Management of Intestinal Obstruction
Presentation - SBO

• History
  – Key factors – past surgery, presence of lumps

• Pain
  • Colicky to start - progress to constant- diffuse
  • Precedes vomiting

• Vomiting
  • Follows pain
  • Projectile – may indicate location
  • Bilious, faeculent, altered coffee ground - ominous

• Nausea / Anorexia

• Distension
  • More distal – greater the distension
  • May precede vomiting

• Constipation
  • One off movement- diarrhoea – does not exclude SBO
Clinical Findings - SBO

- Difficult to distinguish on clinical examination
  - Simple, incomplete, early strangulated obstruction
- Vitals signs
  - Tachycardia – response to pain - altered hemodynamic status
  - Hypotension altered fluid status
  - Temperature – ongoing systemic inflammation, ischemia, perforation
- Tenderness
  - Localised – maximal – over the site of distension or impending perforation
  - Diffuse - perforation
- Swelling
  - Discrete lump – abdominal wall – hernia
  - Diffuse – common
- Resonance
  - Tympanic – gas filled
  - Dull - fluid
- Bowel sounds
  - Increased early
  - Absent late
Management SBO

• All cases
  – Aggressive fluid resuscitation,
  – bowel decompression
  – Analgesia and antiemetic
  – early surgical consultation
  – Antibiotics

• Non operative
  – Adhesive obstruction
    » If no peritonitis
    » Atleast 72 h (60 to 85% resolve)
  – Inflammatory obstruction / active Crohns disease / diverticulitis
  – Intra abdominal abscess (drainage radiological)
  – Radiation enteritis
  – Metastatic malignancy
  – Acute post operative obstruction – paralytic ileus
Clinical Examination LBO

• Abdominal distension
  – Resonance
  – Tenderness – diffuse; RIF
  – bowel sounds normal – increased- quiet later
• Palpable mass
  – Hernia, caecum, distended bowel loop
  – Inflammatory mass omentum & bowel (phlegmon)
• Rigidity, peritonitis late sign
• Digital rectal examination
  • Empty rectum
  • Hard stools,
  • Blood
• Proctoscopy / Sigmoidoscopy
Colorectal Tumours - LBO

• About 70 percent Colorectal Tumours (L)
  • distal to the transverse colon
• Tumours at the flexure are the least common.
• Tumours of the left side - more likely to result in obstructive symptoms.
• Perforation at the point of obstruction
  – Local tumour invasion
  – Inflammatory reaction, rather than in the proximal, dilated colon.
Investigation

• Blood test
  • Essential - Full blood count, urea and electrolytes, lactate
• Radiological
  • Plain x-ray – spine / erect
    » Partial SBO: gas throughout abdomen & rectum.
    » Complete SBO: no distal gas, & staggered air-fluid levels.
    » Complicated SBO: free air under the diaphragm - perforation;
    » thumb-printing of the bowel - Ischaemia.
  • CT
  • Ultrasound
  • MRI
Radiological investigation

• CT scan
  – Performed with oral and intravenous contrast
  – Shows transition zone—complete or partial
  – Diagnosis of underlying cause and extent and location
  – Should be performed only in cases in which peritonitis is not present.
Radiological Images

Hernia

Air enema - child

Barium enema.adult

Pincer sign

Intesussuption
Presentation & Diagnosis
Intesussuption

• Presentation
  • Usually affects infants and toddlers
  • Commonest cause of obstruction in 3-18m
  • vomiting, abdominal pain, Blood and mucous PR “red currant jelly”
  • Lethargy
  • Palpable sausage-shaped mass in RUQ : Empty RIF- “Dance sign”. This mass is hard to detect and is best palpated between spasms of colic, when the infant is quiet
  • Adults – polyp / malignancy

• Diagnosis
  – Clinical can be difficult
    • High index of suspicion
    • Plain x’ray – normal difficult
    • Ultrasound scan very useful
    • Contrast enema – diagnostic and therapeutic
Management SBO

