart)
Emergency Treatment	IV Thiamine 200-500mg TDS BEFORE glucose (glucose can precipitate Wernicke's)
Duration	Continue until no dietary improvement, then oral maintenance
Korsakoff Psychosis	Chronic amnesia, confabulation - if untreated Wernicke's

### ▼ Vitamin B12 Deficiency & Pernicious Anemia

ASPECT	DETAILS
Causes	Pernicious anemia (autoimmune, anti-IF antibodies), gastric surgery, ileal resection/disease, chronic PPI, dietary (vegans)
Hematologic	Megaloblastic anemia (high MCV, hypersegmented neutrophils), pancytopenia possible
Neurologic	Posterior column (vibration, proprioception), lateral corticospinal tract (UMN), peripheral neuropathy, dementia, optic atrophy
Diagnosis	Low B12 (<200 pg/mL), elevated methylmalonic acid and homocysteine, anti-IF antibodies (specific), Schilling test (historical)

ASPECT	DETAILS
Treatment	IM Cyanocobalamin 1000mcg daily x 1 week, then weekly x 4 weeks, then monthly for life (if PA)
Nitrous Oxide	Inactivates B12 - contraindicated in deficiency (causes neurologic deterioration)

### KMU EXAM TRAPS - VITAMINS

- Thiamine before glucose: Classic exam trap. Giving glucose to malnourished patient without thiamine can cause Wernicke's.
- Nitrous oxide anesthesia: Contraindicated in B12 deficiency (inactivates B12) - neurologic deterioration.
- Isoniazid: Always give pyridoxine (B6) prophylaxis with INH - prevents neuropathy.
- Terminal ileum: B12 absorption site - resection → lifelong B12 replacement.
- Fat malabsorption: Vitamins A, D, E, K deficient (fat-soluble). Water-soluble spared unless general malnutrition.
- Neonatal hemorrhagic disease: Vitamin K deficiency. Prophylactic IM Vit K at birth prevents this.

Reference: Bailey &amp; Love 28th Ed., Chapter 12 - Surgical Physiology

## 85. NUTRITIONAL SUPPORT

Bailey Ch. 12

ROUTE	INDICATION	ADVANTAGES	COMPLICATIONS
Enteral Nutrition (EN)	Functional gut, but cannot meet needs orally	Maintains gut barrier, fewer infections, cheaper, physiological	Aspiration, diarrhea, tube displacement, refeeding syndrome
Parenteral Nutrition (PN)	Gut non-functional or inaccessible	Nutrition despite gut failure, bowel rest	Line sepsis, metabolic (hyperglycemia), liver dysfunction, gut atrophy

### ▼ Enteral Access Routes

ROUTE	INDICATION	DURATION
Nasogastric (NG)	Short term (<4 weeks), functional stomach	4-6 weeks
Nasojejunal (NJ)	Gastroparesis, high aspiration risk, pancreatitis	4-6 weeks
PEG	Long term (>4 weeks), functional stomach	Months to years
PEJ	Long term, gastric outlet obstruction	Months to years

### ▼ Refeeding Syndrome - Critical

ASPECT	DETAILS
Risk Factors	Severe malnutrition, anorexia nervosa, chronic alcoholism, prolonged starvation, morbid obesity with rapid weight loss, post-bariatric
Pathophysiology	Rapid feeding → insulin surge → intracellular shift of phosphate, potassium, magnesium → organ dysfunction
Clinical Features	Hypophosphatemia (cardiac failure, respiratory failure, rhabdomyolysis), hypokalemia (arrhythmia), hypomagnesemia, fluid retention
Prevention	Start feeds at 10-20 kcal/kg/day, increase slowly, aggressive electrolyte monitoring and replacement (pre-emptive), thiamine supplementation

ASPECT	DETAILS
Monitoring	Daily electrolytes (first week), cardiac monitoring, fluid balance

#### ▼ Nutritional Requirements Calculation

PARAMETER	CALCULATION	NOTES
Calories	25-30 kcal/kg/day (basal) 30-35 kcal/kg/day (stress)	Use ideal body weight if obese
Protein	0.8-1.0 g/kg/day (normal) 1.2-2.0 g/kg/day (catabolic/critical illness)	Essential for wound healing
Fluid	30-35 ml/kg/day	Adjust for losses (fistula, diarrhea)
Nitrogen balance	N intake - N losses	Positive balance = anabolism

#### ▼ Complications of Parenteral Nutrition

TYPE	COMPLICATION	PREVENTION/MANAGEMENT
Catheter-related	Infection (CRBSI)	Aseptic insertion, hub care, ethanol locks
	Thrombosis	Appropriate sizing, heparin flush
	Displacement	Secure fixation, radiological confirmation
Metabolic	Hyperglycemia	Insulin protocol, avoid overfeeding
	Electrolyte imbalance	Daily monitoring, aggressive replacement
	Refeeding syndrome	Gradual introduction, thiamine
Hepatic	Steatohepatitis	Avoid overfeeding, cycling TPN
	Cholestasis	Prevent gut atrophy (minimal EN), ursodeoxycholic acid
	Gallstones	Stimulate gallbladder contraction (enteral if possible)

#### BAILEY'S GOLDEN RULE

"If the gut works, use it."

Enteral nutrition is preferred whenever any portion of the GI tract is functional. Even minimal enteral feeding (trophic feeds) maintains gut integrity, reduces bacterial translocation, and prevents PN-associated liver disease.

#### KMU EXAM TRAPS - NUTRITION

- TPN is not superior: Higher infection risk, metabolic complications. Only use when EN contraindicated.
- Refeeding syndrome: Start low (10-20 kcal/kg), go slow. Check phosphate daily - can be fatal.
- Aspiration risk: Post-pyloric feeding (NJ) if gastroparesis or high aspiration risk, not prophylactic.
- Overfeeding: Worse than underfeeding in critically ill. Causes hyperglycemia, liver dysfunction, increased CO<sub>2</sub> production.
- Immunonutrition: Arginine, glutamine, omega-3 fatty acids - use in specific situations (trauma, surgery).
- Short bowel syndrome: <100cm jejunum without colon, <50cm with colon - requires TPN or transplant.

Reference: Bailey & Love 28th Ed., Chapter 12 - Surgical Physiology

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