



The Child with Gastrointestinal Dysfunction

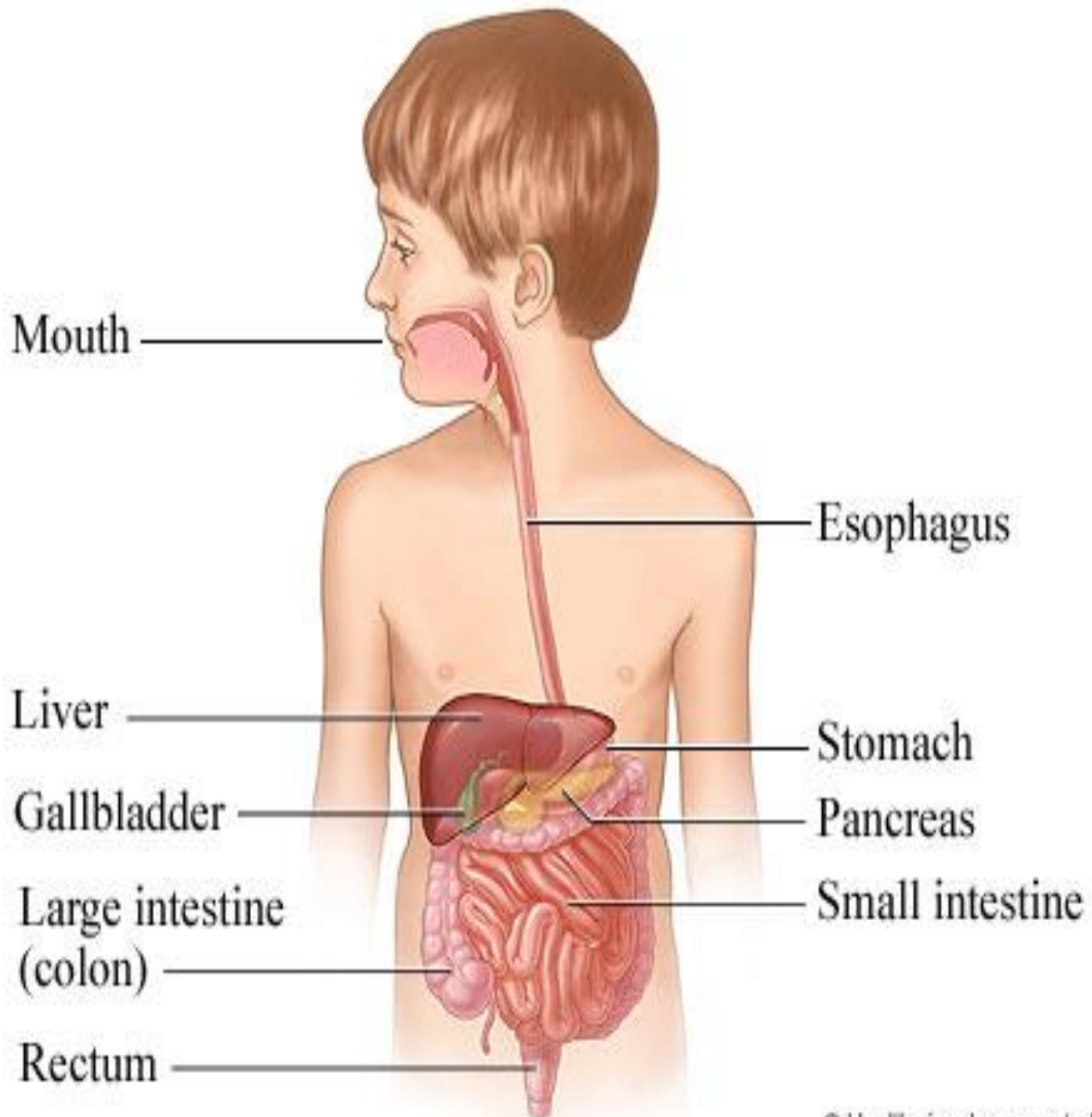
ASST. PROF. DR. MUNTANA VADEE MAYTAPATTANA

Topics

- ▶ Overview GI System
- ▶ GI Disease
 - ▶ Diarrhea, Gastroenteritis, Gastritis
 - ▶ Intussusception, Hirschsprung's disease, Cleft lip & Cleft palate, TE fistula, Imperforated anus
- ▶ Pain Assessment
- ▶ Nursing Care of GI Disease

Objectives

- ▶ Explain about the GI diseases :
 - ▶ Diarrhea, Gastritis, Gastroenteritis, Hirschsprung disease, Intussusception, Cleft lip & Cleft palate, TE Fistula, Imperforated Anus
- ▶ Describe about nursing care of children who had GI diseases
- ▶ Assess and describe about pain by using the pain scales

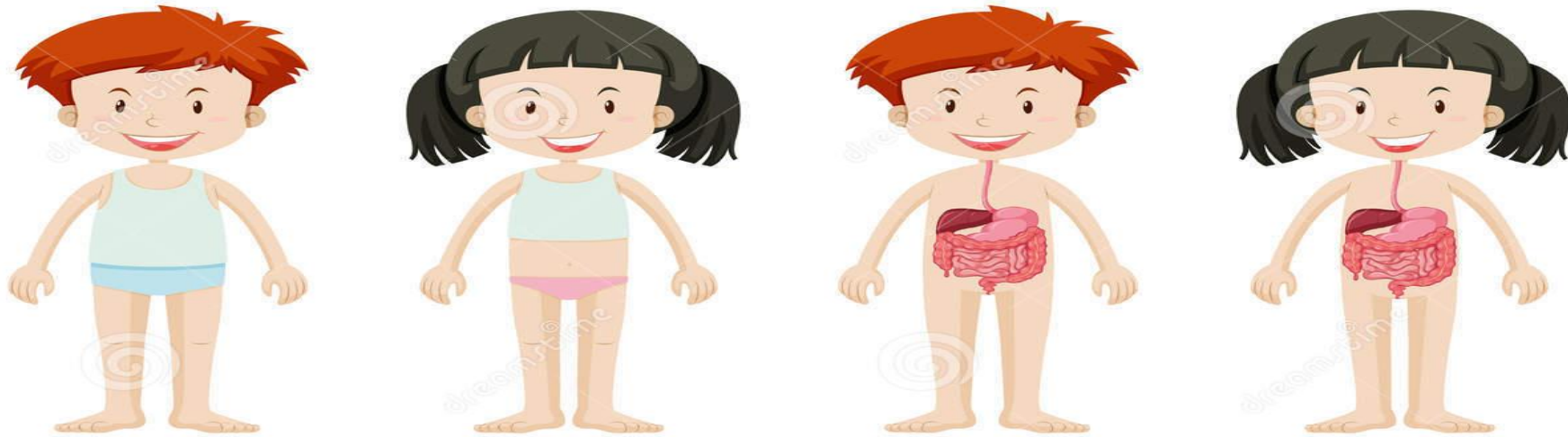


The digestive system is responsible for breaking down food, absorbing nutrients from the food, and ridding the body of waste products from the food. The digestive system consists of the:

- **Upper digestive tract, which includes the mouth, esophagus, and stomach.**
- **Lower digestive tract, which includes the small and large intestines.**
- **Liver, pancreas, and gallbladder.**

<https://baltimorecity.md.networkofcare.org/mh/library/article.aspx?wid=zm6273>

Infectious GI Disease



Digestive System



Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.

ID 66686675

© Daniel Cole | Dreamstime.com

Diarrhea

► Frequency

- Diarrhea can usually be defined as an increase in stool frequency to twice the usual number per day in infants, or three or more loose or watery stools per day in older children

► Consistency and color

► Duration : Acute diarrhea (< 7 days), Persistent diarrhea (> 14 days),
Chronic diarrhea (> 21 days)

Gastroenteritis (Infectious Diarrhea)

- ▶ Gastroenteritis is defined as vomiting or diarrhea due to infection of the small or large bowel
- ▶ The changes in the small bowel are typically non inflammatory, while the ones in the large bowel are inflammatory

Gastroenteritis (Infectious Diarrhea)

- ▶ Diarrhea & Vomiting
- ▶ Fever, fatigue, headache, and muscle pain
- ▶ If the stool is bloody, more likely to be bacterial
- ▶ Some bacterial infections may be associated with severe abdominal pain and may persist for several weeks

Diarrhea & Gastroenteritis Causes

Virus (most common)	Bacteria	Parasite
Rota Virus	E. Coli	Entameba histolytica
	Shigella / Salmonella	Strongyloides stercoralis
	Vibrio cholera	Giardia lamblia

Rotavirus

Rotavirus is a contagious virus that can cause gastroenteritis (inflammation of the stomach and intestine)



Symptoms:
Severe watery diarrhea
Vomiting
Fever
Abdominal pain

Transmission:
Fecal-oral route
Enters mouth by feces contaminated hands, surfaces or objects

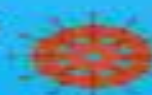
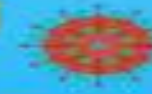
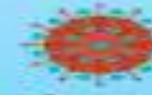
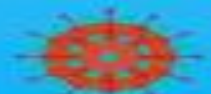
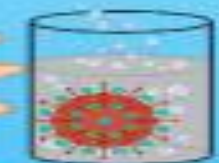
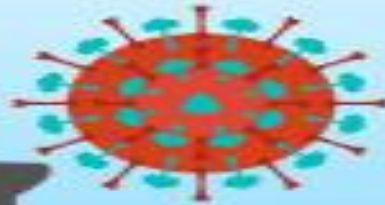
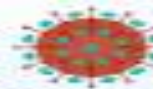
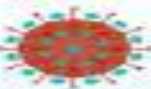
Infants and young children are most likely to get rotavirus disease
Between 6 - 24 months of age

Complications:
Can become severely dehydrated and need to be hospitalized

Still a significant cause of death

2 million people hospitalized annually worldwide

Prevention - Rota virus vaccine by mouth
#roypath histopathology-india.net



Diagnosis

- ▶ Stool exam
- ▶ Stool culture
- ▶ Dehydration evaluation
- ▶ Electrolyte balance evaluation
 - Sodium imbalance, Potassium imbalance, Chloride imbalance, Acidosis / alkalosis



Assessment

▶ Water volume in body per day (M + D + C)

▶ Demand fluid (Maintenance fluid)

Holiday-Segar Formula

- 1st 10 kg. = 100 ml. /kg./day

- 2nd 10 kg. = 50 ml. /kg./day

- Remained weight = 20-30 ml. /kg./day

▶ Fluid Deficit

▶ Concurrent loss

level of Dehydration

- ▶ Mild dehydration ; 3-5% loss of body weight
- ▶ Moderate dehydration ; 6-9% loss of body weight
- ▶ Severe dehydration ; 10% or more loss of body weight

Evaluation of dehydration in children

ลักษณะทางคลินิก	mild	moderate	severe
Loss weight in children (< 2 years)	3-5%	6-9%	≥ 10%
Loss weight in children (> 2 years)	3%	6%	9%
General apprerance	Normal	Agitated	Agitated or drowsy
Skin turgor	Good	Poor skin turgor (return to normal > 2 secs but < 4 secs)	Poor skin turgor (return to normal > 4 secs)
Anterior fontanelle	Normal	Sunken slightly	Sunken significantly
Eye blow	Normal	Sunken slightly	Sunken significantly
Tear	Normal	Less than expected	Absent
Buccal mucosa	Moist	Dry	Parched
Body temperature	Worm	Worm/ cold	Cold
Respiration rate	Normal	fast	Fast and deep
Pulse rate	Normal	Fast/ low volume	Very fast or cannot feel
Blood pressure	Normal	Normal or low	Very low
Capillary refill	Normal < 2 secs	Slightly delayed 2-3 secs	Delayed 3-4 secs
Urine out put	Normal	Less than (< 1 ml/ kg/ hr.)	Severely deduced (< 0.5 ml/ kg/ hr.)