- **Operative**
  - Immediate (ASAP)
    - Signs of strangulation
      » Radiologically
      » Clinically
    - Perforation
      » Clinical peritonitis
      » Free air on radiological imaging
  
- **Planned intervention**
  - Non progression of conservative management
  - Malignancy
  - Recurrent, Subacute or partial obstruction
Surgery for SBP

• Laparascopy
  – Limited established role

• Laparotomy
  – Viable - hernia, band adhesion
    – Release / remove the cause of obstruction
    – By pass segment – metastatic malignacy
  – Non viable bowel
    – resection and restoration of continuity if no contamination
  – Peritonitis
    – Resection
    – Exteriorisation – provide a stoma
Definitive Treatment Intussusception

- Intussusception
- Non operative
  - Air / Contrast enema
- Operative
  - Open / Laparoscopic reduction

Laparoscopic view of jejunojenenal intussucption
Summary - Treatment of SBO

Treatment of ASBO

- No signs of strangulation or peritonitis
- Surgery more than 6 weeks before ASBO
- Partial ASBO
- Signs of resolution on admission

Non-operative management:
- NGT or LT decompression
- Intravenous fluid administration
- Clinical observation

Water Soluble Contrast Medium Administration

Appearance of contrast in the colon within 24h predicts RESOLUTION OF ASBO

No contrast in the colon within 24-36 hrs

Further indications for delayed operation:
- Evolving peritoneal signs
- Persistent ileus >72h
- Drainage volume >500ml on 3rd day
- Pain lasting 4 days or more
- CRP ≥ 75 mg/L
- WBC ≥ 10,000/mm³
- Free intraperitoneal fluid ≥ 500ml on CT
- Reduction of CT small bowel wall contrast enhancement

Operative management:
- Laparoscopic exploration
- Open approach
Investigation of LBO

• Blood test
  • Essential - Full blood count,
  • Low Hb - chronic occult blood loss
  • urea and electrolytes,
  • lactate

• Radiological
  – Plain X’ray
  – CT
  – Contrast study
  – Endoluminal investigation
Plain X-ray - Large bowel Obstruction

Competent Ileocaecal valve - Dilated air filled large bowel loops in periphery with haustration - large caecum, normal small bowel

Incompetent Ileocaecal valve - Dilated air filled large bowel loops in periphery with haustration, centrally dilated small bowel loops valvulae conniventes –
Radiology - Volvulus

Sigmoid volvulus – concavity towards left

Coffee bean sign

Caecal Volvulus – concavity towards right

Barium enema – Sigmoid Volvulus
bird of prey sign
Investigations CT

• CT modality of choice
  – 90% diagnosis
  – Underlying cause
  – Dilatation of colon and risk of perforation
  – Staging of disease

Mass hepatic flexure

Stricture sigmoid colon
Investigation – Contrast enema

- Contrast enema
  - Level, degree, & type of obstruction.
  - Water-soluble contrast clear cut off – nature of obstruction
  - Colonic Volvulus – characteristic:
    - Bird of prey beak confirmatory
    - Therapeutic

Apple core deformity of carcinoma colon – double contrast enema – air and barium

Barium enema – Sigmoid Volvulus bird of prey sign

Barium enema single contrast showing stricture
Investigation – Luminal examination

- Mucosal assessment
- Tissue diagnosis
- Therapeutic
- Rigid Sigmoidoscopy
  - Usually up to recto sigmoid
  - Can relieve sigmoid Volvulus
- Flexible Sigmoidoscopy
  - Descending colon
  - Insertion of stent
- Colonoscopy
  - Up to ileum
  - Not of use in acute obstruction
Flexible Endoscopy

Flexible Sigmoidoscopy

The COLONOSCOPY

- Flat Polyp/Lesion
- Polyp
- Adhesions
- Ulcerative Colitis
- Crohn's Disease
- Appendicitis
- Cancer
- Diverticulitis
Management General Principles

• Fast the patient
• Supplemental oxygen is given.
• Intravenous fluids to replace losses, + correct electrolyte imbalances.
• Urinary catheterisation and monitoring of urinary output.
• Nasogastric decompression
• Antibiotics.
• Conservative management -72 hours
  – If no risk of imminent perforation
Suspected Perforation

