GASTROINTESTINAL SYSTEM DISORDERS

CLEFT LIP & PALATE

- Definition: facial malformations that occur during embryonic development (6-12 weeks gestation) causing a failure of the maxillary and median nasal structure to fuse.

CLEFT LIP & PALATE

- Nonunion of the tissue and bone of the upper lip and hard/soft palate during embryologic development
- Familial disorder, often associated with other congenital abnormalities.
  - Cleft lip/palate 1 in 1000 births
  - Cleft lip with or without cleft palate affects more boys; cleft palate affects more girls.

CLEFT LIP & PALATE

- Etiology: unknown; may occur as part of a genetic disorder or environmental factors such as:

a) Exposure to teratogens
b) Familial tendency
c) Increased incidence in Asians, Native Americans, lowest in African Americans.

CLEFT LIP

- Signs and symptoms

a) May be unilateral or bilateral
b) Varies from simple notching of vermillion border of the lip to a deep cleft, extending through the lip or into the nose.

CLEFT PALATE

- Signs and symptoms

a) Midline fissure or opening in the hard and/or soft palate areas
b) Difficulty forming a seal for sucking
c) Coughing and choking
d) Nasal distortion
e) Congestion
f) Failure to thrive (un-repaired defect with persistent feeding difficulties)

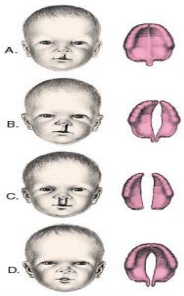
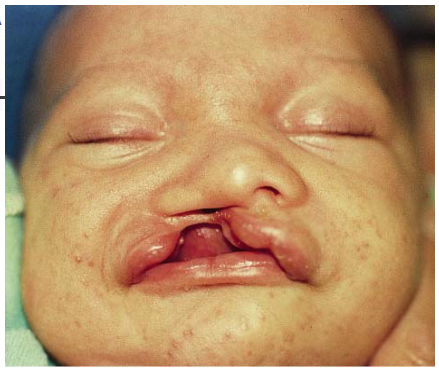


Fig. 11-17, A-D Variations in clefts of lip and palate at birth. **A,** Notch in vermilion border. **B,** Unilateral cleft lip and cleft palate. **C,** Bilateral cleft lip and cleft palate. **D,** Cleft palate.

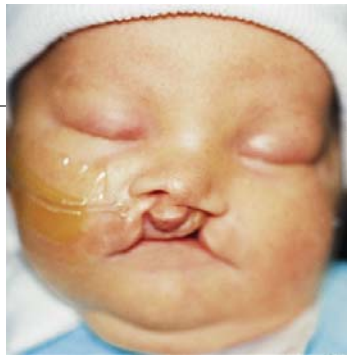
Figure 46-1A



Unilateral cleft lip

London / Ladewig / Ball / Bindler
Maternal-Newborn and Child Nursing: Family-Centered Care

Figure 46-1B Cleft lips



Bilateral cleft lip

London / Ladewig / Ball / Bindler
Maternal-Newborn and Child Nursing: Family-Centered Care

CLEFT LIP & PALATE

- Diagnostic tests and labs:
  a) History and physical
  b) Prenatal ultrasound
  c) Pre-op laboratory data (CBC, electrolytes)
  d) Wound and sputum culture if infection is suspected

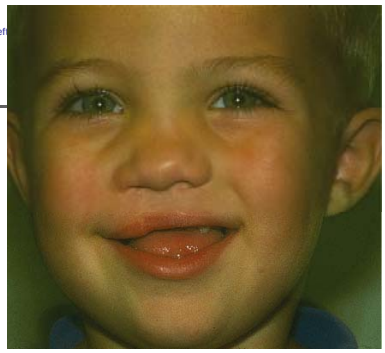
Medical Management

- A team approach for therapy
  - Speech Therapist
  - Dentist and Orthodontist
  - Audiologist
  - Otolaryngologist
  - *These children are prone to otitis media and possible hearing loss*
  - Pediatrician

Surgical Management

- Timing varies with severity of the defect; early correction helps to avoid speech defects
- Cleft Lip Repair
  - Usually performed at age 2 months
- Cleft Palate Repair
  - Usually performed at 18 months in anticipation of speech development

Figure 46-2A Repaired cleft



Repaired unilateral cleft lip.

