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St. Stephen's Hospital
College of Nursing

GNM Exam Essentials

A Question Bank with Smart Answer Guide

2nd Year

Based on Indian Nursing Council Syllabus

Key Features:

- Includes important content
- Important diagrams and flowcharts
- Multiple choice questions with answer key
- Short and long answer questions from every unit
- Various other state question paper subject wise

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9 UNIT

Nursing Management of Patients with Gastrointestinal Disorders

Learning Objectives

- Explain the procedure of colostomy care.
- Discuss the stages, management and nursing care plan of colorectal cancer.
- List and describe the types of hernia.
- Describe the tests for appendicitis.
- Differentiate between ulcerative colitis and Crohn's disease.
- Explain the pathophysiology of cholelithiasis
- Describe composition and functions of saliva.
- Describe the factors associated with the development of inflammatory bowel disease.

NURSING ASSESSMENT

Health History

A thorough health history is necessary to adequately assess the health status of patient with potential dysfunction.

Pain

Pain can be a major symptom of GI disease. Abdominal pain may be continuous, episodic in nature associated with eating.

- The nurse assesses its onset, duration, character, location, relationship to meal, stressful events, activity or medication.
- Patient is asked to point the site of pain in the abdomen.

Food Intolerance

- Abdominal pain or discomfort may also be reported as heart burn, indigestion, belching or bloating and require further clarifications.
- Discomfort may interfere with chewing or swallowing food.
- Specific foods such as spicy, very hot, very cold may precipitate discomfort smoking or alcohol consumption may also trigger abdominal discomfort.

Intestinal Gas

The accumulation of gas in the GI tract may result in the following:

- **Belching:** It is the expulsion of gas from the stomach through the mouth.
- **Flatulence:** It is expulsion of gas from the rectum. Excessive flatulence may be a symptom of gall bladder disease or food intolerance.

Nausea and Vomiting

- Nausea and vomiting are commonly associated with GI problems and the nurse assesses for onset, frequency, duration, patterns of occurrence, relationship to meal and the quantity and character of emesis.

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- Emesis may contain red blood indicative of recent bleeding, coffee ground emesis may indicate old bleeding in stomach. The presence of bile produces a green color and has a bitter taste; brown vomitus may contain fecal matter.

Fatigue and Weakness

Patient with GI system problem often complains of fatigue and weakness. Inadequate nutrient intake, abnormal fluid and electrolyte status may also contribute to problem.

Change in Bowel Habits and Stool Characteristics

- Pattern of bowel elimination varies significantly among healthy individuals and these patterns are commonly altered by GI system disorders.
- Changes in a normal pattern of bowel elimination may represent a physiologic alteration or pathologic condition.
- Constipation may be a temporary response to a change in diet or activity or it may be a sign of bowel obstruction. It may result from the administration of opioid that slows peristalsis.
- Diarrhea and stool containing mucus, pus and possibly undigested food may indicate enteritis or invasion by a parasite.
- Obstruction in the descending colon may produce small, ribbon shaped stools, or no stools if the obstruction is complete.
- When fat absorption is abnormal, steatorrhea (bulky foul smelling, fatty stools) may occur.
- If biliary obstruction is present, the patient may give a history of clay colored or grayish stools.
- Blood in the stool, i.e., hematochezia (melena) may be recent or a chronic symptom and may result from erosion of the mucosa, leading to perforation of the muscle wall or rupture of a blood vessel.

Foods and Medications that Alter Stool Color

Altering substances	*Color*
Meat protein	Dark brown
Spinach	Green
Carrots and beers	Red
Cocoa	Dark red or brown
Senna	Yellow
Bismuth, iron, licorice and charcoal	Black
Barium	Milky white

Physical Assessment

Information gained from the physical examination helps the nurse to determine the patient's baseline status and develops an appropriate plan of care.

- The patient lies in supine position with knees flexed slightly for inspection, auscultation, palpation and percussion of the abdomen.
- Mouth, tongue, buccal mucosa, teeth and gums are inspected.
- Ulcers, nodules, swelling, discoloration and inflammation are noted.
- While performing physical assessment, it is also important to note the contour and symmetry of the abdomen.

Assessment of Oral Cavity

Lips

- Inspect landmarks-vermilion zone, commissures, nasolabial fold.
- Inspect color.
- Inspect surface for ulcerations, blisters, growth and thickness changes.
- Observe patient with mouth closed and patient smiling to look for cranial nerve VII lesions.
- Palpate with gloved hands for surface irregularities not visible to the eye, submucosal nodules, and areas of tenderness.

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Labial Mucosa

Reflect patient's lips with gloved hands.

- Inspect color and surface for nodules, ulcerations and thickenings.
- Palpate upper and lower surfaces with two fingers from commissure to commissure to detect sub-mucosal changes.

Buccal Mucosa

Have patient's mouth wide open in order to inspect and have good lighting.

- Inspect color and surface for nodules, ulcerations, thickenings.
- **Identify normal landmarks:** Pterygomandibular raphe and parotid papilla. Identify parotid papilla on mucosal surface near upper molars. Palpate the parotid gland and observe for expression of fluid from Stensen's duct.
- Palpate surface with two fingers to identify sub-mucosal lesions.

Gingiva and Alveolar Mucosa

- Inspect color of gingival and alveolar mucosa.
- Inspect texture of gingival and alveolar mucosa: Look for atrophy, recession, hypertrophy or enlargement. Look for ulcerations.
- Palpate any areas of enlargement to determine, if enlargement is due to edema, or an underlying bony or fibrous process.

Palate

- Identify hard and soft palate landmarks, i.e., fovea palatine, palatine raphe, alveolar tuberosity, hamular notch, pillars of the fauces and uvula. Inspect for any developmental abnormalities of these landmarks.
- Inspect color of hard and soft palate and inspect for ulcerations, thickenings, exudates and petechiae.
- Palpate posterior hard palate and soft palate for subcutaneous nodules.

Tongue

Inspect in normal resting position and in a protruded position.

- **Identify landmarks:** Terminal sulcus, median sulcus, foramen cecum and lingual frenulum.
- Be familiar with normal appearance of filiform, fungiform and circumvallate papillae.
- Inspect color and texture of dorsal, ventral and lateral surfaces. Look for plaques, ulcerations, thickenings and changes in papillae.
- Palpate dorsal and ventral aspects of the tongue.
- Evaluate movement of tongue.

Floor of the Mouth

Have patient's mouth open, touch tip of tongue to roof of mouth to inspect. Carefully retract tongue to inspect distal aspects of floor.