- Laparotomy
- Resect the perforated segment,
- Irrigate / wash out the contamination
- Exteriorise the proximal bowel as a stoma
  - Ileostomy
  - Colostomy
Volvulus Management

• Sigmoid Volvulus
  – Not perforated
    • Rigid/ Flexible sigmoidoscopy
    • Flatus Tube
  – Elective fixation
    • Endoscopic pexy
    • Elective resection and Anastomosis
  – Perforated
    • Resect
    • Wash out

CAECAL VOLVULUS:
- Reduced if viable.
- Caecopexy.
- Caecostomy.

SIGMOID VOLVULUS:
- Young - elective sigmoid colectomy.
- Elderly -
  - fixation to PAW if viable.
  - Paul-Mikulicz operation.
Volvulus Management

Colonic Volvulus

- Sigmoid
  - No Peritonitis
    - Endoscopic decompression
      - Successful
        - Bowel prep stabilize patient
          - Viable bowel No peritoneal contamination
            - Sigmoid resection and anastomosis
          - Non-viable bowel Peritoneal contamination
            - Resection and Hartmann’s procedure
            - Right hemicolecetomy for cecal volvulus
      - Unsuccessful
        - Semi-elective Surgery
  - Peritonitis
    - Evidence of Ischemic bowel
    - Emergent Surgery
      - Exploratory laparotomy
      - Cecostomy
    - Extremely debilitated patient
      - Cecostomy
Colorectal cancer - LBO

- Initial resuscitation same principles
- Relieve obstruction
  - Stent decompression
- Stage the disease
- Neoadjuvant therapy - rectal tumours
- Planned elective surgery
Management Cancers

Surgery for bowel cancer

- **Principles:**
  - Ideally empty bowel
    - Enemas & laxatives
  - Remove the tumour
    - Wide resection of growth
  - Lymphadenectomy
    - Regional LNs
  - Neo-adjuvant chemotherapy
    - Rectal Ca T1 or T2 only
    - Not colonic tumours
    - Aim to downsize tumour before surgery
Hernia

- **Definition**
  - Abnormal protrusion of lining of cavity with or without its contents through natural orifice or a weakness into another compartment
  - All abdominal wall hernias present as lump

- **Types of hernia:**
  - **COMMON**
    - Inguinal (direct or indirect), Femoral, Umbilical, Paraumbilical, Epigastric, Incisional, parastomal, Hiatus*
  - **Rarer**
    - Lumbar, Spigelian, Obturator*

- **Presentation**
  - Straining event
  - Sensation of give / discomfort
  - Appearance of lump
    - appears and disappears
  - Discovery of painless lump
Hernia and Complication

• Reducible - Spontaneous / manual
  – most hernias are reducible when they first appear

• Complications
  – IRREDUCIBLE (INCARCERATED):
    • Impossible to return the contents of the hernia to the abdominal cavity
    • Partial / completely
  
  – OBSTRUCTED:
    • The bowel inside the hernia becomes obstructed due to the pressure from the edges of the hernia

  – STRANGULATED:
    • the blood supply to the contents of the hernia is impaired and eventually leads to gangrene and perforation of the hernia contents
INGUINAL HERNIA

• Inguinal hernias
  – the most common type of hernia.
  – 98% occur in men.
  – Can occur at any age but
  – Primarily an age-related condition, the older one gets, the more likely one is likely to develop an inguinal hernia

• Hernia into the inguinal canal
  – INDIRECT: through deep inguinal ring, lateral to inferior epigastric artery
  – DIRECT: through the posterior wall of the inguinal canal, medial to the inferior epigastric artery
  – Both types – present above and medial to the pubic tubercle
  – deep inguinal ring: midway between pubic tubercle and ant sup iliac spine
  – indirect hernia controlled by direct pressure over deep inguinal ring but direct hernia is not
FEMORAL HERNIA