Treatment of Dehydration

Level of Dehydration	Treatment (C)	Deficit loss treatment (D)	Maintenance (M)
mild (3-5%)	ORS 50 ml/ kg within 4 hours	<ul style="list-style-type: none"> - In infant : ORS 10 ml/kg - In children : 150-250 ml per defecation 1 time 	<ul style="list-style-type: none"> - Breast milk or Infant formula - Food supplements in children for each age
moderate (6-9%)	ORS 100 ml/ kg within 4 hours	The same of mild	The same of mild
severe ($\geq 10\%$)	IV. fluid is initial fluid resuscitation (Ringer Lactate, NSS) 20-30 ml/kg/hr. within 2 hours until pulse and conscious are normal, then ORS 50-100 ml/kg	The same of mild	The same of mild

Treatment

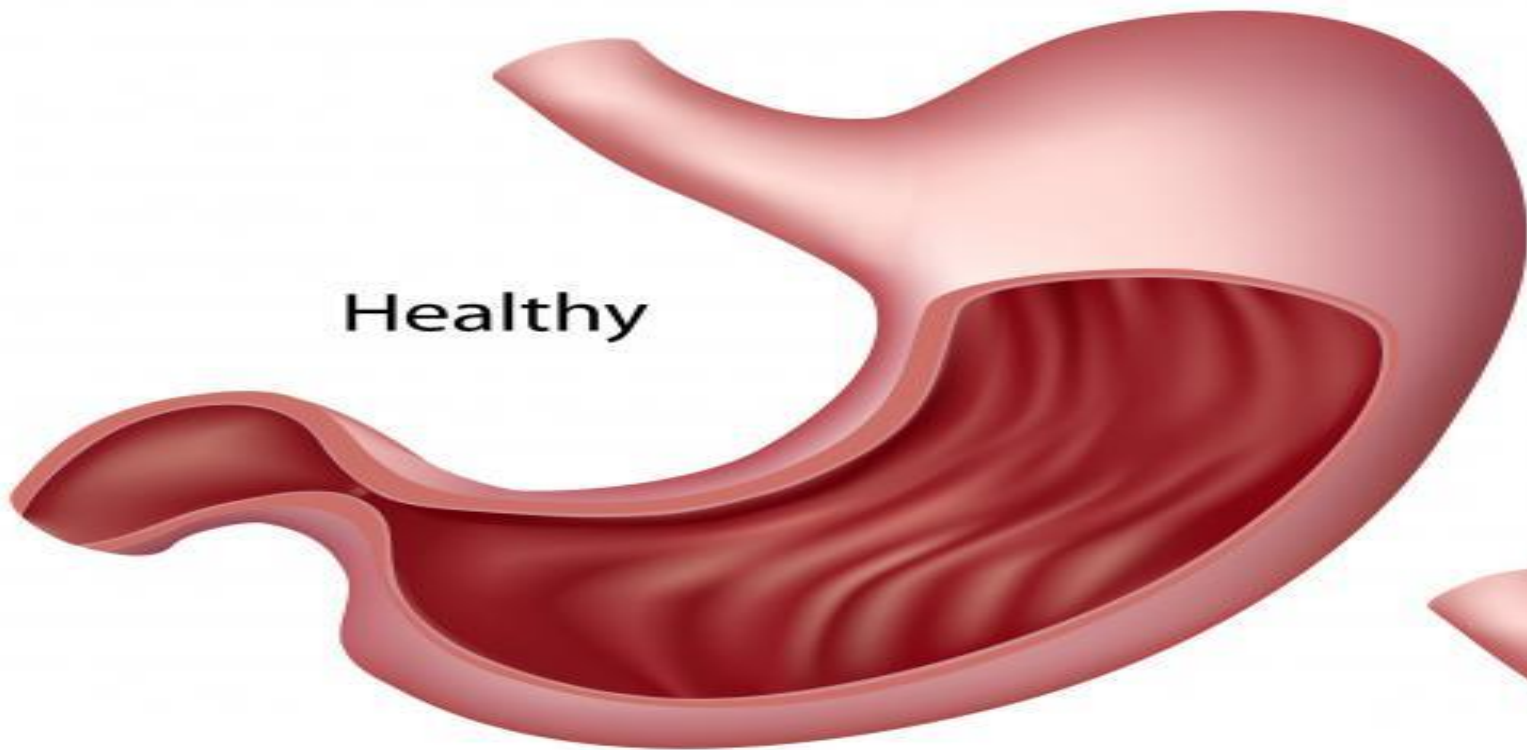
- ▶ Symptomatic treatment
 - Protection and Treatment for Dehydration
 - Protection for Malnutrition
 - On Antibiotic in case of Bacteria infection
 - On antidiarrheal drug
 - On antipyretic drug in case of fever



Gastritis

Gastritis is an inflammation, irritation, or erosion of the lining of the stomach. It can occur suddenly (acute) or gradually (chronic)

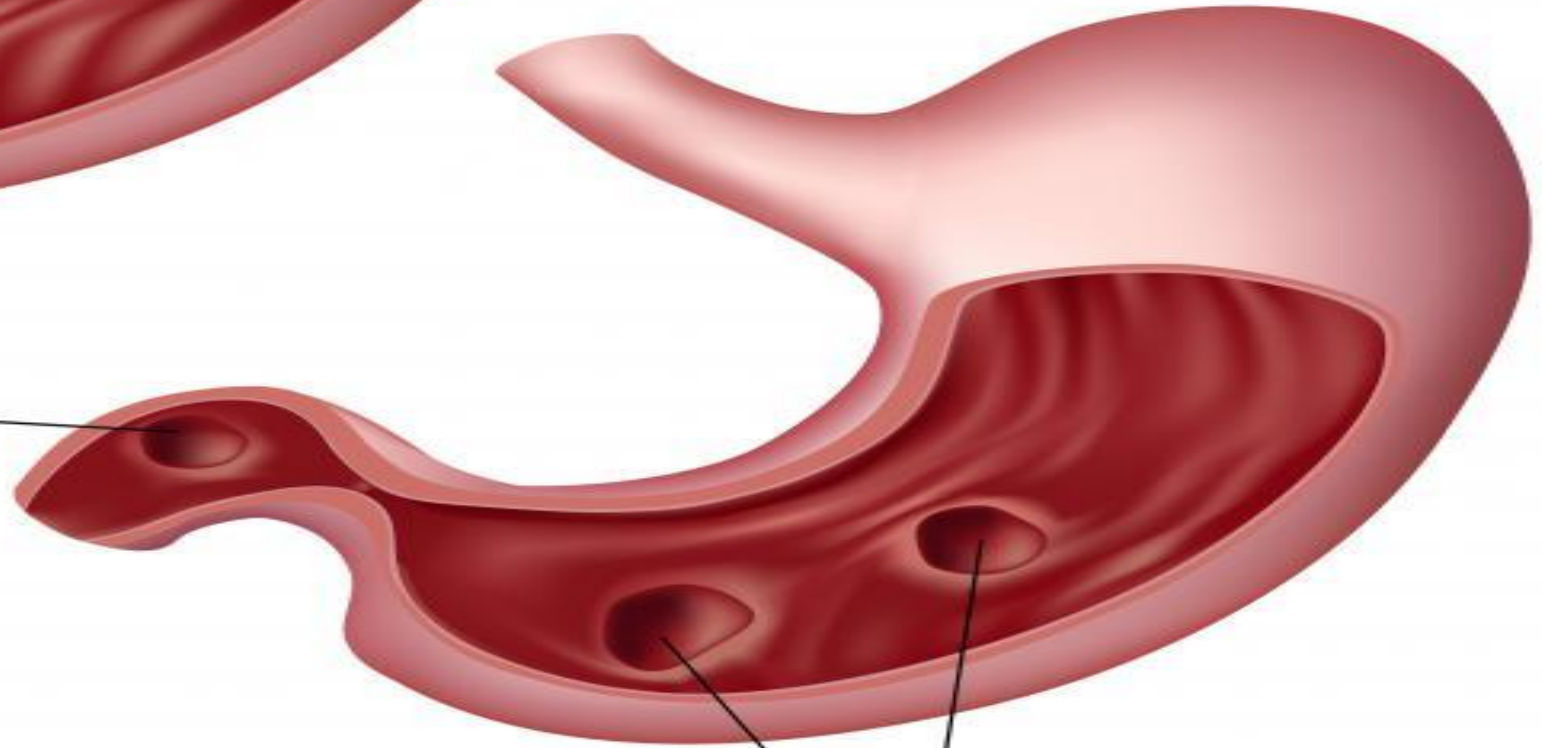




Healthy

Peptic ulcer

Duodenal ulcer



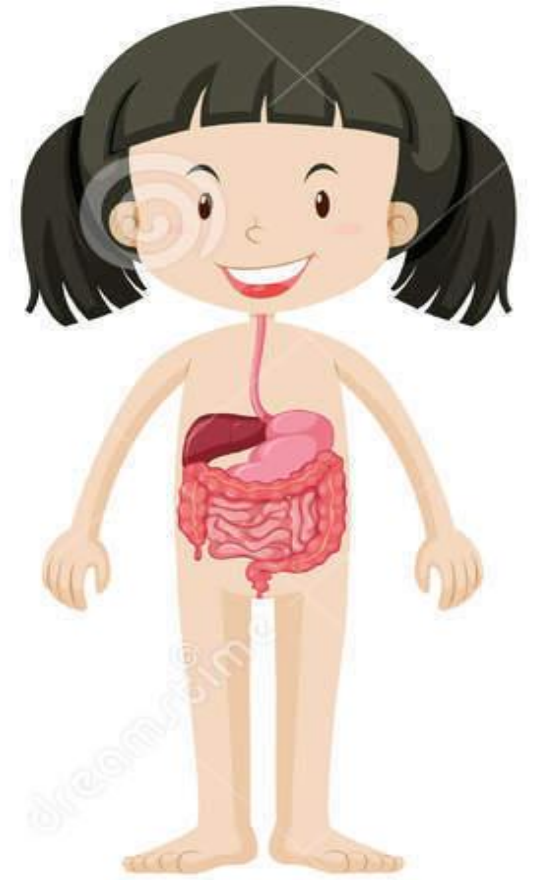
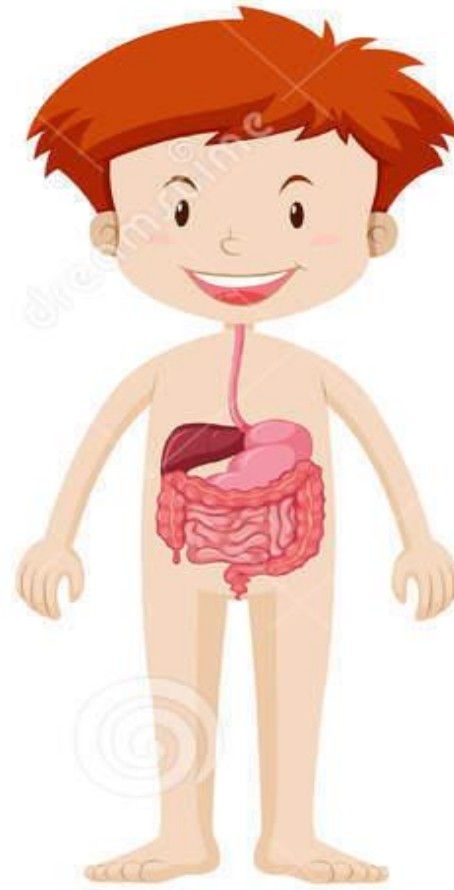
Stomach ulcer

Assessment

- ▶ Gastritis is a condition marked by inflammation and irritation of the lining of the stomach
- ▶ Child with the condition may develop nausea, vomiting, appetite loss, and unexplained weight loss. Often, children will also feel full even though they haven't eaten very much, become bloated, or belch frequently when they have Gastritis.