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Maternal-Newborn and Child Nursing: Family-Centered Care

Figure 46-2B Repaired cleft lips

Repaired bilateral cleft lip.

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Maternal-Newborn and Child Nursing: Family-Centered Care

Nursing Care Pre-op

- Feed in upright position to decrease possible aspiration and swallowing of air
- Burp frequently
- Special feeding devices as needed:
  a) Cleft palate nipple
  b) Syringe with soft rubber tubing
  c) Soft nipple with enlarged hole
- Tube feeding as necessary
- Emotional Support to parents:
  - Demonstrate benefits of surgery
  - Reinforce that disorder is not their fault and will not affect child's life span or mental ability
  - Prepare for surgery

Nursing Care Pre-op

- Position on side with head of the bed elevated
- Provide oral care and suction as needed
- Teach family to use bulb suction to clear airway

Fig. 11-19 Some devices used to feed an infant with a cleft lip and palate. *Clockwise:* Lamb's nipple, flanged nipple, special nurser, and syringe with rubber tubing (Breck feeder).

Post-op Nursing Care

- Cleft Lip Repair
  - Maintain patent airway
  - Position on back or side
  - **AVOID ANY STRAIN ON SUTURE LINE**
  - Use elbow restraints to keep child's hands away from the suture line
  - Keep suture line clean
  - Teach parents to keep suture line clean at home

Post-op Nursing Care

- Cleft Palate Repair
  - Position on side or abdomen for drainage of blood/mucus
  - Have suction at the bedside for emergency use
  - Prevent injury or trauma to suture line
  - Give water after feedings to clean suture line
  - Rinse mouth with water after feeding
  - Hold and cuddle these babies

Post-op Nursing Care

- Address pain management needs
- Avoid placing hard items in mouth (suction catheters, spoons, ice chips)
- Use a cup for drinking to avoid placing anything in mouth
- Monitor for bleeding, infection or breakdown at the surgical site

Complications

- Otitis media and hearing loss
- Speech difficulties
- Pulmonary complications from aspiration
- Malocclusion due to abnormal teeth eruption

Fig. 11-18 Infant with Logan bow in place to prevent trauma to the suture line. Note elbow restraints.

Altered Connections between Trachea, Esophagus and Stomach

- Congenital rare malformation that represents a failure of the esophagus to develop as a continuous passage.
- Often found in:

Low birth weight infants

HX of maternal polyhydramnios

TYPES

- *Esophageal atresia*
  - Esophagus ends in a blind pouch; no entry route to the stomach
- *Tracheoesophageal fistula (TEF)*
  - Open connection between trachea and esophagus
- *Esophageal atresia with TEF*
  - Esophagus ends in blind pouch, stomach end of esophagus connects with trachea

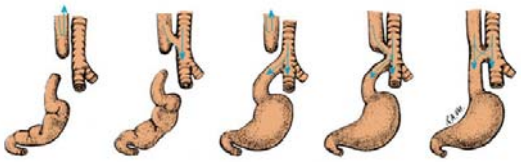

Fig. 11-20 Five most common types of esophageal atresia and tracheoesophageal fistula.

Management

- Drug therapy
  - antibiotics for respiratory infections
- Surgery
  - Palliative
    - Gastrostomy for placement of a feeding tube
  - Corrective
    - End-to-end anastomosis to correct the defect and restore normal anatomy

Assessment Findings

- Esophageal atresia
  - Inability to pass an NG tube
  - Increased drooling and salivation
  - Immediate regurgitation of undigested formula/milk when fed
  - Intermittent cyanosis from choking on aspirated secretions
  - C-C-C (choking, coughing, cyanosis)