- **Inspect normal landmarks:** Lingual frenulum, sublingual folds and caruncles.
- Inspect for color and texture changes.
- Palpate entire sublingual and submandibular fossa areas by bimanual palpation to detect nodules, differences in consistency of sublingual glands and tissues.

Teeth

- Inspect for number and position of teeth: Understand how the number of teeth change from childhood to adulthood, look for changes in teeth structure or number that indicate congenital/genetic syndromes.
- Inspect color of teeth and look for surface changes indicative of early dental decay.

Assessment of Abdomen

Techniques used for clinical examination of abdomen include inspection, auscultation, percussion and palpation. It is important to do auscultation before percussion because percussion may alter/affect the bowel movement which alters

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the auscultation findings. Use any one of the system to anatomically describe the surface of the abdomen-abdominal quadrants or abdominal regions

Inspection

- Inspect for contour symmetry, abdominal aorta pulsation and distention.
- Do not touch the abdomen during the inspection otherwise peristalsis can be stimulated which will provide false data during the auscultation portion of the assessment.
- Instruct the patient not to touch the abdomen during the inspection phase. Abdominal distention can be caused by three factors:
  - *Obesity:* Abdomen is soft and rounded with a sunken umbilicus.
  - *Ascites:* Skin is shiny and glistening with an everted umbilicus. Veins are dilated and prominent (more visible in thin, malnourished skin).
  - *Obstruction:* There may be visible, marked peristalsis; restlessness; lying with knees flexed; grimacing facial expression; and uneven respirations.

Auscultation

Bowel Sounds

- Bowel sounds are best heard with the diaphragm portion of the stethoscope.
  - Note the character (high-pitched, gurgling and clicking) and frequency.
  - Normally, the sounds occur intermittently at 5–15 times per minute.
  - Judge if the sounds are normal, hyperactive. hypoactive or
- Nurse must listen for 5 minutes to each quadrant before deciding that bowel sounds are absent
- If the patient is experiencing an obstruction due to an ileus (absence of peristalsis), bowel sounds will be absent as there is no enervation by the nervous system to the area.
- If the patient is experiencing a mechanical obstruction (feces, volvulus and tumor), the bowel sounds can alter between being hyperactive or peritonitis presents with absent bowel sounds.

Vascular Sounds

- Vascular sounds are best heard with the bell of the stethoscope.
- Assess all four quadrants listening for bruits (whooshing, blowing sounds that represent impaired circulation within an artery or an aneurysm).
- An aortic pulsation may be heard over the left upper quadrant in the presence of hypertension, aortic insufficiency or aortic aneurysm.

Palpation

- Prior to palpating the abdomen, tell the patient to bend the knees and relax the abdominal muscles.
- Ask the patient to point any painful or tender areas.
- Save those areas to palpate last, so that the patient becomes more accustomed to the touch and does not guard throughout the exam.
- Lightly palpate the abdomen by quadrants. Note any muscle guarding, rigidity, tenderness or masses.

Percussion

- **Tympani:** Tympani should predominate as air rises to surface of the abdominal cavity.
- **Hyper-resonance:** Will be heard in the presence of gaseous distention.
- **Dullness:** Percussed over a distended bladder adipose tissue, fluid, or a mass in the abdomen.

Diagnostic Evaluation

Many of the examination and tests performed for diagnosis of GI system are both time consuming and unpleasant. It remains the nurse's responsibility to meet the educational and psychologic needs of the patient by answering questions

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concerning the test procedure, rationale for its use, and specific test preparation in a caring manner. The nurse ensure that the patient is prepared physically and mentally for diagnostic test.

Stool Tests

- **Testing of stool specimens include:** Inspecting the specimen for consistency and color and testing for occult blood.
- Test for fecal urobilinogen, fat, nitrogen, parasites, pathogens, food substances and other substances may be performed, these tests require that the specimen to be sent to the laboratory.
- Random specimens are sent promptly to the laboratory.
- Quantitative 24–72 hours collections must be kept refrigerated until they are taken to the laboratory.
- Some specimens require that a certain diet to be followed or that certain medications to be withheld, check agency guidelines regarding specific procedures.

Breath Tests

Hydrogen Breath Test

- The hydrogen breath test evaluates carbohydrate absorption by determining the amount of hydrogen expelled in the breath after it is produced in the colon and absorbed in the blood.
- The hydrogen breath test is used to aid in the diagnosis of bacterial overgrowth in the intestine.

Urea Breath Test

- The urea breath test detects the presence of Helicobacter pylori, the bacteria that causes peptic ulcer disease.
- The patient consumes a capsule of carbon-labelled urea and provides a breath sample 10–20 minutes later.
- Patient is instructed to avoid antibiotics or Bisthmus Subsalicylate (Pepto-Bismol) for 1 month before the test. Sucralfate and Omeprazole for 1 week before the test and cimetidine, famotidine, nizatidine, ranitidine for 24 hours before breath testing.

Abdominal Ultrasonography

- Ultrasonography uses a focused beam of high-frequency sound waves to create echoes, which then appear as spikes and dots on an oscilloscope. Echoes vary with tissue density.
- This procedure is generally used to indicate the size and configuration of abdominal structures.
- This test helps to differentiate between obstructive and non-obstructive jaundice and diagnosis

Nursing Considerations

- If the patient is undergoing pelvic or abdominal ultrasonography, he/she need a full bladder, therefore he/she must drink three to five glasses of water before the test and must avoid urinating until the test is complete.
- For gallbladder evaluation, inform the patient that he/she should not eat solid food for 12 hours before the test.
- For pancreas, liver or spleen evaluation test, tell the patient that he/she should be on fasting for 8 hours before the test. If barium studies are to be performed, the nurse should make sure that they are scheduled after this test; otherwise, the barium will interfere with transmission of sound waves.

DNA Testing

- Researchers have refined methods for genetic risk assessment, preclinical diagnosis and prenatal diagnosis to identify persons who are at risk for certain GI disorders (e.g., gastric cancer, lactose deficiency, inflammatory bowel disease, colon cancer).
- Persons who are identified as at risk for certain GI disorders may choose to undergo genetic counselling to learn about the disease; to understand options for preventing and treating the disease; and to receive support in coping with the situation.

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Imaging Studies

Upper Gastrointestinal Tract Study

An upper gastrointestinal series is usually ordered for patients complaining of nausea, vomiting, weight loss, or abdominal pain. These complaints are common for patients with esophagus, stomach, duodenum and jejunum disorders.