Treatment

- ▶ Specific treatment
 - on antibiotic for H. pylori
 - Changing pain relieve drug if the cause from NSAIDS
- ▶ Symptomatic treatment for example..On antacid drug, indigestive drug, and antispasmodic drugs



Digestive System



Download from
Dreamstime.com

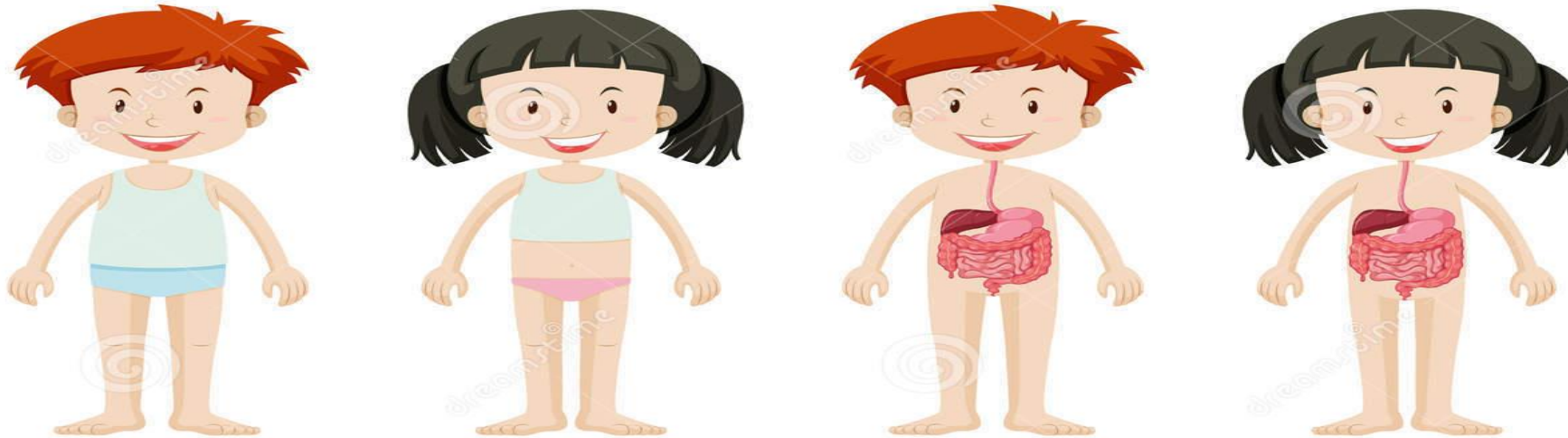
This watermarked comp image is for previewing purposes only.



ID 66686675

© Daniel Cole | Dreamstime.com

GI Disease with surgery



Digestive System



Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.

ID 66686675

© Daniel Cole | Dreamstime.com

Intussusception



Digestive System



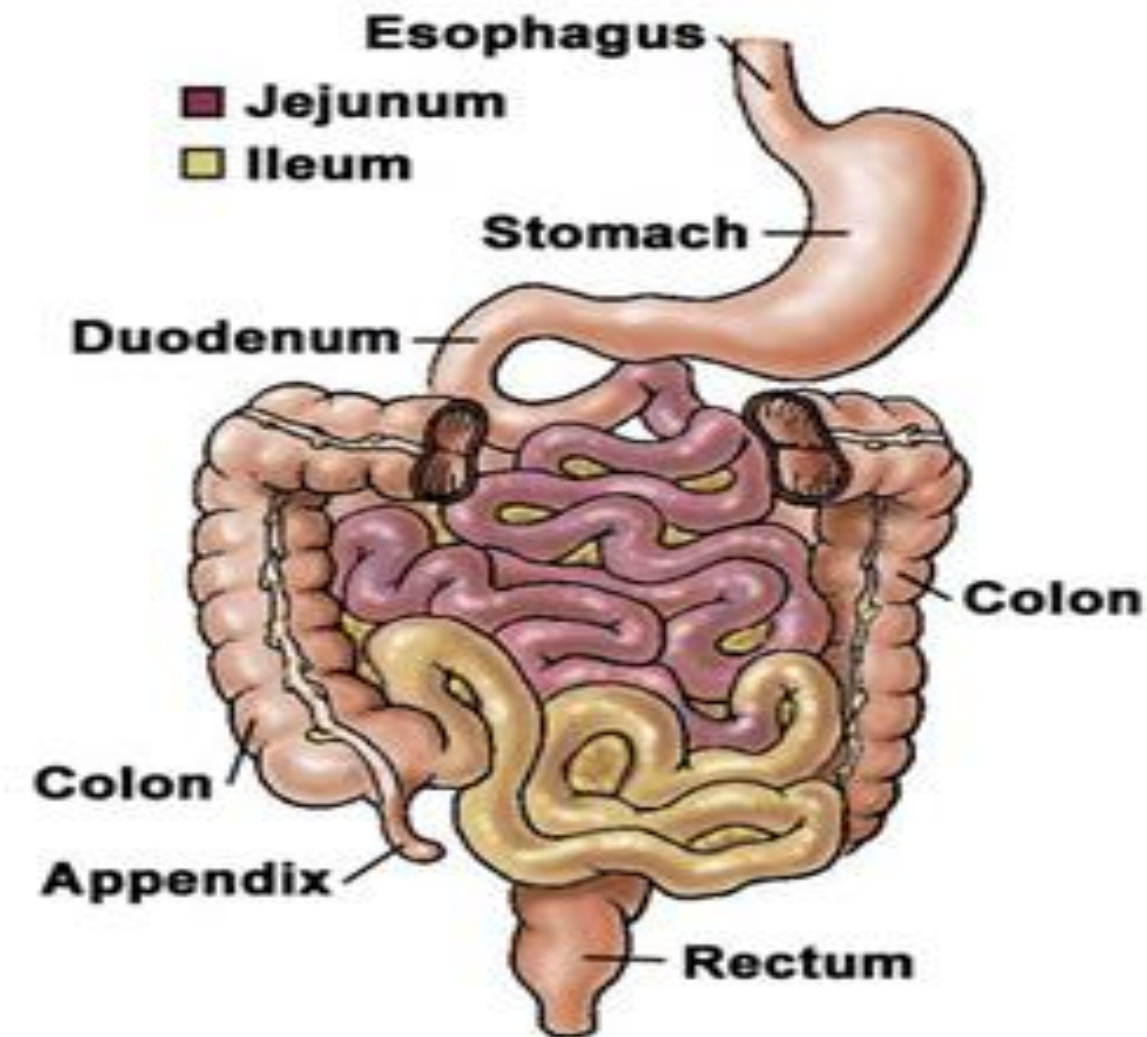
Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.

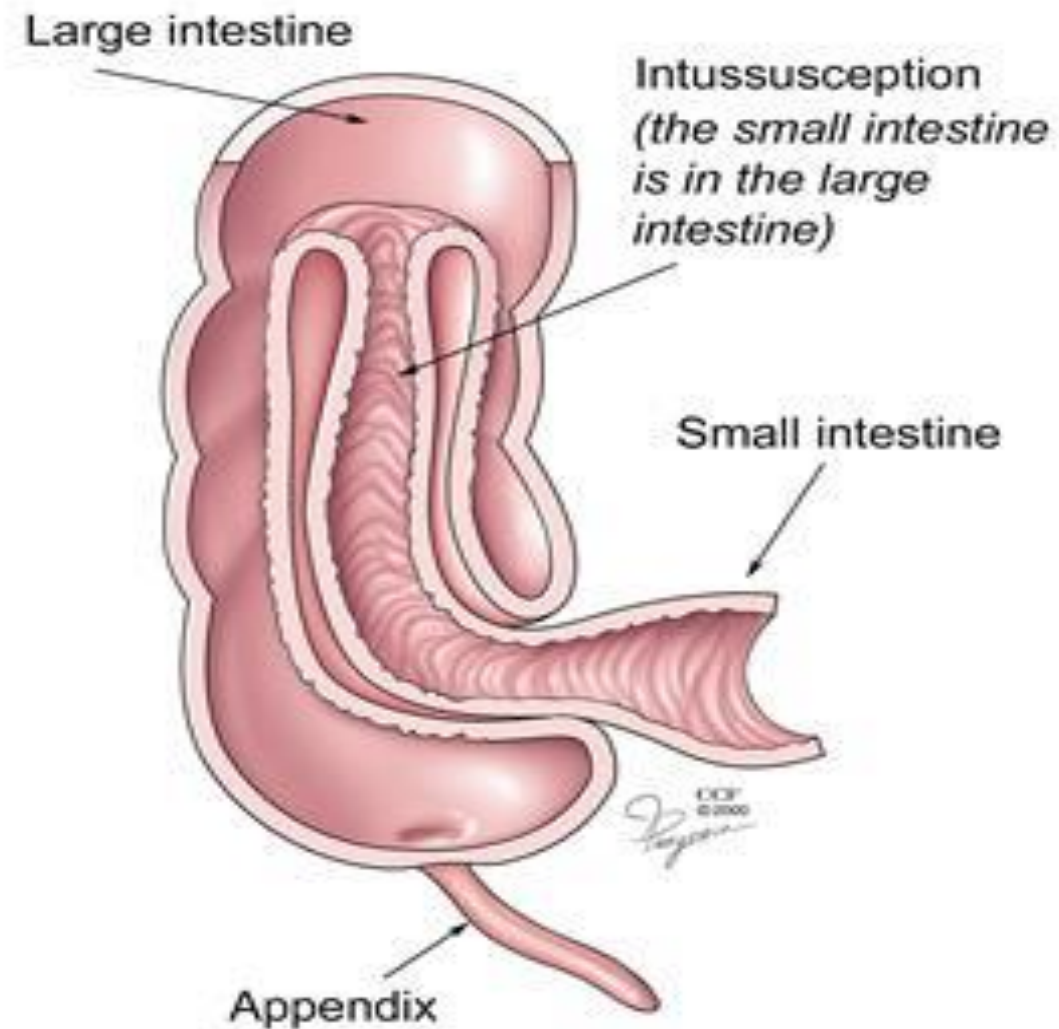
ID 66686675

© Daniel Cole | Dreamstime.com

Anatomy of the digestive tract showing the relationship of the small bowel to the stomach and colon

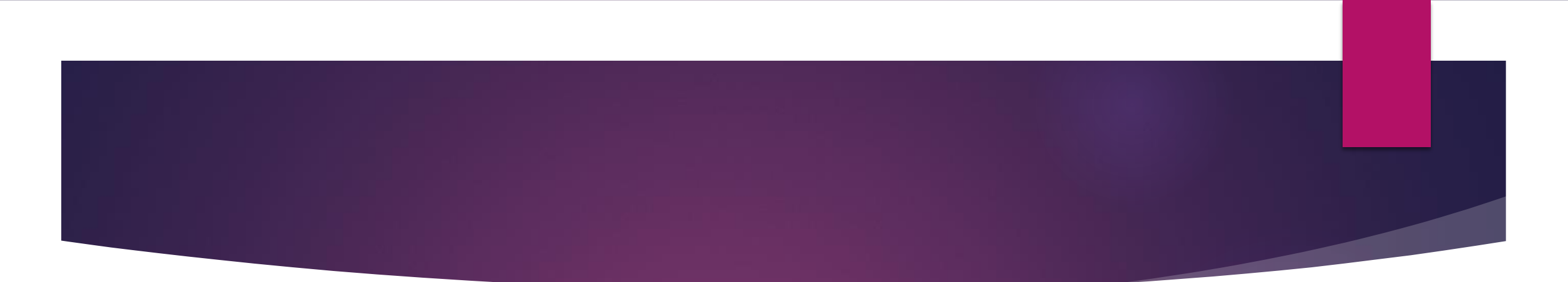


Anatomy of a typical intussusception of ileum into the colon



Intussusception

- ▶ Intussusception is a rare medical condition where one part of the small intestine draws back, into another part of the intestine
- ▶ Intussusception is a serious emergency that requires immediate treatment
- ▶ Nerves and tissue are dragged . The veins are compressed, which causes the area to swell and reduce its blood supply. If left untreated, a blockage in the intestine can cause that part of the intestine to develop gangrene and die
- ▶ It may also rupture, which will lead to abdominal infection and shock
- ▶ Boy: Girl; 3:2, age < 2 years