Assessment Findings

- TEF
  - Normal swallowing but some food/mucus crosses fistula, causing choking and intermittent cyanosis
  - Distended abdomen from inhaled air crossing fistula into stomach
  - Aspiration pneumonia from reflux of gastric secretions into the trachea

Nursing Interventions

- Pre-operative
  - Head of bed slightly lowered-minimize aspiration of secretions into trachea
  - Keep NPO
  - Provide suctioning
  - IV fluids
  - Maintain patent airway and lung expansion
  - Recognize defect early (excess salivation)
  - Prevent aspiration pneumonia

Nursing Interventions

- Post-operative
  - Provide nutrition
  - Support parents
  - Provide client teaching and discharge teaching
    - Alternative feeding methods (GT and then advance to oral feeding as child progresses)
    - Signs of respiratory distress
    - Suctioning
    - CPR

Nursing Interventions

- Promote respiratory function
  a) Suction secretions as needed
  b) Maintain care of chest tube and drainage apparatus
  c) Administer oxygen as indicated
  d) Prevent aspiration of feedings
- Prevent infections at the operative sites
- Maintain fluid and electrolyte balance
- Comfort measures (pacifier, tactile stimulation)

GASTROESOPHAGEAL REFLUX

GER

- Relaxation or incompetence of the lower esophagus sphincter which results in frequent return of stomach contents into the esophagus

GER

- Reversal of flow of stomach contents into lower portion of the esophagus
- Common in premature infants due to hypotonia
- Caused by relaxed cardiac sphincter or overdistension of stomach by gas or overfeeding
- Results in local irritation of lining of esophagus from gastric secretions

Manifestations of GER

- Infants
  - "Spitting up"/vomiting
  - Irritability
  - Weight loss
  - Frequent URIs
  - Respiratory problems
  - Life-threatening apnea
  - Bloody stools/emesis
  - Anemia
- Older children
  - Heartburn
  - Abdominal pain
  - Chest pain (noncardiac)
  - Nocturnal asthma
  - Recurrent pneumonia
  - Chronic cough

Diagnostics

- History
- Fluoroscopic observation of reflux following a barium swallow
- Upper gastrointestinal endoscopy
- Direct measurement of pH (probe monitoring) of the distal esophagus
- Scintigraphy which detects radioactive substances in the esophagus after a feeding of the compound

Nursing Interventions

- Position with head elevated 30-45 º
- Small, frequent feedings with adequate burping
- Provide client teaching and discharge planning
  - Teach parents how to position and feed infant
  - Administration of medications

Treatment

- Mild
  - Modification of feeding habits
    - Thicken feedings
    - Avoid fatty foods and citrus
  - Medication
    - Antacids, histamine blockers, metoclopramide
  - Positioning
    - Prone after feedings

Treatment

- Severe
  - Fundoplication
    - Wrapping of the fundus of the stomach around the distal esophagus
    - GT usually inserted during surgery and left in place for six weeks

PYLORIC STENOSIS

- Hypertrophy (thickening) of the pyloric sphincter causing stenosis and obstruction
- 5 in 1000 births, more common in Caucasian, firstborn, full-term boys
- Cause unknown; possibly familial

PYLORIC STENOSIS

- Pathophysiology

a) Hypertrophy of the pylorus muscle (stenosis of stomach lumen)

b) Lumen (inflamed and edematous/complete obstruction)

c) Projectile vomiting (dehydration and electrolyte depletion)

Assessment Findings

- Olive-size mass in RUQ
- Peristaltic waves during & after feedings (move left to right towards pylorus)
- Hyperactive BS
- Vomiting
  - As obstruction increases, vomiting becomes more forceful and projectile
  - Hungry after vomiting
- Dehydration

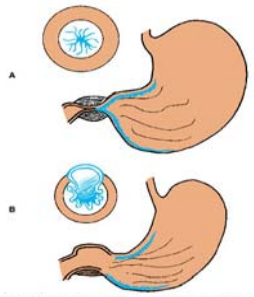

Fig. 33-7, A & B Hypertrophic pyloric stenosis. A, Enlarged muscular tumor nearly obliterates pyloric channel. B, Longitudinal surgical division of muscle down to submucosa establishes adequate passageway.