- Femoral hernias - less common than inguinal hernias
  - 6 / 100,000 people (England)
  - 75% femoral hernias - women

- Comes through the femoral canal below the inguinal ligament

- Narrow neck,
  - appears below and lateral to the pubic tubercle
  - prone to incarceration and strangulation
**UMBILICAL HERNIA**

- **Umbilical hernia** - occurs when tissue protrudes around the umbilicus
  - Umbilical hernias are very common in young children.
    - 1 in 6 children being affected.
    - Black children are 10 times more likely to develop an umbilical hernia than white children.
    - The reasons for this are unclear.
    - In most cases, an umbilical hernia in child under 6 months will resolve as a child grows older, without the need for treatment.
  - Umbilical hernia can develop in adults.
    - Risk factors for an umbilical hernia in adulthood include: Obesity
    - heavy lifting,
    - persistent coughing
    - multiple pregnancies.
INCISIONAL HERNIA

• Incisional hernia –
  – occurs when tissue protrudes through a surgical scar that is weak.
  – are a complication of abdominal surgery.
  – The chance of an incisional hernia -0.5%-10

• Risk factors for developing an incisional hernia
  – Emergency surgery
  – Wound infection post op
  – Persistent coughing
  – Poor nutrition
  – heavy lifting,
  – having another pre-existing health condition, such as diabetes or HIV, or AIDS, that slows down the healing process.
Non Mechanical Obstruction

• Adynamic obstruction, Paralytic ileus
• Failure of Peristalsis
• No Mechanical cause
• Cause
  – Post operative,
    • Laparotomy 9%
    • Thoracotomy / Orthopaedic procedure <2%
    • Drugs, Trauma, Intra abdominal sepsis
  – Unclear mechanism
    • neural- increased sympathetic discharge
    • toxins
    • Metabolic disturbance – electrolyte imbalance
Non Mechanical Obstruction

• Types
  – Post operative
    • GI surgery
  – Ileus associated with systemic illness
    • Myocardial infarction, pancreatitis, sepsis
  – Narcotic ileus
    • Opiod Mu receptors
Non Mechanical Obstruction

• Signs and Symptoms
  – Painless distension,
  – vomiting,
  – absent or minimal bowel sounds- tinkling

• Investigation
  – Blood urea, electrolytes, magnesium
  – Radiological
    • Plain xray
    • CT scan

Air outlining the entire colon- No cut off
Treatment of Non Mechanical Obstruction

- Nil orally,
- Intravenous fluids
- Nasogastric aspiration
- Treat the underlying cause
- Avoid opiates
- Support Nutrition
## Mechanical and Non Mechanical Obstruction

### Table: Characteristics of Ileus, Pseudo-obstruction, and Mechanical Obstruction

<table>
<thead>
<tr>
<th></th>
<th>Ileus</th>
<th>Pseudo-obstruction</th>
<th>Mechanical Obstruction (Simple)</th>
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</thead>
<tbody>
<tr>
<td><strong>Symptoms</strong></td>
<td>Mild abdominal pain, bloating, nausea, vomiting, obstipation, constipation</td>
<td>Crampy abdominal pain, constipation, obstipation, nausea, vomiting, anorexia</td>
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</tr>
<tr>
<td><strong>Physical Examination Findings</strong></td>
<td>Silent abdomen, distention, tympanic</td>
<td>Borborygmi, tympanic, peristaltic waves, hypoactive or hyperactive bowel sounds, distention, localized tenderness</td>
<td>Borborygmi, peristaltic waves, high-pitched bowel sounds, rushes, distention, localized tenderness</td>
</tr>
<tr>
<td><strong>Plain Radiographs</strong></td>
<td>Large and small bowel dilatation, diaphragm elevated</td>
<td>Isolated large bowel dilatation, diaphragm elevated</td>
<td>Bow-shaped loops in ladder pattern, paucity of colonic gas distal to lesion, diaphragm mildly elevated, air-fluid levels</td>
</tr>
</tbody>
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THANK YOU FOR your ATTENTION! ANY QUESTIONS?