- 
- ▶ The main symptom of intussusceptions is intermittent cramping or abdominal pain.
 - ▶ Infants will cry as if in sharp pain, and may draw their knees up the chest at intervals with the pain.
 - ▶ Yellow and green vomit not associated with eating is another sign.
 - ▶ If the patient also has currant jelly stool, or stool mixed with blood and mucus, this can be a sign that some portions of intestine are already dead

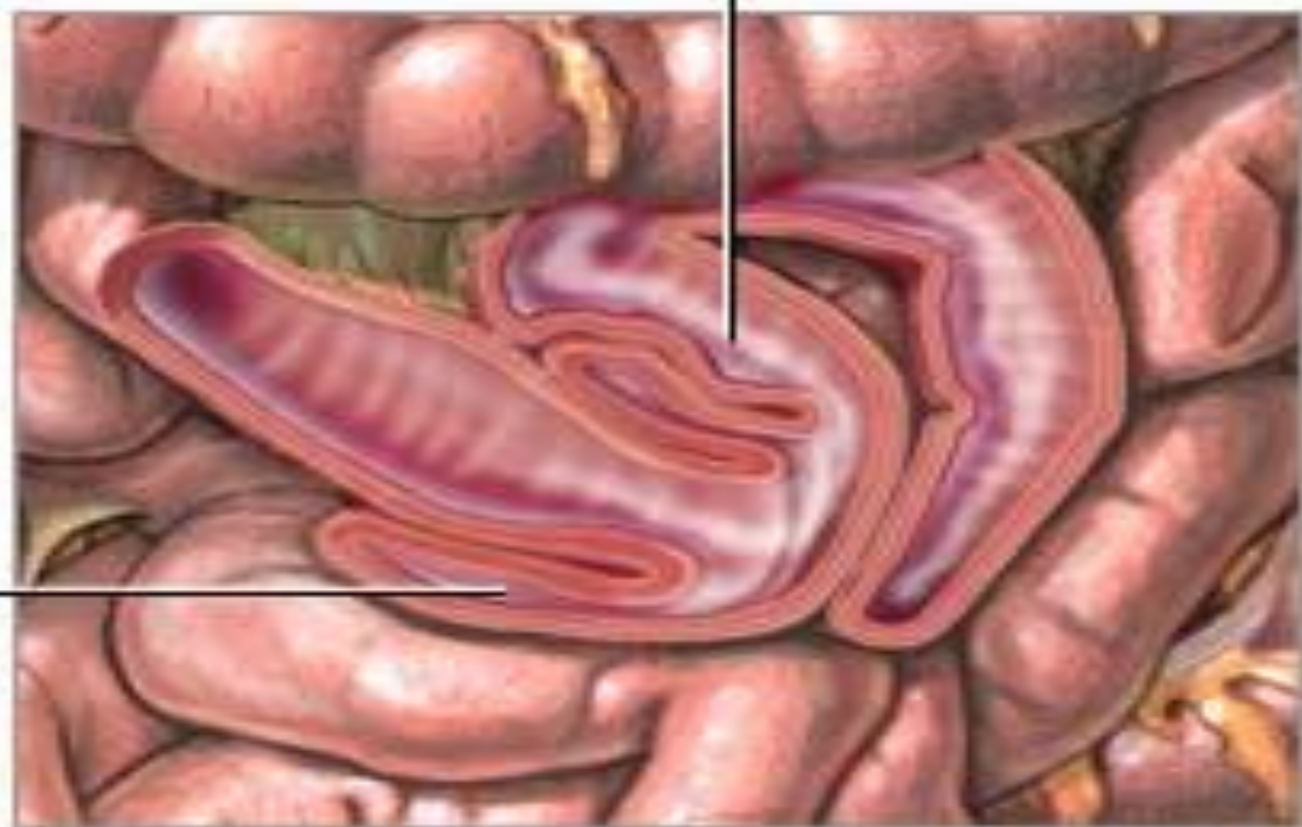
Diagnosis

- ▶ Doctor will then perform a thorough abdominal examination
- ▶ Be able to feel the actual intussusception as a sausage-shaped mass in the abdomen
- ▶ X-rays are sometimes done to view the obstruction for a second confirmation

Barium enema

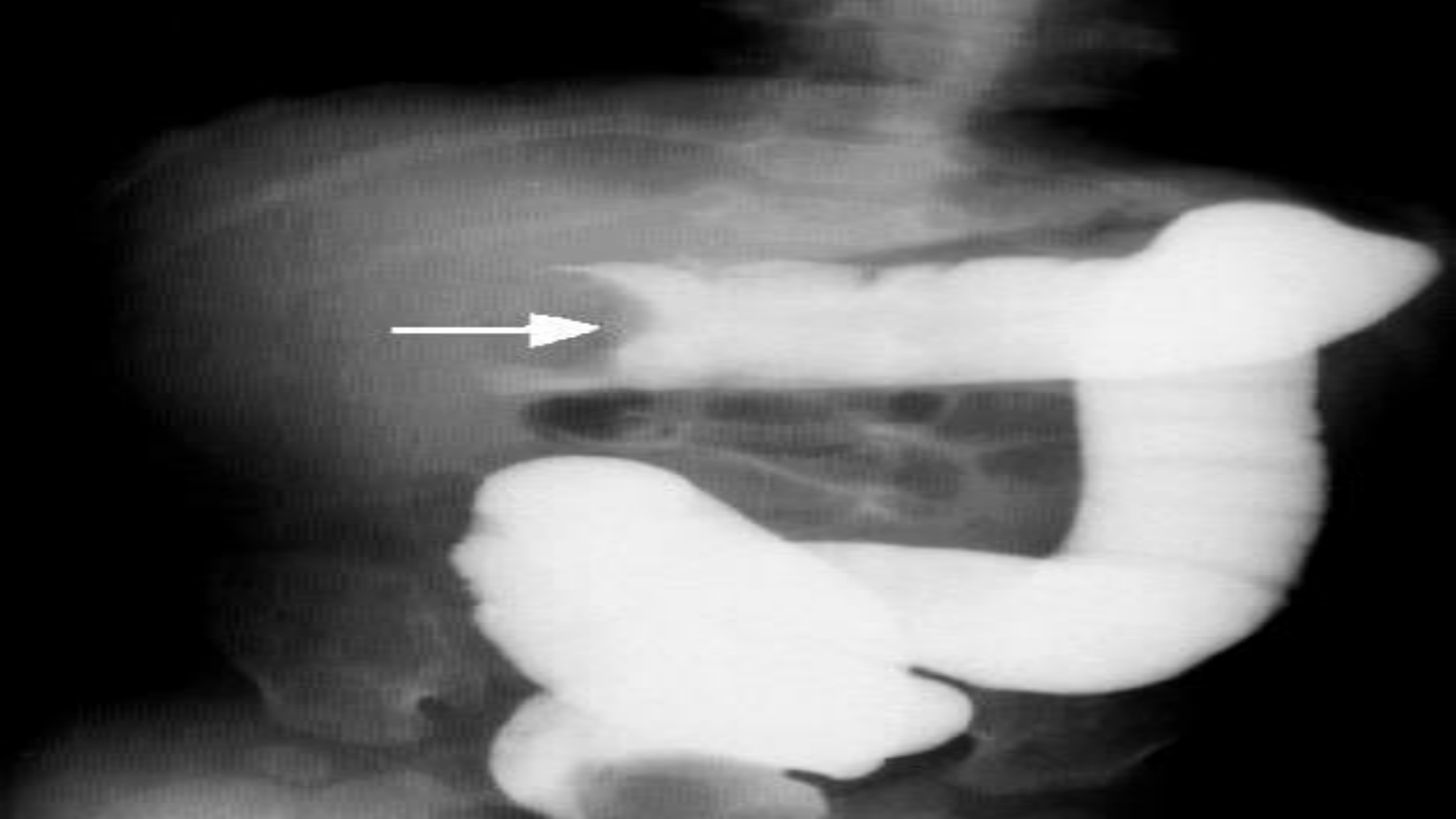
Barium traveling
in affected intestine

Intussusception

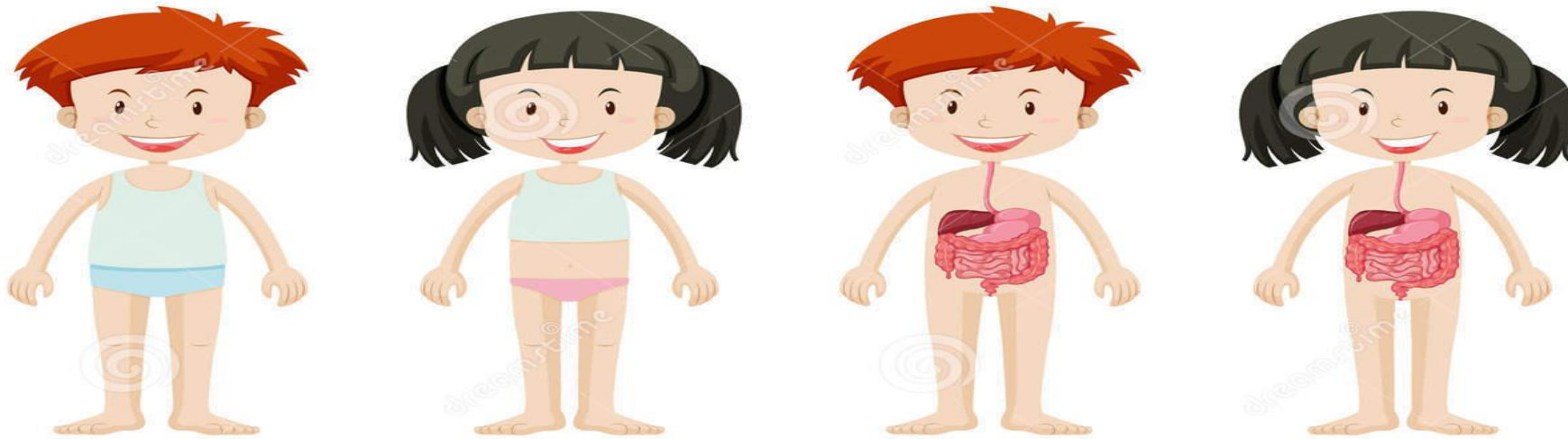


Treatment

- ▶ Supportive treatment
- ▶ Barium reduction & Pneumatic reduction
- ▶ Operation
 - ▶ Surgical manipulation
 - ▶ Surgical resection with end-to end anastomosis



Hirschsprung's Disease (Congenital megacolon)