Diagnostics

- Upper GI
- Pyloric ultrasound
- Electrolyte imbalance

a) Severe depletion of water and electrolytes from extensive vomiting
b) Decreased serum levels of sodium and potassium
c) Increased pH and bicarbonate levels (metabolic alkalosis)

Interventions

- Replacement of fluid and electrolytes
- NPO

a) promote gastric decompression
b) Carry out lavage
c) Maintain patency of NGT
d) Measure and record amount and type of drainage

Interventions

- Surgery: Pylorotomy (the circular muscle fibers of the pylorus are released to allow the passage of food and fluids-incision through muscle fiber)
  - Clear liquids post-operatively; then advance
  - HOB elevated

Interventions

- Assess adequacy of intake

a) Weigh daily

b) Measure carefully: intake (PO and parental), output (vomitus, NGT drainage, stools, urine)

c) Urine specific gravity

HIRSCHSPRUNG'S DISEASE (Aganglionic Megacolon)

- Absence of autonomic parasympathetic ganglion cells in a portion of the large colon resulting in decreased motility in that portion of the colon and signs of functional obstruction
- Usually diagnosed in infancy

Hirschsprung's Disease

- When stool enters the affected part of the colon, lack of peristalsis causes it to remain there until additional stool pushes it through; colon dilates as stool is impacted
- Familial disease; more common in boys; associated with Down's syndrome

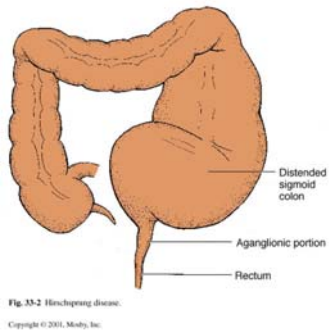

Fig. 33-2 Hirschsprung disease.

Assessment

- Failure or delay in passing meconium
- Abdominal distension
- Chronic constipation
- Foul, ribbon-like stools
- Bile-stained emesis
- Nausea, anorexia, lethargy
- Weight loss

Assessment: Newborn

- Failure to pass meconium within 24-48 hours after birth
- Reluctance to ingest fluids
- Bile stained vomitus
- Abdominal distension

Assessment: Infancy

- Failure to thrive (FTT)
- Constipation
- Abdominal distention
- Episodes of diarrhea and vomiting

Assessment: Childhood

- Constipation
- Passage of ribbon-like-stool
- Foul smelling stool
- Abdominal distention
- Visible peristalsis
- Fecal masses easily palpable
- Poorly nourished
- Anemic
- Hypoproteinemic from malabsorption of nutrients

Diagnostics

- Barium enema
- In neonate, Dx is usually made based on clinical signs of intestinal obstruction and failure to pass meconium
- Rectal exam
  - Rectum empty of stool
  - Rectal biopsy confirms the diagnosis (absence of ganglia)

Treatment

- Drug Therapy: stool softeners
- Isotonic or Mineral Oil enemas
- Diet Therapy: low residue, diet modification (milder defect)
- Surgery:
  - Palliative: loop or double-barrel colostomy
  - Corrective: abdominal-perineal pull through; bowel containing ganglia is pulled down and anastomosed to the rectum

Nursing Interventions

- Administer enemas as ordered
- Administer TPN as ordered
- Provide low residue diet
- Provide client teaching and discharge planning concerning colostomy care and low residue diet

IMPERFORATE ANUS

- Congenital malformation caused by abnormal fetal development
- Many variations
- Often associated with fistula formation to rectum or vagina and other congenital anomalies

Imperforate Anus

- Surgical correction performed in stages with completion at about age 1 year
- May need temporary colostomy

Assessment

- No stool passage within 24 hours of birth
- Meconium stool from inappropriate orifice (appears in urine)
- Inability to insert rectal thermometer
- Absence of an anal opening
- Checking for patency of the anus and rectum is a routine part of the newborn assessment including observation or inquiries regarding the passage of meconium