- The patient is allowed nothing by mouth after midnight before the test (minimum 6–8 hours).
- Answer any patient's concern and explain patient that he/she will be asked to swallow a large amount of barium sulfate (substance, i.e., opaque, tasteless) odorless, completely insoluble powder in the form of a thick or thin aqueous suspension for the purpose of studying the upper GI tract, the patient swallows barium under direct fluoroscopic examination.
  - As the barium descends into stomach, the position, patency and caliber of the esophagus are visualized, enabling the examiner to detect or exclude any anatomic or functional derangement of the organ.
  - The patient will be placed on X-ray table and radiographs will be taken in various positions and at various times during the procedure.
  - The patient should understand that the procedure may take several hours depending on the rate at which the barium moves through the patient's GI tract.
  - A laxative, such as milk of magnesia may be given after the procedure to aid in the evacuation of the barium.

Lower Gastrointestinal Tract Study

A barium enema may be ordered if the patient has reported any change in bowel function such as diarrhea or constipation, blood or mucus in the stool. When barium is instilled rectally to visualize the lower GI tract, it is known as barium enema.

- The purpose of barium enema is to detect the presence of polyps, tumors and other lesions of the large intestine and to demonstrate any abnormal functioning of bowel.
- The radiopaque substance is instilled rectally in the radiology department during fluoroscopy.
- The procedure usually takes about 15 to 30 minutes, during this time X-ray images are taken.

Instructions

- The patient is asked to eat a low-residue diet for two days before the scheduled procedure, then a clear liquid on the night before the procedure.
- The patient is kept nil per oral (NPO) after midnight before the test.
- Further, patient is asked to use powerful laxatives such as bisacodyl (Dulcolax) to clean the bowel for accurate X-ray views.
- Enema may also be ordered.

Computed Tomography (CT)

In CT scanning, a computer translates the action of multiple X-ray beams into three dimensional oscilloscope images of the biliary tract, liver and pancreas. This test can be done with or without a contrast medium, but contrast is preferred (unless the patient is allergic to contrast medium).

This test:

- Helps to distinguish between obstructive and nonobstructive jaundice.
- Detects occult malignancy.
- Identify abscess, cysts, hematomas, tumors and pseudocysts.
- Helps to diagnose disease of liver, spleen, kidney, pancreas and pelvic organs.

Nursing Considerations

- Tell the patient to restrict food and fluids after midnight before the test but to continue any drug regimen as ordered.
- Explain that the patient should lie still, relax, breath normally and remain quiet during the test because movement blurs the X-ray picture and prolongs the test.

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- If the radiologist order I/V contrast medium, the patient may experience discomfort from the needle puncture and feeling of warmth as the contrast is injected.
- If the patient has seafood or dye allergy, a pre-test preparation kit containing Prednisone, Cimetidine and Diphenhydramine may be given to him/her. Patient should immediately report any adverse reactions such as nausea, vomiting, dizziness, headache and urticaria (hives).
- Explain that patient may resume his/her normal diet after the test.

Magnetic Resonance Imaging (MRI)

MRI is a non-invasive technique that uses magnetic fields and radio waves to produce an image of the area being studied.

- MRI generates an image by energizing protons into strong magnetic field. Radiowaves emitted as protons return to their former equilibrium state and are recorded.
- MRI transmits non-ionizing radiation during the scan.
- One limitation of MRI is the closed tube-like space, ie. required for the scanned patient lies in this space.
- Patient with metal or implanted devices cannot undergo this test, because of the strong magnetic field, it generates.
- MRI is useful in evaluating disorders of liver and other organs in order to identify tumors, masses or cysts.

Nursing Considerations

- Explain the procedure to the patient.
- Patient is instructed to take deep breath or hold breath during procedure.
- Patient must lie still during the procedure which may last from 30 to 90 minutes.
- Patient must remove any metal, such as jewellery before the procedure.
- If patient becomes claustrophobic during the test, he/she may be given mild sedation.

Scintigraphy (Fig. 1)

- Scintigraphy (Radionuclide Imaging) may be used to localize the site of GI bleeding.
- Endoscopy provides excellent visualization of gastric or esophageal bleeding, but other areas of the GI tract are much more difficult to visualize and pinpoint.
- An intravenous injection of 99 Tc sulphur colloid is administered.
- Pooling of the radionuclide will occur at the bleeding site. No pre-test preparation is required and no discomfort is experienced.

Endoscopic Procedures

It includes fibroscopy/esophagogastroduodenoscopy, anoscopy, proctoscopy, sigmoidoscopy, colonoscopy, small bowel enteroscopy and endoscopy from ostomy.

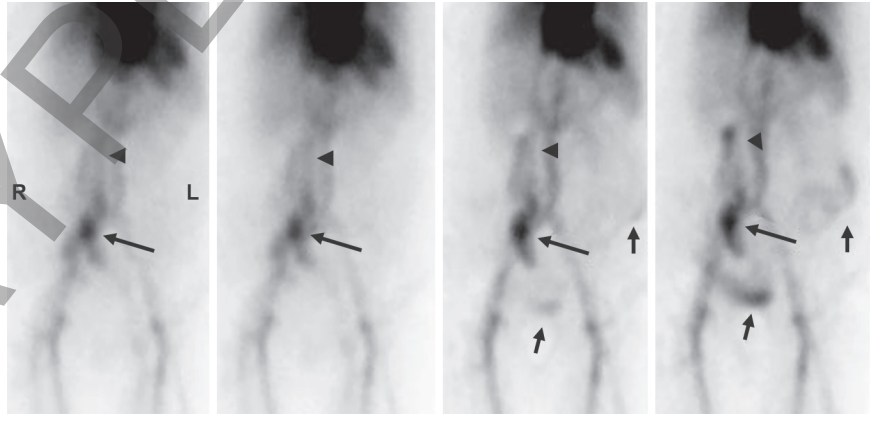

Fig. 1: Scintigraphy.
87-year-old female with hematochezia. Image from dynamic RBC scintigraphy

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Upper Gastrointestinal Fibroscopy/ Esophagogastroduodenoscopy

Upper GI endoscopy may be limited to the esophagus (esophagoscopy), stomach or duodenum (duodenoscopy) or it may involve examination of the entire region (esophagogastroduodenoscopy).