Digestive System



Download from
Dreamstime.com

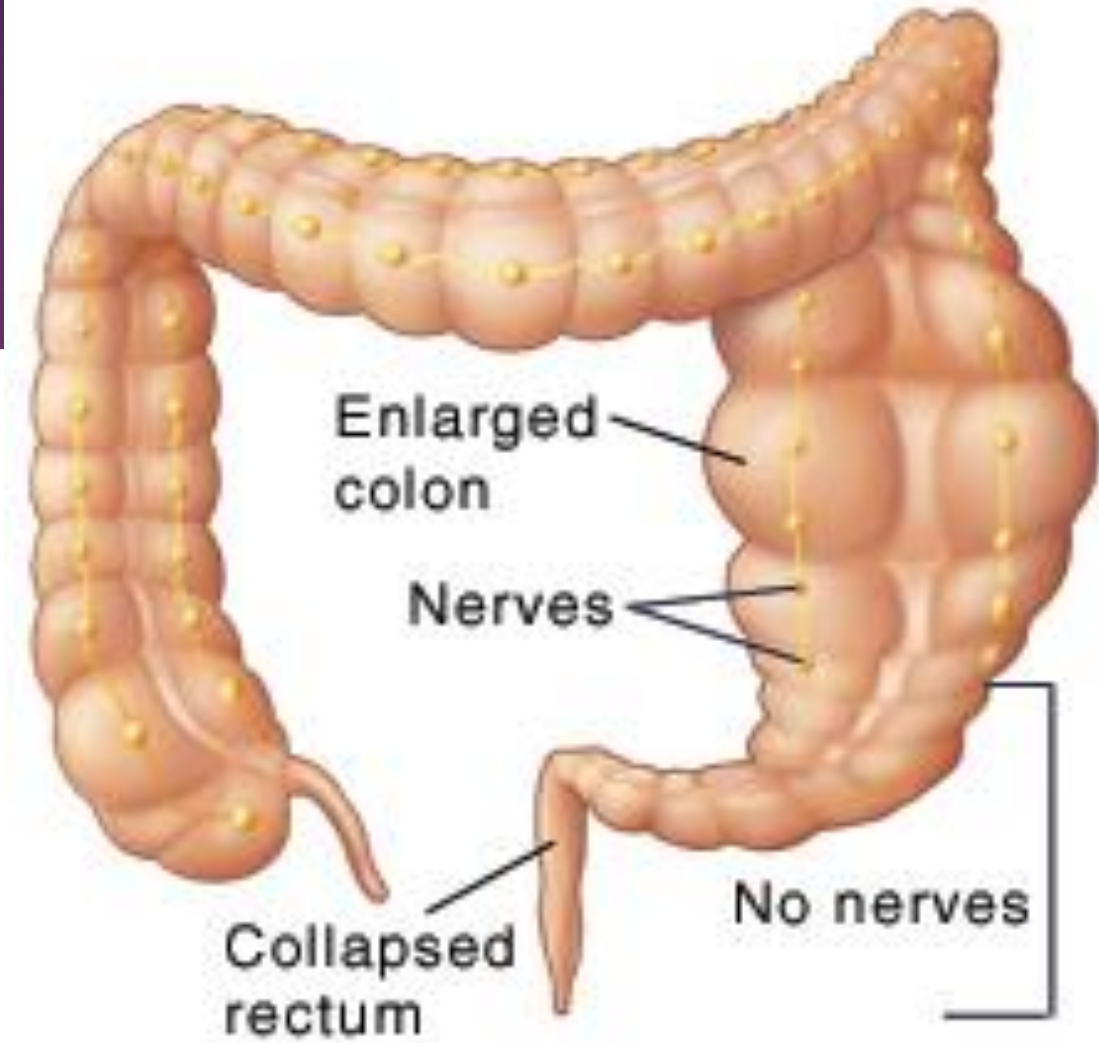
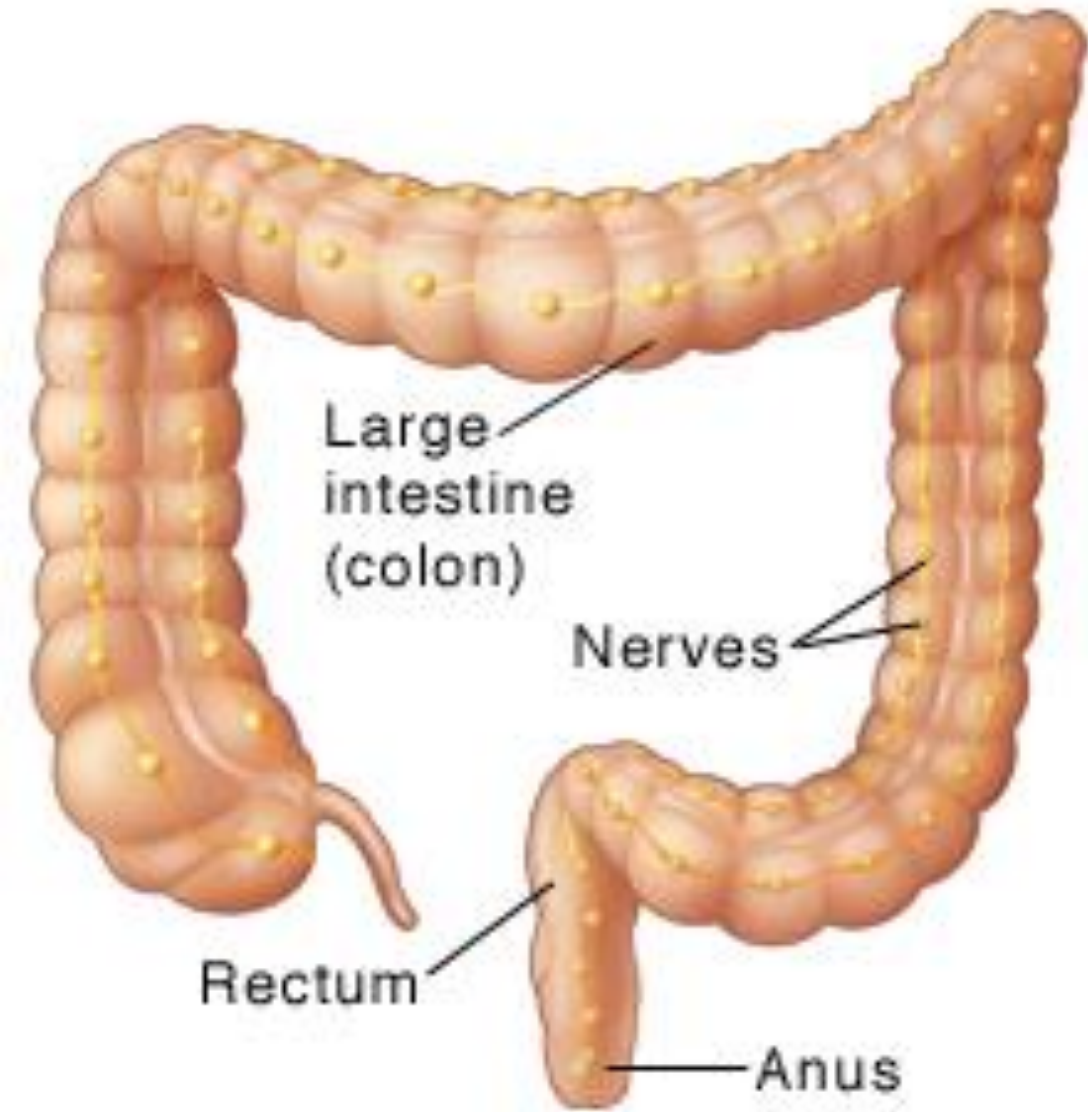
This watermarked comp image is for previewing purposes only.

ID 66686675

© Daniel Cole | Dreamstime.com

Normal

Hirschsprung's Disease



Hirschsprung's Disease

- ▶ An intestinal blockage due to impaired muscle movement within the bowel. Due to missing nerves within the bowel, intestinal contents accumulate, causing abdominal distention and bowel dysfunction. Often diagnosed in infancy, this condition causes newborns to develop constipation, abdominal distention, and vomiting. Additional symptoms may include the absence of a first stool (meconium), jaundice, and watery diarrhea
- ▶ Boy: Girl; 4 : 1

Assessment

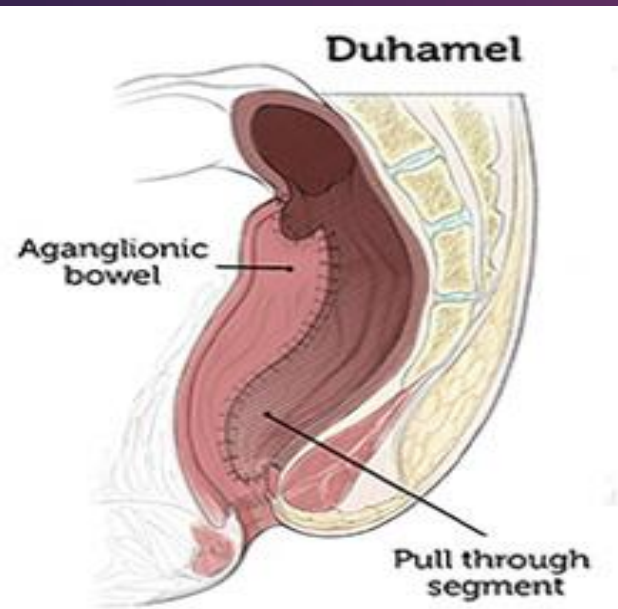
- ▶ The presence of colon dilation
- ▶ In the presence of abdominal distention,
- ▶ Physical examination and palpation of the affected area may be performed. Any abnormalities discovered during a preliminary examination will usually prompt additional testing. If toxic megacolon is suspected,
- ▶ Abdominal X-ray and blood tests to evaluate electrolyte levels and detect the presence of any markers indicative of infection.



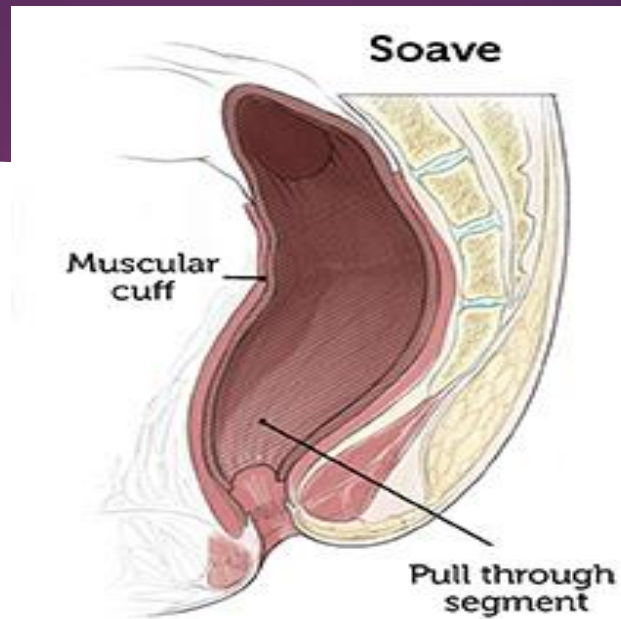
Treatment

- ▶ Supportive treatment : Rectal Irrigation
- ▶ Operation
 - Opened colostomy
 - Transanal endorectal pull through operation
(Swenson, Duhamel,& Soave operation)
 - Closed colostomy

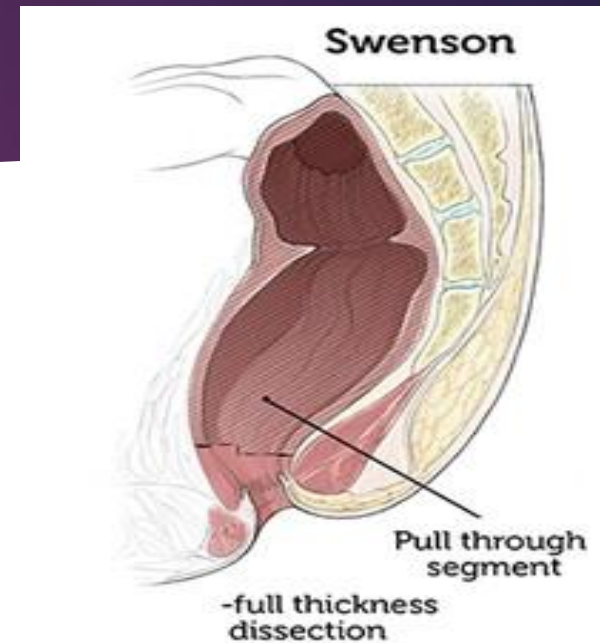
Types of Pull-Through Procedures



Duhamel
Residual pouch of aganglionic bowel left intact with the healthy bowel attached behind



Soave
The outer layer of the aganglionic bowel is left in place (muscular cuff)



Swenson
All of the aganglionic bowel is removed

Cleft lip & Cleft palate



Digestive System



Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.