Management

- Manual dilation for anal stenosis
- Surgery
  - Anoplasty (reconstruction of the anus)
  - Colostomy for higher anomalies in infants
- Prophylactic Antibiotics

Nursing Interventions

- If suspected, do NOT take rectal temperature because of risk of penetrating wall and causing peritonitis
- Perform manual dilation as ordered, instruct parents in proper technique
- After surgery keep incision clean as possible
- Use side-lying/prone position post-surgery
- For colostomy teach parents colostomy care (dressing change, skin care, correct application of collection devices)

CONSTIPATION

- Decrease in number of bowel movements with large, hard stools
- May be caused by high fat and protein and low fluid diet
- May cause bowel obstruction if severe

Assessment

- Less frequent stools
- Difficulty eliminating stool
- Hard consistency compared to normal pattern
- Bleeding with stooling
- Abdominal pain

Management

- Drug therapy
  - Stool softeners
  - suppositories
  - enemas
- Diet
  - Increased fiber and fluids

Nursing Interventions

- Assess for other pathologic causes
- Dietary modification
- Apply lubricant around anus
- Remove stool digitally if possible
- Provide prune juice (1 oz), add fruits to diet

DIARRHEA

- Inflammatory process of GI lining
  - Acute caused by:
    - Infections (bacterial, viruses)
    - Antibiotic therapy
    - Diet conditions
  - Chronic caused by:
    - Malabsorption disorders
    - Structural defects
    - Allergic disorders

Assessment

- Frequent watery stools
- Anorexia
- Dehydration
- Weight loss

Nursing Interventions

- Mild diarrhea – home treatment
  - ORT (oral rehydration therapy)
  - Dietary advancement (clear liquids, electrolyte solutions)
  - Bland/BRATT diet
  - Infants may need soy formula
  - Teach parents signs & symptoms of dehydration

Nursing Interventions

- Severe diarrhea – hospitalize esp. infants
  - Isolation (enteric) until organism isolated
  - NPO to rest bowel
  - Fluid & electrolyte replacement
  - Strict I & O
  - Daily weight
  - Skin care

Gastroenteritis

- Definition: an inflammation of the mucous membranes of the GI tract characterized by vomiting and diarrhea resulting in F&E losses that lead to dehydration and electrolyte imbalances.

Gastroenteritis

- Predisposing factors:
- Age (NBs and infants)
- Impaired health
- Climate
- Environment

Gastroenteritis

- Pathophysiology:
- Pathogens infect the cells
- Produce enterotoxins that damage the cells
- Or, enterotoxins adhere to the walls of the intestines

Gastroenteritis

- Enteropathogenic organisms:
- Shigella
- Salmonella
- Eschericha Coli

Gastroenteritis

- Transmission:
- Fecal-oral route, person to person
- Contaminated water and food supplies
- Exposure to day care facilities increased risk
- Travel to other countries

Gastroenteritis

- Other causative factors:
- Viruses
- Stress
- Fever
- Parasites
- Food intolerance
- Overfeeding
- Medications
- Colon disease

Gastroenteritis

- Major physiological disturbances:
- Dehydration
- Electrolyte imbalance
- Metabolic acidosis

Gastroenteritis

- Diagnostic evaluation:
- Stool specimen
- Serum electrolytes
- Hematocrit
- BUN

Gastroenteritis

- Signs of dehydration:
- Sunken fontanel
- Sunken eyes
- Poor skin turgor
- Dryness of mouth
- Loss of weight
- Increased heart rate
- Concentrated urine
- irritability

Gastroenteritis

- Treatment:
- Home care
- Oral hydration therapy (Pedialyte>1/2 st formula>FS formula)
- BRATT diet contraindicated

Gastroenteritis

- Contraindicated foods:
- Carbonated beverages and those containing sugar
- Caffeinated soda
- Chicken or beef broth

Gastroenteritis

- Nursing interventions:
- Assessment and history
- Weight and vital signs
- Monitor IV fluids
- I & O
- Description of stools, vomitus, and urine
- Skin care
- Good hand washing