- It is particularly useful for identifying the source of upper GI bleeding and for differentiating gastric malignancies from benign ulcers, gastric ulcers and from duodenal ulcers.
- Other uses include visualization of esophageal strictures, varices, tumors, achalasia, hiatal hernias and surgical removal of gastric polyps.

Nursing Considerations

- Preparation for this procedure involves instructing the patient to remain NPO for 8 hours before the test. Because air is typically introduced as the endoscope is advanced to improve visibility, the patient should be told that a feeling of pressure or fullness will likely be experienced. The entire procedure lasts about 15 to 30 minutes unless additional treatments are planned.
- After the procedure, the patient is monitored carefully for the signs of dyspnea, pain, bleeding or acute dysphagia. Vital signs are taken every 30 minutes for 3-4 hours, and no oral food or fluids are administered until the nurse determines that the gag reflex is fully intact. Throat lozenges or saline gargles may be used to relieve sore throat after the test. Complications are rare but include aspiration, perforation and bleeding.

Anoscopy, Proctoscopy and Sigmoidoscopy

- Anoscopy requires use of a rigid scope to examine the anal canal. Patient is placed in the knee chest position with the back in patient at a 45° angle.
- Proctoscopy and sigmoidoscopy requires use of a flexible scope to examine the rectum and sigmoid colon and then patient is placed on the left side with the right leg bent and placed anteriorly.
- Biopsies and polypectomy can be performed.

Nursing Considerations

- Proctoscopy and sigmoidoscopy requires the lower bowel to be cleaned out.
- The patient usually receives a clear liquid diet 24 hours before the test and a laxative, the night before the test.
- The morning of the procedure, a warm tap-water enema or Sodium Biphosphate (fleet) enema is given.
- Bowel preparation may not be ordered for patients with bleeding or severe diarrhea.
- After the procedure, the patient is allowed to rest for a few minutes in the supine position to avoid orthostatic hypotension. When standing pain and flatus may occur from instilled air.
- The patient is observed for the signs of perforation such as bleeding, pain and fever.

Colonoscopy

- Colonoscopy provides visualization of the lining of the large intestine to identify abnormality through a flexible endoscope which is inserted rectally.
- A biopsy specimen may be obtained or polyps may be removed during the colonoscopy.

Nursing Considerations

- Patient receives a liquid diet 24 hours before the test and is kept NPO after midnight before the procedure.
- A bowel preparation solution as GOLYTELY is given in the night before the procedure. Drinking this solution can be unpleasant for the patient. In addition, a laxative, suppository (dulcolax) or enema may be needed.
- Conscious sedation (e.g., midazolam, meperidine) is used to relax and ease pain during the procedure.
- The patient is positioned on the left side with the knees bent. A small amount of air is instilled into the colon to help the physician to visualize the bowel. The air causes pressure and may be uncomfortable for the patient.
- The patient is encouraged to relax and take slow deep breaths through the nose and breathe out through the mouth.
- Vital signs are monitored throughout the procedure to watch for a vasovagal response, which can lead to hypotension and bradycardia.

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- Complications, such as hemorrhage are reported. or severe pain.
- At the time of discharge, explain the patient that flatus and cramping will occur several hours after the test, that blood may be present in the stool, its biopsy specimen was taken. Also instruct the patient to report problems to the physician.

Small Bowel Enteroscopy

- Technology for the use of the small caliber transnasal endoscopy to allow direct inspection of the wall of the small intestine continues to be developed.
- Two methods are being used at this time:
  - *Pull endoscope method:* It is very long and flexible and has a balloon at its tip. When inflated, the balloon tip advances the scope by peristalsis through the small intestine.
  - *Push endoscope method:* It has been designed to be smaller in caliber and longer in length, while still allowing the use of biopsy forceps and probes (Lightdale, 2000).

These two methods are especially useful in the evaluation of patients who have continued bleeding even after extensive diagnostic testing has identified no other problem area.

Endoscopy through Ostomy

A flexible endoscope is passed through an ostomy (stoma) to visualize the segment of small or large intestine. It may be helpful to screen the recurrent disease or to visualize and treat bleeding in a segment of the bowel.

Monometry and Electrophysiologic Studies

Monometry and electrophysiologic studies are the methods to evaluate that patient has Gl motility disorders.

- Esophageal monometry is useful in diagnosing disorders of motility or dysfunction of the lower esophageal sphincter.
- The test is performed by inserting an electrode equipped nasogastric tube which is connected to a monometric catheter.
- A typical monometry tube has three recording probes to record esophageal dysfunction and pressure in upper and lower esophageal sphincter. This sensitive test is used as differential diagnostic test for patient complaining of persistent heart burn to discriminate GI problems from other system problems.

Nursing Considerations

- Patient must restrict from eating or drinking for 8–12 hours before the test.
- The patient then swallows small amount of water while the resultant pressure changes are recorded.
- During the catheter insertion, patient may develop cyanosis or paroxysmal coughing, indicating that the electrode has entered the trachea instead of the esophagus.
- If this occurs, remove the electrode immediately. Observe the patient closely during insertion because arrhythmia may develop.

Anorectal Monometry

This is a diagnostic examination that provides information about pressure activity in the rectum and anal canal.

- It is useful in diagnosing and managing constipation.
- Patient receives an enema several hours before the examination.
- A rectal examination is performed.
- A lubricated monometry catheter is introduced into the anus, recordings are taken of pressure and reflexes within the anal canal.

Nursing Considerations

- Tell the patient that the procedure will be uncomfortable but not painful.
- Explain that he/she will be given an enema prior to the examination.
- After monometer is inserted into the rectum, pressures are recorded.
- There is no restrictions for the patient following the test.

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Laparoscopy (Peritoneoscopy)

- Laparoscopy can be used for the diagnosis of GI disease.
- This procedure is performed through a small incision in the abdominal wall.
- Special fiberoptic laparoscopes allow direct visualization of the organs and structures within the abdomen permitting visualization and identification of any growths, anomalies and inflammatory processes.
- This procedure can be used to evaluate peritoneal disease, chronic abdominal pain, abdominal masses, gall bladder and liver disease.