ID 66686675

© Daniel Cole | Dreamstime.com

Cleft lip & Cleft palate

- ▶ Cleft lip and cleft palate are openings or splits in the upper lip, the roof of the mouth (palate) or both. They are among the most common birth defects. (in Thai = 1.01-2.49 : 1,000)
- ▶ They happen because there is not enough tissue in the body's mouth to join together normally. It's caused by both genetic and environmental factors.
- ▶ These defects can lead to eating, respiratory tract infection, dental, and speech problems.



Unilateral cleft lip



Bilateral cleft lip



Cleft palate



Cleft lip and cleft palate

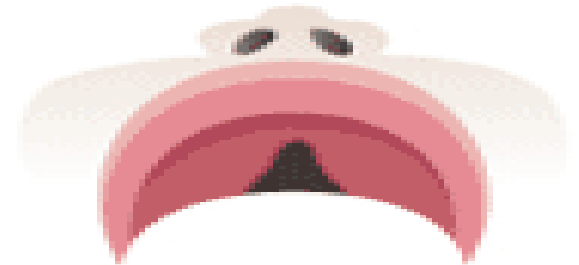




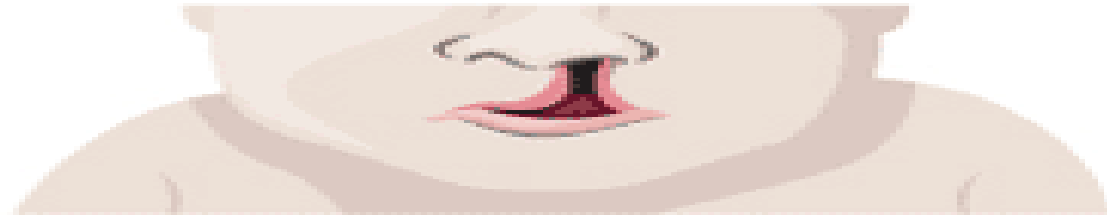
normal lip



normal palate



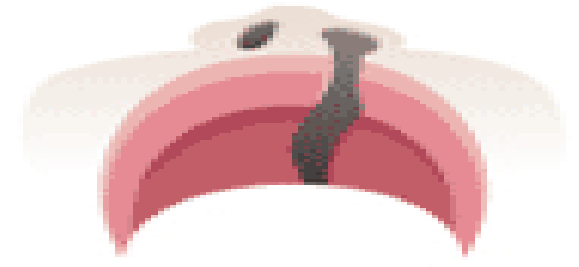
cleft palate



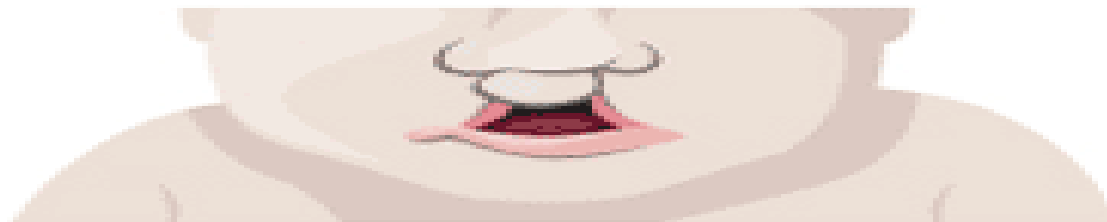
left unilateral cleft lip



left cleft lip



left unilateral cleft lip and palate



bilateral cleft lip and palate



bilateral cleft lip



bilateral cleft lip with full palate

Foods High in Folate (Vitamin B9)



Treatment

► Pre – operation

► Feeding for cleft palate child



<https://mpksmile.wordpress.com/tag/%E0%B9%80%E0%B8%9E%E0%B8%94%E0%B8%B2%E0%B8%99%E0%B9%80%E0%B8%97%E0%B8%B5%E0%B8%A2%E0%B8%A1/>

Treatment

► Feeding for cleft lip child



<https://mpksmile.wordpress.com/2012/11/04/%E0%B8%97%E0%B8%94%E0%B8%A5%E0%B8%AD%E0%B8%87%E0%B8%82%E0%B8%AD%E0%B8%87%E0%B8%82%E0%B8%A7%E0%B8%94%E0%B8%99%E0%B8%A1/>

Treatment

▶ Pre – operation

▶ Infection

▶ Anxiety



<https://mpksmile.wordpress.com/2012/10/04/%E0%B8%81%E0%B8%B3%E0%B9%80%E0%B8%99%E0%B8%B4%E0%B8%94%E0%B8%A0%E0%B8%B9%E0%B8%9C%E0%B8%B2/>

Treatment

▶ Operation

▶ Cleft Lip : Rule of over ten (10 weeks, 10 lb, and Hb = 10mg/dl)

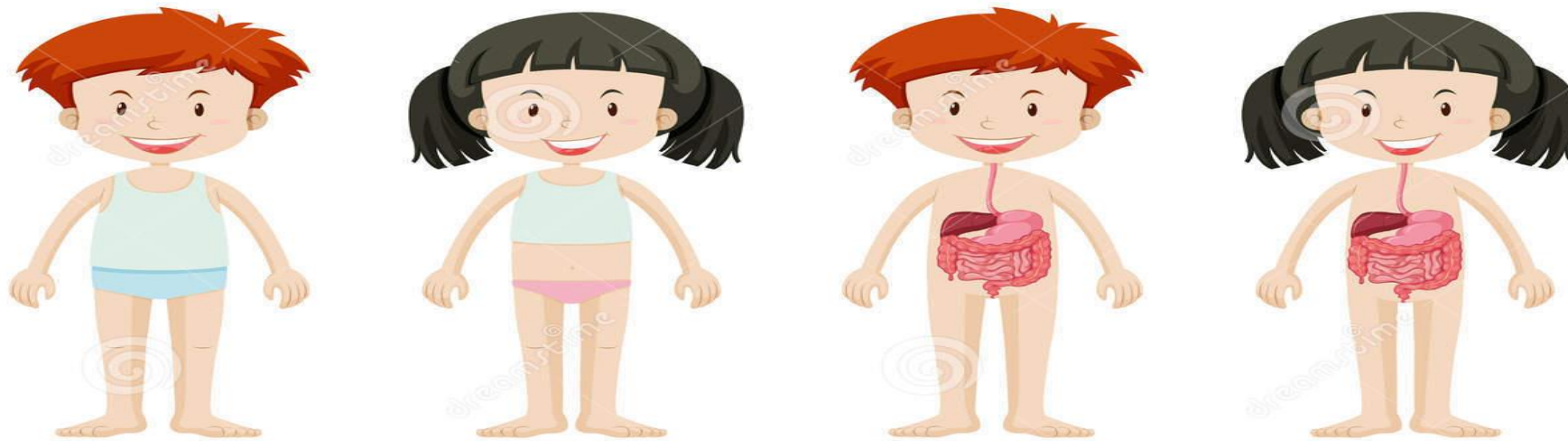
▶ Cleft Palate :

▶ 6-18 mo. (Before speech period) → Repair palate

▶ 3 years → Repair nose → speech therapy

▶ 5 years → Braces

Tracheoesophageal fistula (T-E fistula)



Digestive System



Download from
Dreamstime.com

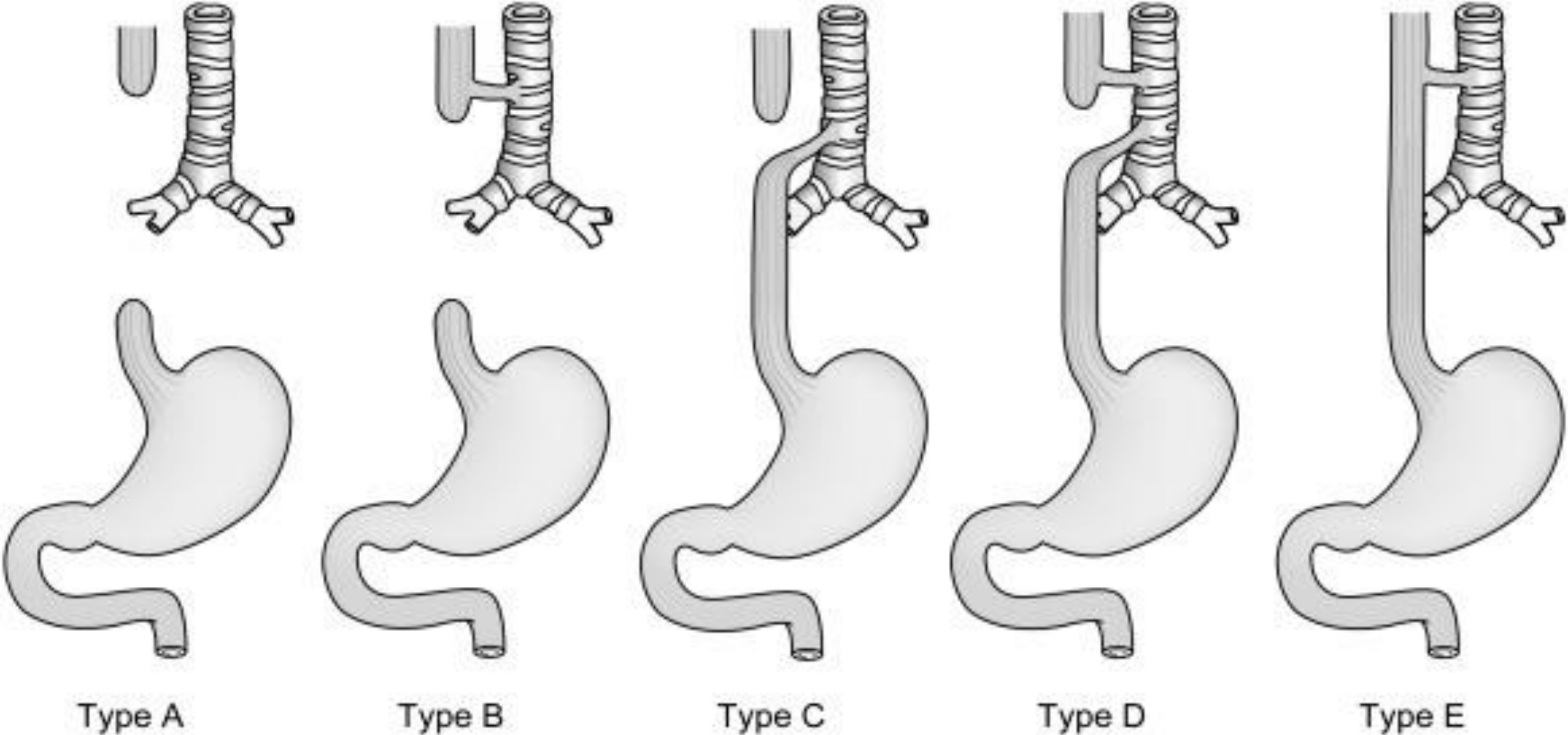
This watermarked comp image is for previewing purposes only.