MANAGEMENT OF UPPER GASTROINTESTINAL DISORDERS

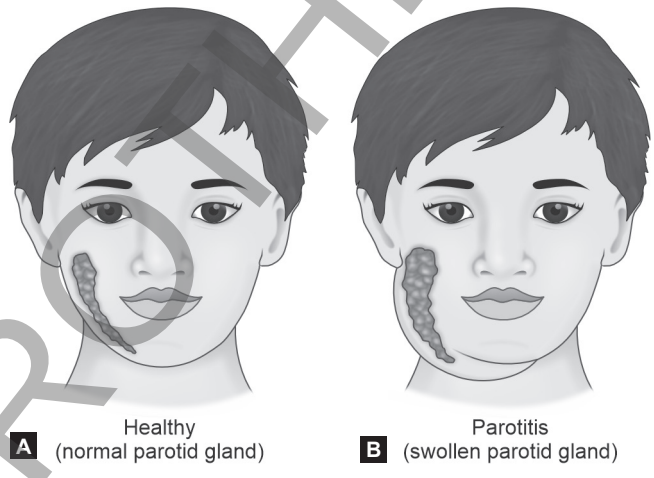
Parotitis (Figs. 2A and B)

Definition

Inflammation of one or both parotid glands is known as parotitis. It is also known as surgical mumps. It is the most common inflammatory condition which affects salivary gland.

Classification

1. **Acute parotitis:** It is characterized by redness, pain and swelling of parotid region. It occurs as a result of post surgery complication, which is performed on mentally retarded patients.
2. **Recurrent parotitis:** It is caused by a congenital abnormality of the salivary ducts with recurrent attacks of ascending infection.



Figs. 2A and B: (A) Healthy parotid gland; (B) Parotitis.

Etiology

- Parotitis (mumps) is caused by a mumps virus belongs to the genus rubella virus of the family paramyxoviridae.
- It mostly affects the children in the age group 5-9 years.
- Males and females are affected equally with mumps.
- Environmental factors: Peak incidence is in winter and spring.
- Parotitis (mumps) is a contagious disease. In this, infection spread through saliva or mucus from the mouth, nose or throat by an infected person through direct contact, airborne droplet infection or fomites during:
  - Coughing, sneezing and talking.
  - Sharing certain items, such as cups or eating utensils.
  - Touching infected objects or surfaces with unwashed hands.

Viruses Associated with Mumps

- Epstein Barr virus
- Cytomegalovirus
- Human herpes simplex virus-8
- Hepatitis C virus
- Paramyxovirus
- Influenza virus
- Echovirus

Risk Factors

There are number of factors which increase the risk of developing parotitis. Not all people with risk factors will get parotitis. Risk factors for parotitis include the following:

- Close contact with a person infected with the mumps

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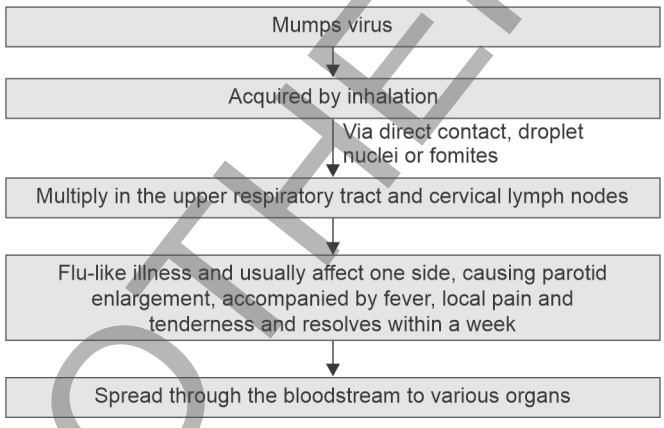
- Dehydration
- Poor oral hygiene
- Not being immunized with the MMR vaccine.

Pathophysiology

See **Flowchart 1.**

Flowchart 1: Pathophysiology of parotitis.



Clinical Manifestations

- After an incubation period of some 2 to 4 weeks, mumps begins with non-specific symptoms such as myalgia, headache, malaise and low grade fever.
- Swelling is the first visible symptom of parotitis which presents in front of the lower part of the ear then it extends downward and forward.
- Throat and neck symptoms of parotitis:
  - Bad taste in the mouth.
  - Difficulty in opening the mouth.
  - Dry mouth
  - Face pain
  - Fever
  - Redness over the side of the face or upper neck
  - Sore throat
  - Swelling in the jaw region
- Symptoms that might indicate a serious condition:
  - Difficulty in breathing
  - Difficulty in swallowing
  - High fever (higher than 101 degrees F)

Diagnostic Evaluation

- Complete physical examination of patient should be performed.
- **Complete Blood Cell Count (CBC):** It helps to rule out normal, decreased or elevated white blood color with predominating lymphocytes in differentia count.
- **Sera inflammatory markers, such as C-reactive protein or erythrocyte sedimentation rate (ESR):** It defects non-specific systemic inflammatory response.
- **Serum amylase:** It is elevated in parotitis (mumps) (amylase S) and in pancreatitis (amylase P). Serum lipase is elevated in pancreatitis
- **Specific immunoglobulins:** It helps to demonstrate significant rise in mumps-specific immunoglobulin G (IgG) antibody titers between acute and convalescent sera specimens.

Management

Medical Management

- Conservation and supportive medical care or treatment is indicated for patients with mumps.
- There is no antiviral agent for the treatment of viral illness because mumps are self limited disease.
- Analgesics, such as ibuprofen or acetaminophen are recommended for headaches or discomfort due to parotitis.
- Topical application of warm or cold packs to the swollen parotid area are used to soothe the painful area.
- Maintain adequate hydration and parotid massage should also be started.

Nursing Management

- Give small and frequent meals in the short intervals to avoid acidity.
- Instruct patient to drink plenty of water to moisten the mucous membrane of the mouth.

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- Reframing from smoking or tobacco use.
- Educate patient for hand hygiene before and after defecation.
- Minimize irritant food like caffeine, spicy and hot food.
- Use sugar free lemon drops to increase the saliva production; it helps to reduce swelling.
- Advice patient to take semi-solid diet.
- Use lukewarm saline solution for soothing and moist the mouth.
- Pain relievers such as ibuprofen and acetaminophen are prescribed to patient.
- Isolate patient to prevent spreading the disease to other family members.

Complications

- Meningitis.
- Encephalitis.
- Hearing loss.
- Abscess of salivary gland.
- Infection of other organs.
- Spread of bacterial infection.

Nursing Assessment

- Assess the level of pain, its location and intensity.
- Physical examination of patient should be assessed.
- A nurse should assess the anxiety or fear level.
- Monitor the nutritional status of patient.
- Observe the oral cavity of the patient.
- Observe the parotid swelling.
- Note history of exposure to infected individuals as well as immunization status.
- Obtain history of low-grade fever, onset and progression of parotid swelling.