ID 66686675

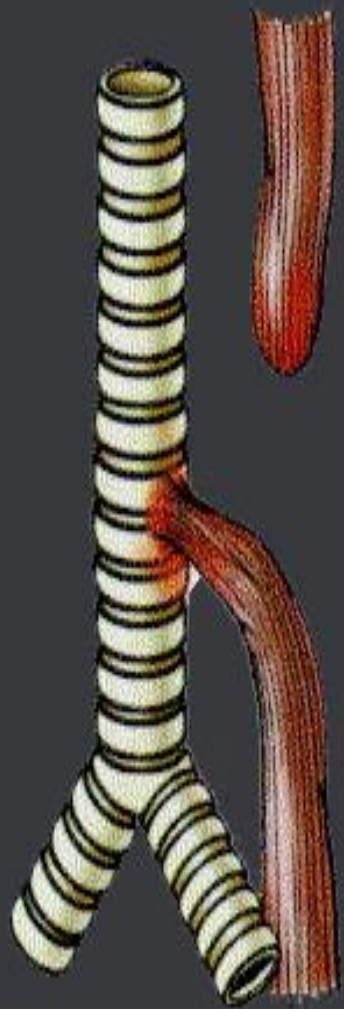
© Daniel Cole | Dreamstime.com

Tracheoesophageal fistula (TE fistula)

- ▶ TE fistula (TEF) is an abnormal connection (fistula) between the esophagus and the trachea. TEF is a common congenital abnormality.
- ▶ It is suggested in a newborn by copious salivation associated with choking, coughing, vomiting, and cyanosis coincident with the onset of feeding. Esophageal atresia and the subsequent inability to swallow typically cause polyhydramnios in utero.



Reproduced with kind permission of John Wiley and Sons from D. M. Burge, K. Shah, P. Spark, et al: Contemporary management and outcomes for infants born with oesophageal atresia. *BJS* 2013; 100: 515–521



EA with
distal TEF (87%)



Isolated EA
(8%)



Isolated TEF
(4%)



EA with
proximal TEF (1%)

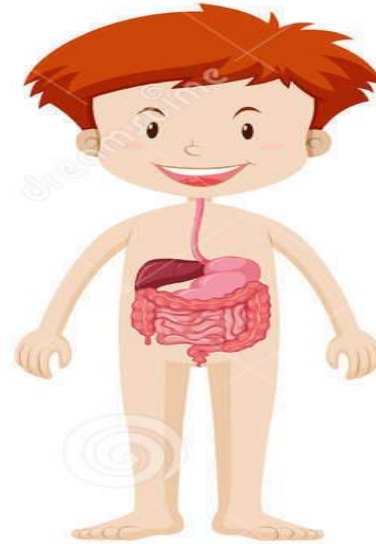


EA with
double TEF (1%)

Treatment

- ▶ It is surgically corrected, with resection of any fistula and anastomosis of any discontinuous segments.
- ▶ Complication after surgical
 - ▶ Recurrent fistula
 - ▶ Swallowing food or liquids may be difficult due to scarring and peristalsis
 - ▶ GERD

Imperforate anus



Digestive System



Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.

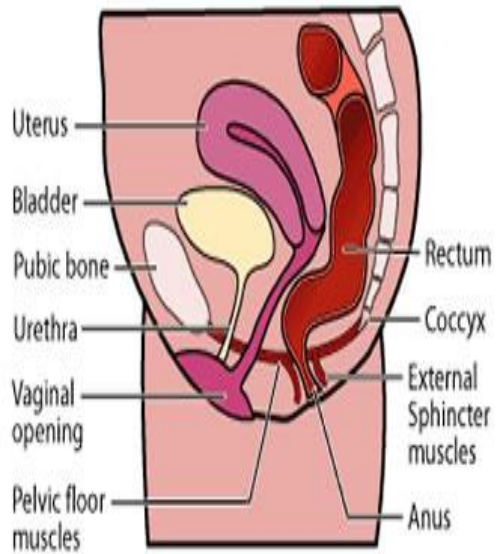
ID 66686675

© Daniel Cole | Dreamstime.com

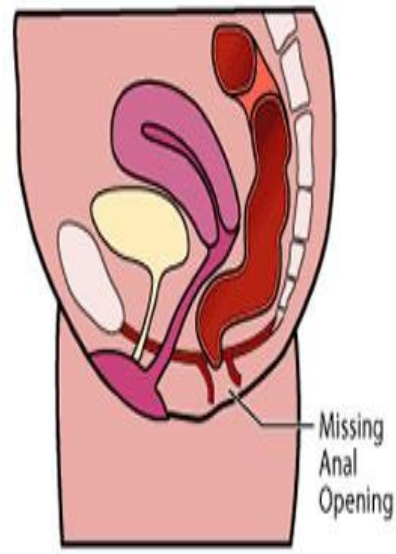
Imperforate anus

- ▶ An imperforate anus or anorectal malformations (ARMs) are birth defects in which the rectum is malformed. (1:4,000-5,000)
- ▶ No stool in the first 24 to 48 hours of life
- ▶ A swollen abdomen
- ▶ Stool passing through the wrong place, such as the urethra, vagina, scrotum, or the base of the penis.