Nursing Diagnosis

Imbalanced nutrition: Less than body requirement related to inability to ingest adequate nutrients due to infectious conditions.

Planning

Nursing Goal: To maintain nutritional balance.

Nursing Interventions

- A nurse need to understand local regulation regarding reporting cases of parotitis (mumps).
- Educate parents of child with mumps to isolate the child from other children without the disease.
- A nurse should also educate the child's parents on how to alleviate the symptoms experienced by the child.
- Instruct parents to give ice pack application over swelling glands.
- Advice warm saline gargles to relieve pain in swallowing.
- Complete bed rest.
- Encourage patient to take light diet.
- Avoid acidic food to lessen oral pain and discomfort.
- Encourage patient to take plenty of fluid.
- Advice patient to follow good hand washing practices.

Patient Education and Health Maintenance

- Educate patient and family about parotitis.
- Instruct family members to avoid things which make symptoms worst.

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- Avoid alcohol ingestion.
- Encourage patient to take low fat diet.
- Avoid gastric stimulants, such as spices
- Eat small meals which are high in calories.
- Give acetaminophen for fever management
- Encourage patient to take oral fluids which prevents dehydration.

Evaluation: Expected outcome
Nutritional balance is maintained.

Stomatitis (Fig. 3)

Definition

It is an inflammation of lining of the mucous membrane of oral cavity

Etiology

- Oral ulcer
- Trauma
- Infections
- Use of irritants
- Smoking
- Tobacco and alcohol
- Liver and hematologic diseases
- Deficiency of vitamins
- Side effects of many cancer chemotherapy drugs.

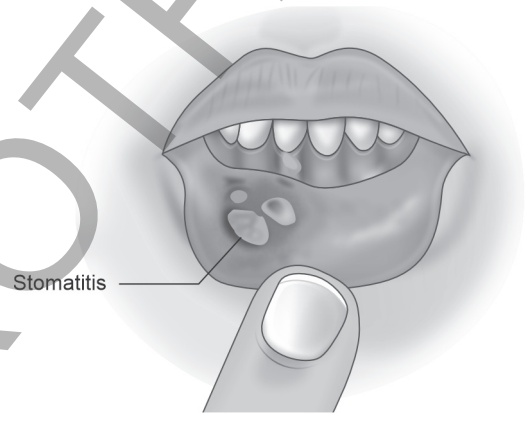

Fig. 3: Stomatitis.

Clinical Manifestations

- Halitosis
- Sore mouth
- Increased body temperature
- Excessive salivation
- Coated tongue

Diagnostic Evaluation

Management

Medical management
- Analgesics
- Antipyretics
- Antibiotics
- B-complex

Nursing management
- Prophylactic mouth care, including brushing, flossing, flossing and rinsing, for any patient receiving chemotherapy or radiation therapy.
- Provide oral hygiene with smoothing solutions.
- Administer topical medications as prescribed.
- Advice the patient to take soft bland diet.
- Vitamin supplements should be given.
- Assess the patient for severity of the inflammation.
- Apply glycerin on the ulcer.

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- Maintain nutritional pattern of the patient either by IV feeding or orally.
- Instruct to avoid the contact of mouth with chemicals.
- Instruct to avoid the use of irritants.
- Instruct to complete restriction of alcohol, smoking and tobacco.
- Educate patient about proper oral hygiene, including the use of a soft-bristled toothbrush and nonabrasive toothpaste; for painful ulcers, oral swabs with spongelike applicators can be used in place of a toothbrush; avoid alcohol-based mouth rinses and hot or spicy foods
- Apply topical anti-inflammatory, antibiotic, and anesthetic agents as prescribed.

Glossitis (Fig.4)

Definition

Glossitis is an inflammatory disease of the tongue.



Fig. 4: Glossitis.

Types

- Acute Glossitis
- Idiopathic Glossitis
- Chronic Glossitis

Etiology and Risk Factors

- Oral trauma
- Dehydration
- Viral infection such as herpes simplex
- Food allergies
- Low iron level
- Oral trauma
- Use of dentures or braces
- Dry mouth
- Excessive eating of high spicy foods.

Clinical Manifestations

- Swelling of the tongue
- An inability to speak
- Pain in tongue
- Fever
- Oral discomfort
- Abnormal color of tongue

Diagnostic Evaluation

- History collection
- Physical examination
- Presence of features during inspection
- Blood test
- Complete blood count

Management

- Administer antibiotics
- Corticosteroids (for e.g., prednisone)
- Avoid eating of irritant foods
- Maintenance of oral hygiene.

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Gingivitis (Fig. 5)

Definition

It is a non-destructive periodontal disease of mouth characterized by inflammation of gums.



Fig. 5: Gingivitis.

Etiology and Risk Factors

- Chronic
- Crooked teeth
- Tobacco chewing
- Diabetes
- Compromised immunity in disorder such as HIV/AIDS patients
- Pregnancy
- Use of oral contraceptives
- Use of drugs such as calcium channel blockers, steroids and anticonvulsants

Clinical Manifestations

- Sensitive teeth
- Loose teeth
- Pain in gums
- Dysphagia
- Bleeding from gums
- Pulling of gums from teeth
- Swelling or tenderness on gums

Diagnostic Evaluation

- History collection
- Physical examination
- Dental examination
- Inspection (assess the depth of pocket surrounding teeth normal—1–3 mm)
- X-ray of cheek bones

Management

Medical Management

- Administer antibiotics orally to treat inflammation.
- Antibiotic mouth wash should be used to clean and disinfect the oral cavity and to prevent the chance of infection, e.g., doxycycline,
- Insert time release antiseptic chips into pockets.

Surgical Management

- **Flap surgery:** It involves removal of plague.
- **Tissue and bone grafting:** It is performed due to damage of jaw and teeth.

Nursing Management

- Educate patient about proper oral hygiene; tooth brushing, flossing, rinsing (i.e., chlorhexidine), dental appointments every 3–6 months.
- Remove casual agents as appropriate—medications, smoking, dental appliances.

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Pyorrhea (Fig. 6)

Definition

Pyorrhea is the inflammation of teeth supporting ligaments and structures.

Etiology and Risk Factors

- Bacterial infection
- Use of contraceptive pills
- Excessive smoking
- Impaired oral hygiene
- Allergy
- Improper diet
- Prolonged tension
- Prolonged stress
- Alcohol consumption
- Pregnancy
- Use of physical and chemical irritants
- Deficiency of Vitamin C
- Injury of supporting structure.



Fig. 6: Pyorrhea.