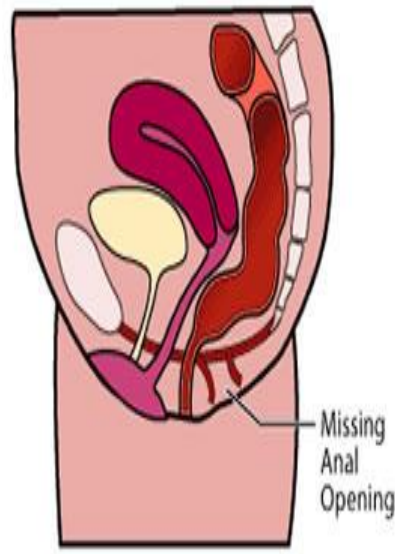
Normal Anatomy Female



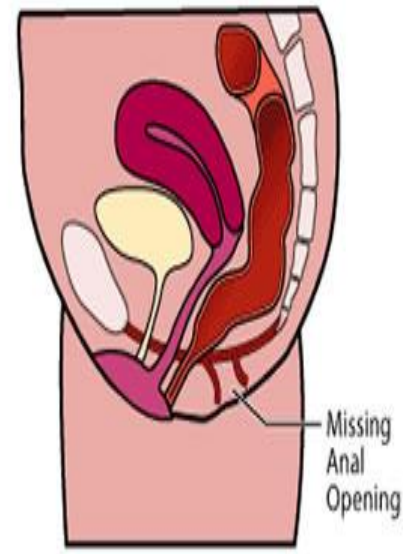
Anal opening missing or closed off



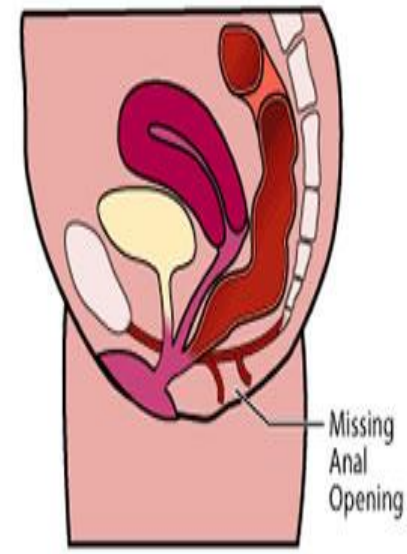
Opening in wrong place and too small



Rectum connects to vagina

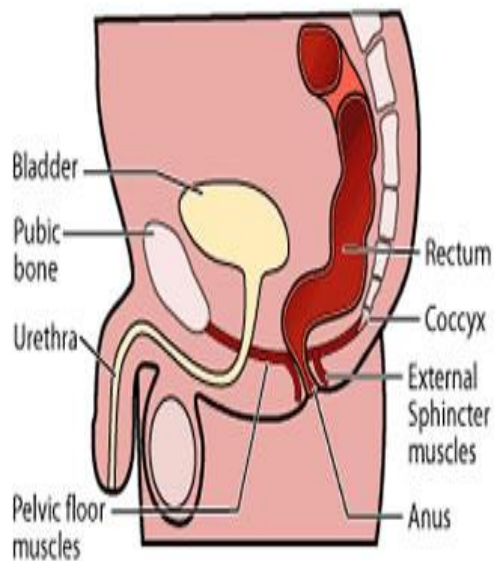


Cloaca: all three form a single opening

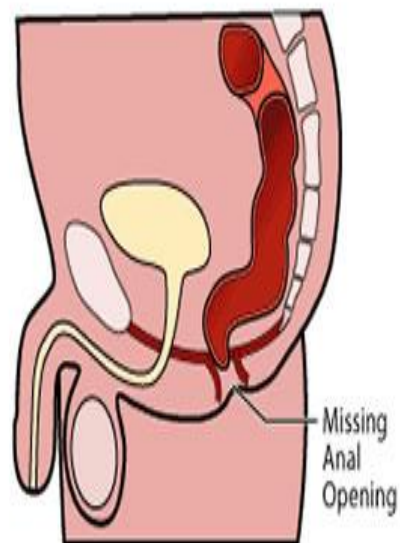


<https://healthjade.net/anorectal-anomalies/>

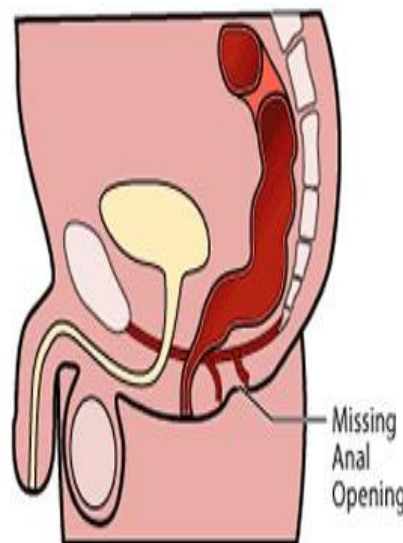
Normal Anatomy Male



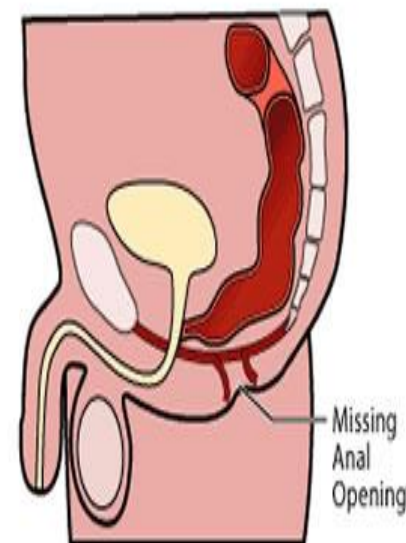
Anal opening missing or closed off



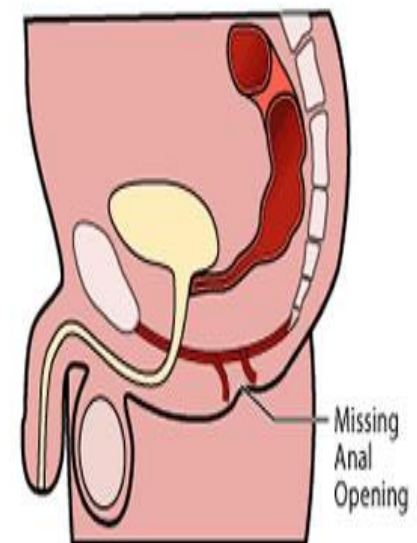
Opening in wrong place and too small



Rectum connects to urethra or bladder

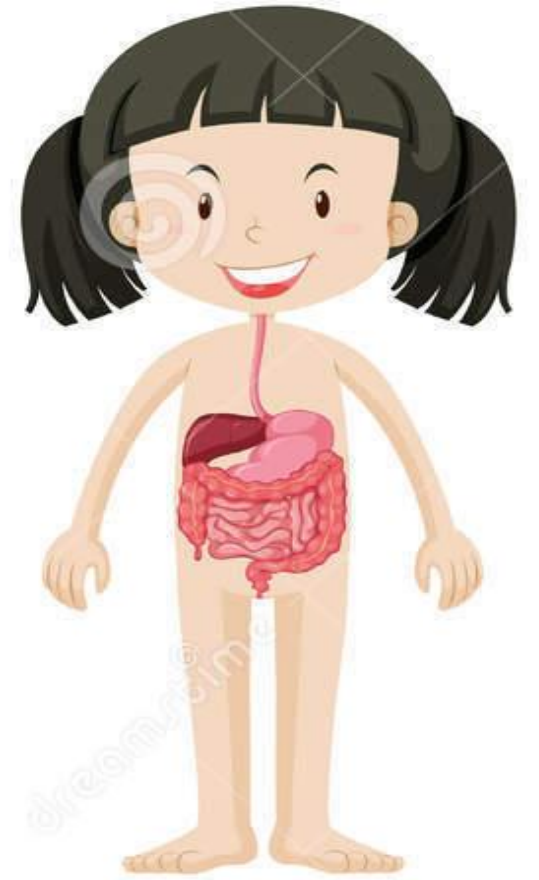
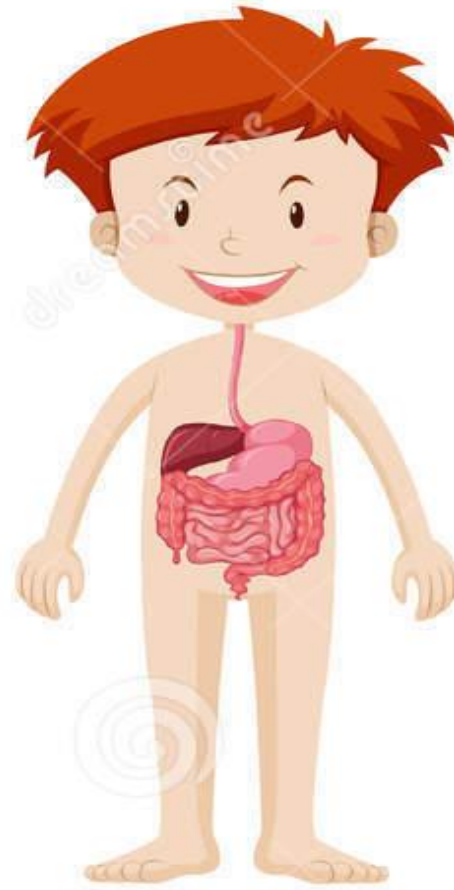


High rectum connects into bladder



Treatment

- ▶ Imperforate anus usually requires immediate surgery to open a passage for feces unless a fistula can be relied on until corrective surgery takes place. Depending on the severity of the imperforate, it is treated either with a perineal anoplasty or with a colostomy.



Digestive System



Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.



ID 66686675

© Daniel Cole | Dreamstime.com

Pain Assessment

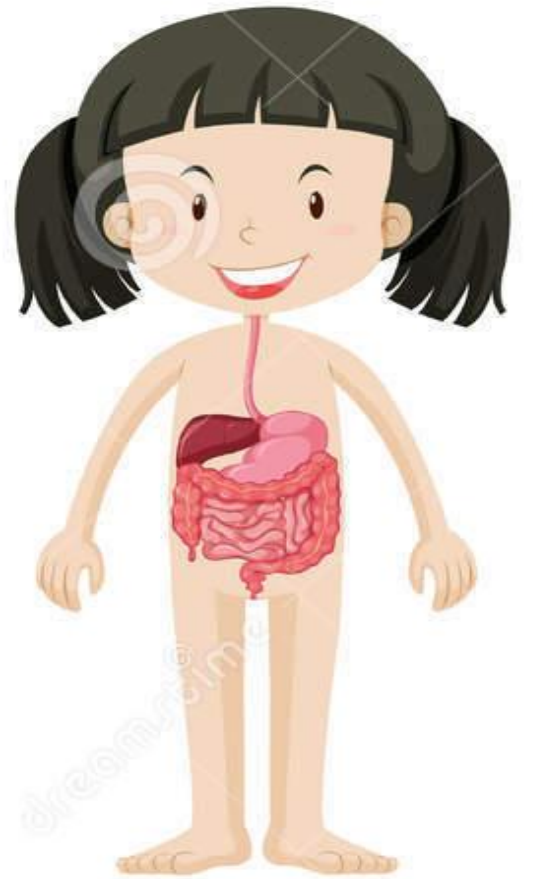
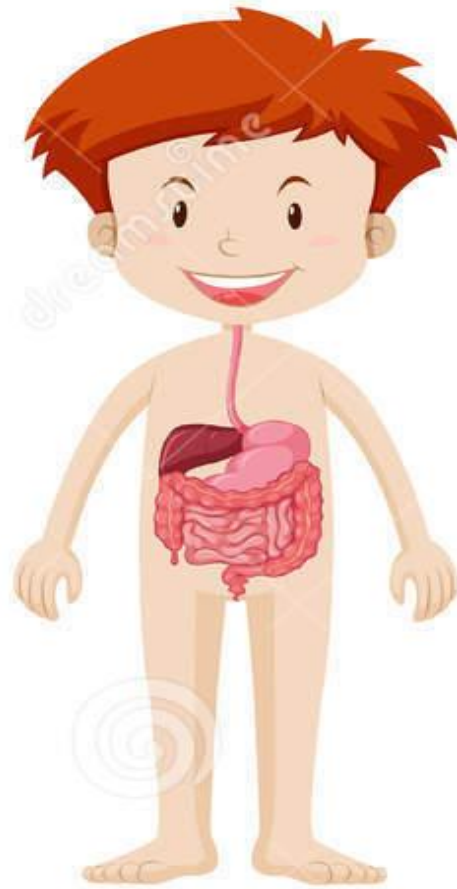


Pain Assessment

- ▶ Neonatal Infant pain scale (NIPS) use for infant (0-1 year old)
- ▶ The Children's Hospital of Eastern Ontario Pain Scales (CHEOPS) use for children (>1–6 years old)
- ▶ Face Legs Activity Crying Consolidation (FLACC) use for children (>1–6 years old)
- ▶ Facial Expression Scales (FES) or FACES use for children (>7 years old)
- ▶ Numerical Rating Scale (NRS) use for children (>7 years old)
- ▶ Behavioral Pain Scales (BPS) use for unconscious patient

Cut-off point

Age	Pain scale	Range	Cut-off point
0-1 year	NIPS	0-7	4
> 1-6 years	CHEOPS	4-13	6
	FLACC	0-10	3
> 7 years	FES (FACES)	0-10/ 0-5	4/ 2
	NRS	0-10	4
Unconscious	BPS	3-12	7



Digestive System



Download from
Dreamstime.com

This watermarked comp image is for previewing purposes only.



ID 66686675

© Daniel Cole | Dreamstime.com

Nursing intervention & Evaluation



Nursing Diagnosis

1. Risk for intestinal perforation r/t distention of the intestinal
2. Risk for dysfunctional gastrointestinal motility r/t gastrointestinal perforate or peritonitis
3. Risk for intestinal inflammation r/t obstruction of the intestinal and decrease resistance of the intestinal wall
4. Risk for infection r/t upper and lower airway aspiration (Cleft lip & Cleft palate)
5. Diarrhea r/t gastrointestinal infection
6. Acute pain r/t increased peristalsis causing cramping
7. Deficient fluid volume and nutrition r/t excessive loss of fluids in liquid stools

Nursing Diagnosis

8. Constipation: bowel obstruction r/t inhibited peristalsis as a result of congenital absence of parasympathetic ganglion cells in distal colon (Hirschsprung's Disease)
9. Risk for retention of gas and gastric juice in stomach and intestinal r/t abnormal intestinal function
10. Impaired skin integrity r/t diarrhea
11. Parental anxiety r/t lack of exposure to information for treatment, surgical, and home care
12. Parental anxiety r/t congenital disease in newborn
13. Parental deficient knowledge r/t lack of disease and caring knowledge

Nursing Diagnosis (Post -Operation)

1. Risk for decrease cardiac output r/t decrease fluid volume, blood volume, and electrolyte according to surgical procedure
2. Risk for separate, bleeding, and infection of the cleft lip and cleft palate surgical wound
3. Acute pain r/t surgical correction
4. Risk for skin infection or impaired skin integrity r/t irritation from bowel contents (on colostomy)
5. Disturbed body image r/t presence of stoma, daily care of fecal material (on colostomy)

References

- คณะกรรมการกลุ่มปรับปรุงชุดวิชาการพยาบาลเด็กและวัยรุ่น. (2554). *เอกสารการสอนชุดวิชาการพยาบาลเด็กและวัยรุ่น. (ฉบับปรับปรุงครั้งที่ 1)*. นนทบุรี: สำนักพิมพ์มหาวิทยาลัยสุโขทัยธรรมมาธิราช.
- พรทิพย์ ศิริบุรณพิพัฒนาและคณะ. (2556). *การพยาบาลเด็ก เล่ม 2. (ฉบับปรับปรุง)*. กรุงเทพมหานคร: ธนาเพลส จำกัด.
- พรทิพย์ ศิริบุรณพิพัฒนาและคณะ. (2556). *การพยาบาลเด็ก เล่ม 3. (ฉบับปรับปรุง)*. กรุงเทพมหานคร: ธนาเพลส จำกัด.
- ศรีสมบุรณ์ มุสิกสุคนธ์และคณะ. (2555). *ตำราการพยาบาลเด็ก เล่ม 1. (ฉบับปรับปรุงครั้งที่ 2)*. กรุงเทพมหานคร: ห้างหุ้นส่วน จำกัด ฟรี-วัน.
- ศรีสมบุรณ์ มุสิกสุคนธ์และคณะ. (2555). *ตำราการพยาบาลเด็ก เล่ม 2. (ฉบับปรับปรุงครั้งที่ 2)*. กรุงเทพมหานคร: ห้างหุ้นส่วน จำกัด ฟรี-วัน.
- สหัทยา ไพบูลย์วรชาติ. (2554). *Pain Assessment and Measurement*. Retrieved from http://www.med.cmu.ac.th/dept/anes/2012/images/Lecture2015/Pain_Assessment.pdf
- Allen, P. J, Vessey, J. A., & Schapiro, N. A. (2010). *Primary care of the child with chronic condition.*(5th ed.). USA: Mosby Elsevier.
- Betty J. Ackley & Gail B. Ladwig. (2011). *Nursing Diagnosis Handbook: An Evidence-Based Guide to Planning Care.* (9th ed.). USA: Wiley-Blackwell Publishing.
- Hockenberry, M. J. & Wilson, D. (2011). *Wong's nursing care of infants and children.* (9th ed.). USA: Elsevier Inc.
- Wong's. (2011). *Nursing Care of Infants and Children.* (9th ed.). Canada: Elsevier Mosby.

Summary

- ▶ GI Disease
 - ▶ Diarrhea, Gastroenteritis, Gastritis
 - ▶ Intussusception, Hirschsprung's disease, Cleft lip & Cleft palate, TE fistula, Imperforated anus
- ▶ Pain Assessment
- ▶ Nursing Care of GI Disease

Answer & Question



Homework

**** Write concept mapping of diseases of Gastrointestinal Tract (a person/ 1 disease)**

- ▶ Diarrhea
- ▶ Gastroenteritis
- ▶ Gastritis
- ▶ Intussusception
- ▶ Hirschsprung's disease
- ▶ Cleft lip & Cleft palate
- ▶ TE fistula
- ▶ Imperforated anus

Content of mapping including meaning, characteristic, sign & symptom, assessment, treatment, nursing diagnosis, and nursing intervention of disease that you write