Clinical Manifestations

- Bleeding from gums
- Oozing of pus
- Loosening of teeth
- Local teeth, tenderness
- Liver problems
- Riddled with decayed teeth
- Swelling of gums

Diagnostic Evaluation

- History Collection
- Physical examination
- Dental X-rays
- CT scan

Management

- Maintain good oral hygiene
- Administer antibiotics to control bacterial infection
- Scaling to remove tartar and to kill bacteria from both surfaces and gums.

Surgical Management

- **Bone grafting:** It is indicated when root of the teeth gets destroyed.
- **Flap surgery:** This procedure is performed by making a small incision in gum and exposing the roots for effective scaling and root planning.
- **Enamel matrix derivative application:** In this therapy special gel is applied on the root of the affected teeth.
- **Guided tissue regeneration:** This procedure is used to prevent entry of unwanted time formation in the healing parts.

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Dental Caries (Tooth Decay) (Fig. 7)

Definition

Dental caries is an erosion of enamel. It is a major oral health problem. It is the common erosive process that begins with the action of bacteria on carbohydrates present in mouth.

Action of bacteria produces acids that dissolve tooth enamel.

The extent of damage to the teeth depends on the following:

- Presence of dental plaque.
- Strength of acid.
- Ability of saliva to neutralize them.
- Acids are in contact with teeth.
- Susceptibility of the teeth to decay.



Fig. 7: Tooth decay.

Etiology

- Dental caries (tooth decay) is caused by acid action on the surface of enamel. This acid is produced when sugar present in food reacts with bacteria in the plaque (dental biofilm) or tooth surface. It leads to the loss of calcium and phosphate from enamel. This type of process is known as demineralization.
- Small holes.
- Pits in the affected tooth.
- Consistent toothache.

Risk Factors

- Thickness of enamel.
- Tooth size and shape.
- Tooth position or bite.
- Diet high in simple sugar.
- Medications that decrease saliva.

Clinical Manifestations

- Toothache
- Light or dark brown spot on the surface of tooth.
- Sensitivity to food which are cold, hot and sweet.

Management

Fillings

- Fillings are the most common treatment for the dental caries.
- There are different types of filling materials used to repair caries and damage to teeth.

Crowns

- This is another option to repair the dental caries.
- It is used only when a large proportion of tooth is destroyed by disease.
- It is done when dental caries leads to need for excessive fillings. Then, there are chances of tooth breakage. In this condition, covering of tooth with an alloy and porcelain crown are preferred.

Root Canal

- It is used when tooth decay progresses through enamel and settles in the center of the tooth. It may damages the pulp (nerve) which is present in the root of the tooth.

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- Root canal treatment is performed to remove the damaged pulp and fill the area.
- This treatment ends by placing a crown over an affected area.

Extraction

- In some cases, tooth may be damaged beyond repair and must be extracted.
- Removal of teeth may affect the alignment of other left teeth in the mouth.
- Bridge, partial denture and dental implants are inserted in that edematous area.

Complications

- Untreated dental cavity lead to an infection in the tooth known as tooth abscess.
- Untreated tooth decay also destroys the tooth pulp.

Prevention of Dental Caries

- Use toothpaste with fluoride.
- Reduce frequent consumption of sugar.
- Apply pit and fissure sealants.
- Brush teeth twice a day for at least two minutes.
- Floss regularly after brushing.

Halitosis (Fig. 8)

Definition

Halitosis is a oral disorder which is manifested by bad breath odor.



Fig. 8: Halitosis.

Etiology and Risk Factors

- Dry mouth
- Poor dental hygiene
- Sinus, mouth or throat disorders
- Smoking
- Strong foods and beverages
- **Diseases:** Diabetes, Gastroesophageal reflex disorders, kidney disease
- Crash diets
- Drugs such as nitrate
- Chronic kidney failure
- Ketoacidosis
- Pneumonia

Diagnostic Evaluation

- **Halimeter:** Used to diagnose the level of sulfur
- **Gas chromatography:** Used to assess
  - Hydrogen sulfide
  - Dimethyl sulfide
- **Beta-galactosidase test:** Beta-galactosidase which is related to mouth odor

Management

- Maintain proper oral hygiene
- Deep dental cleaning

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- Treat the underlying cause
- Drink plenty of oral fluids to avoid dry mouth
- Clean dentures before and after eating.
- Avoid bad smell causative foods such as garlic and onion
- Avoid alcohol and tobacco chewing.

Dysphagia (Fig. 9)

Introduction

The term "dysphagia" is derived from Greek language and composed of two words dys means "difficulty" and phagia means "to eat".

Definition

Dysphagia is a term which means difficulty in swallowing, generally occurs due to muscle or nerve disorders.

Types

1. **Oropharyngeal dysphagia:** When the problem occurs in oral cavity or throat, it is called as oropharyngeal dysphagia. Generally, it occurs due to neurological disorders.
2. **Esophageal dysphagia:** When the problem occurs in the esophagus, it is called as esophageal dysphagia. Generally it occurs due to irritation or blockage in esophageal.
3. Functional dysphagia does not occur due to organic causes. It is related to anxiety, stress attack post traumatic stress disorder and other psycho-login disorders.

Etiology

- Multiple sclerosis
- Parkinson's disease
- Aging
- Bell's palsy
- Radiation
- Scleroderma
- Myasthenia gravis
- Eosinophilic esophagitis

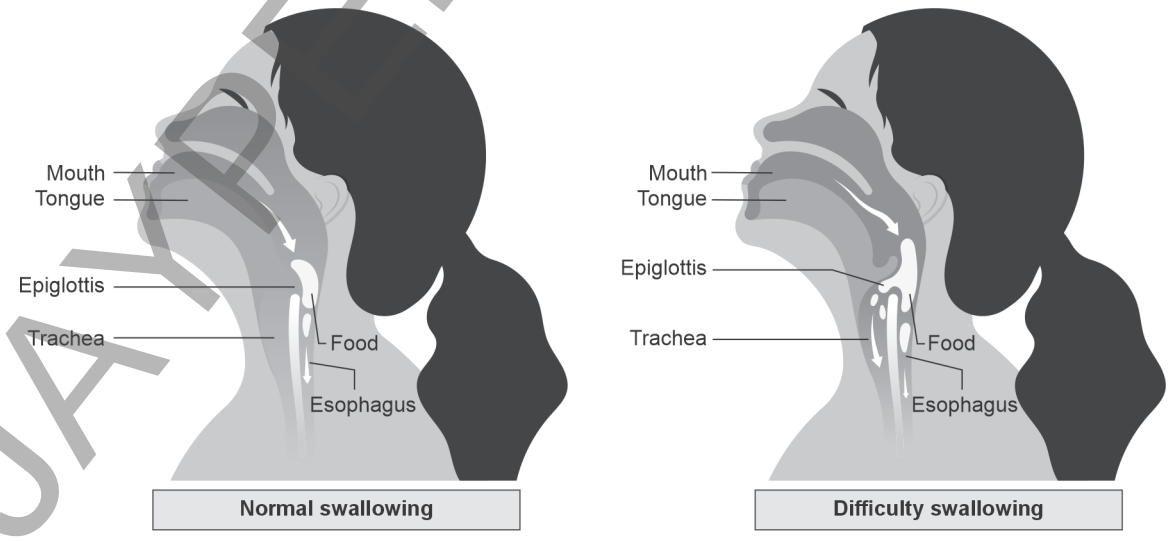

Fig. 9: Dysphagia.

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- Cancers
- Cleft lip and palate
- Gastroesophageal Reflux Disease (GERD)
- Amyotrophic lateral sclerosis (motor neuron disease)
- Cerebrovascular accident

Clinical Manifestations

- Hoarseness
- Weight loss
- Drooling
- Recurrent heartburn
- Difficulty in initiating swallowing
- Food stucking sensation in throat
- Difficulty or pain during swallowing
- Regurgitation of food
- Choking during eating

Diagnostic Evaluation

- History collection
- Physical examination
- Barium swallow test
- **Water-swallow test:** It involves swallowing of water quantity as early as possible
- Chest X-ray
- Esophageal manometry or esophageal motility test to assess motor functions of upper and lower esophageal sphincter and body

Management

- **Oropharyngeal dysphagia (high dysphagia):**
  - *Swallowing therapy:* It involves teaching patient to learn new ways of swallowing
  - *Feeding through a tube:* Feed the patient by nasogastric tube, if indicated or patient is at the risk of malnutrition.
  - *Diet:* Provide a diet which is easy to swallow.
- **Esophageal dysphagia (low dysphagia):**
  - Dilation of esophagus by inserting a small balloon and then inflation of esophagus.
  - Administer botulinum toxin, if there is stiffness of esophageal muscles.

Complications

- Malnutrition
- Dehydration
- Pneumonia
- Upper respiratory tract infections.

Achalasia (Fig. 10)

Definition

Achalasia is a condition characterized by failure of lower esophageal sphincter valve opening during swallowing.

Etiology and Risk Factors

- Cancer of the esophagus
- Autoimmune disorders
- Hereditary

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- Parasitic infection
- Middle age
- Autoimmune disorders

Clinical Manifestations

- Weight loss
- Heartburn
- Regurgitation of food
- Chest pain
- Discomfort after meal
- Difficulty in swallowing
- Feeling of food stuck in esophagus

Diagnostic Evaluation

- History collection
- Physical examination
- Esophageal manometry
- Esophageal X-ray

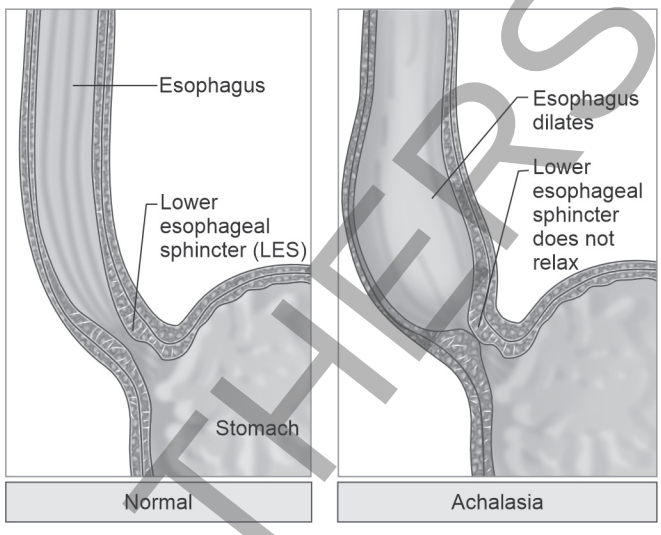

Fig. 10: Achalasia.

Management

- Calcium channel blockers or nitrates are administered because these medications inhibit cellular uptake of calcium, thereby promoting relaxation and impending contraction.
- Insert the balloon in esophagus to dilate sphincter.

Surgical Management

Esophagomyotomy is performed by making incision in sphincter.

Gastroesophageal Reflux Disease (GERD) (Fig. 11)

Definition

Gastroesophageal reflux (GER) occurs when stomach contents flow back up into the esophagus. GER is also called acid reflux or acid regurgitation which is characterized by heartburn, burning feeling in the mid chest, behind the breastbone, or in the upper part of the abdomen.

Gastroesophageal reflux disease results when the lower esophageal sphincter becomes weak or relaxes when it should not, causing stomach contents to rise up into the esophagus called GERD.

Etiology

- Obesity
- Pregnancy
- Certain medications, such as asthma medications, calcium channel blockers, and many antihistamines, pain-killers, sedatives, and antidepressants
- Smoking, or inhaling second-hand smoke
- Use of spicy foods
- Sudden falling to sleep after meal
- Congenital weakness of LES

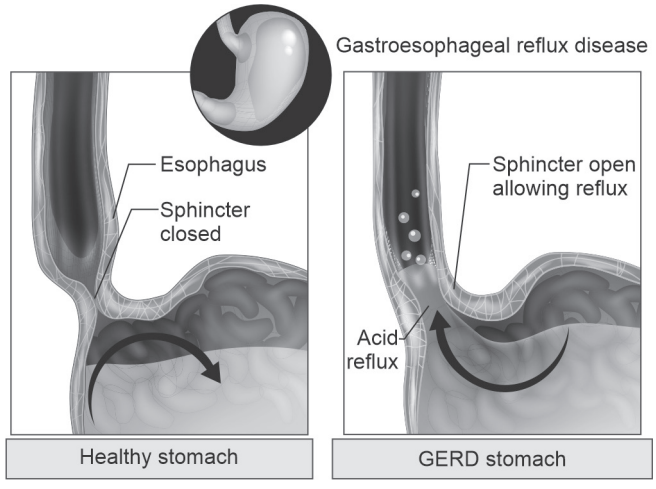

Fig. 11: Gastroesophageal reflux disease.

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