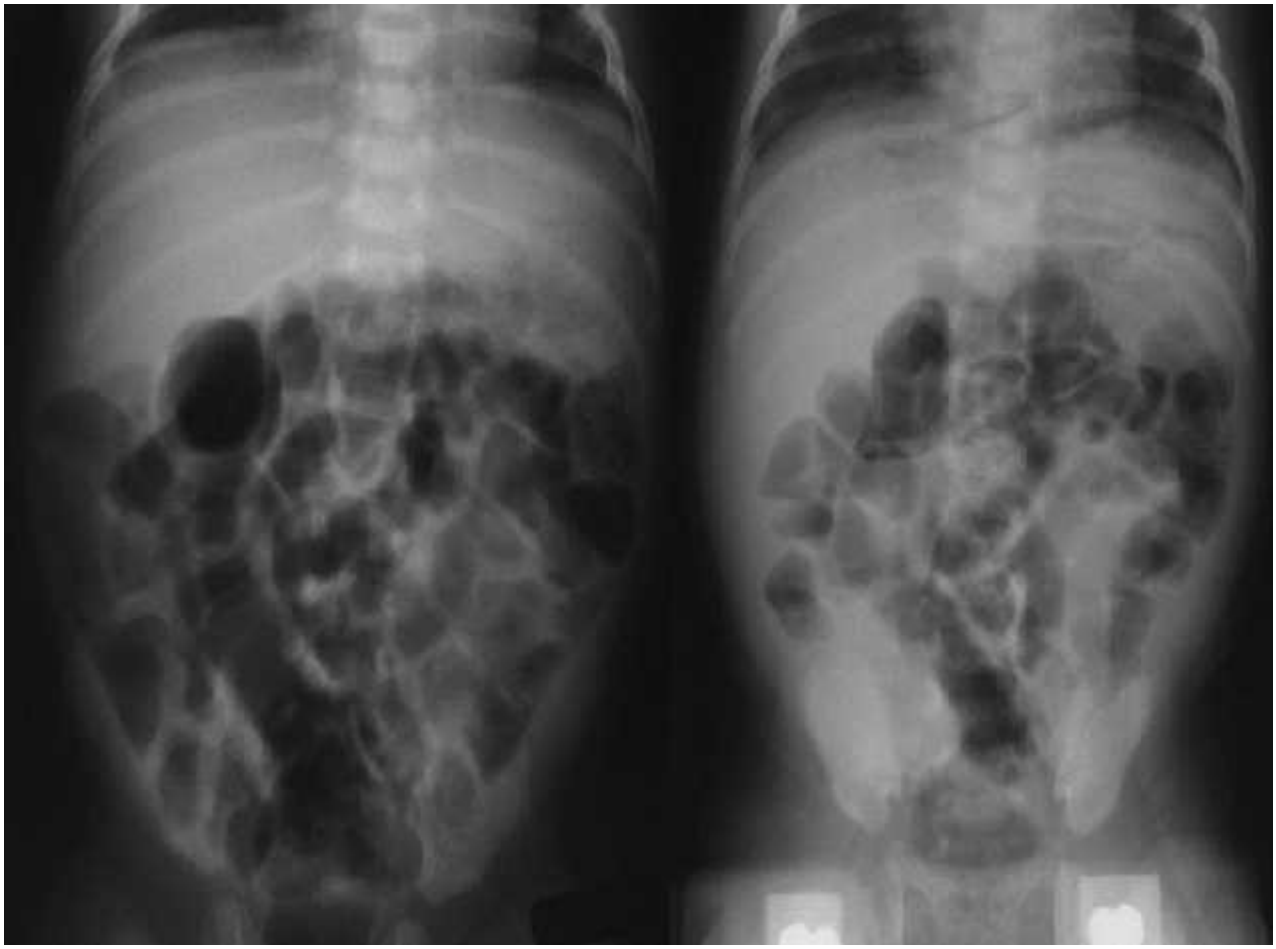
***Prof. Dr.***

***Alaa El-suity***

# NEONATAL INTESTIANL OBSTRUCTION



# Classification :

## High intestinal obstruction

Gastric atresia

Duodenal atresia

Duodenal stenosis (with annular pancreas)

Duodenal web

Malrotation

Jejunal atresia and stenosis

## Low intestinal obstruction

Small bowel involvement

Ileal atresia

Meconium ileus

## Large bowel involvement

Functional immaturity of the colon

Hirschsprung disease

Colonic atresia

Anal atresia and anorectal malformations

# DUODENAL OBSTRUCTION

This usually is seen in the second part of the duodenum at the level of Ampulla of Water.

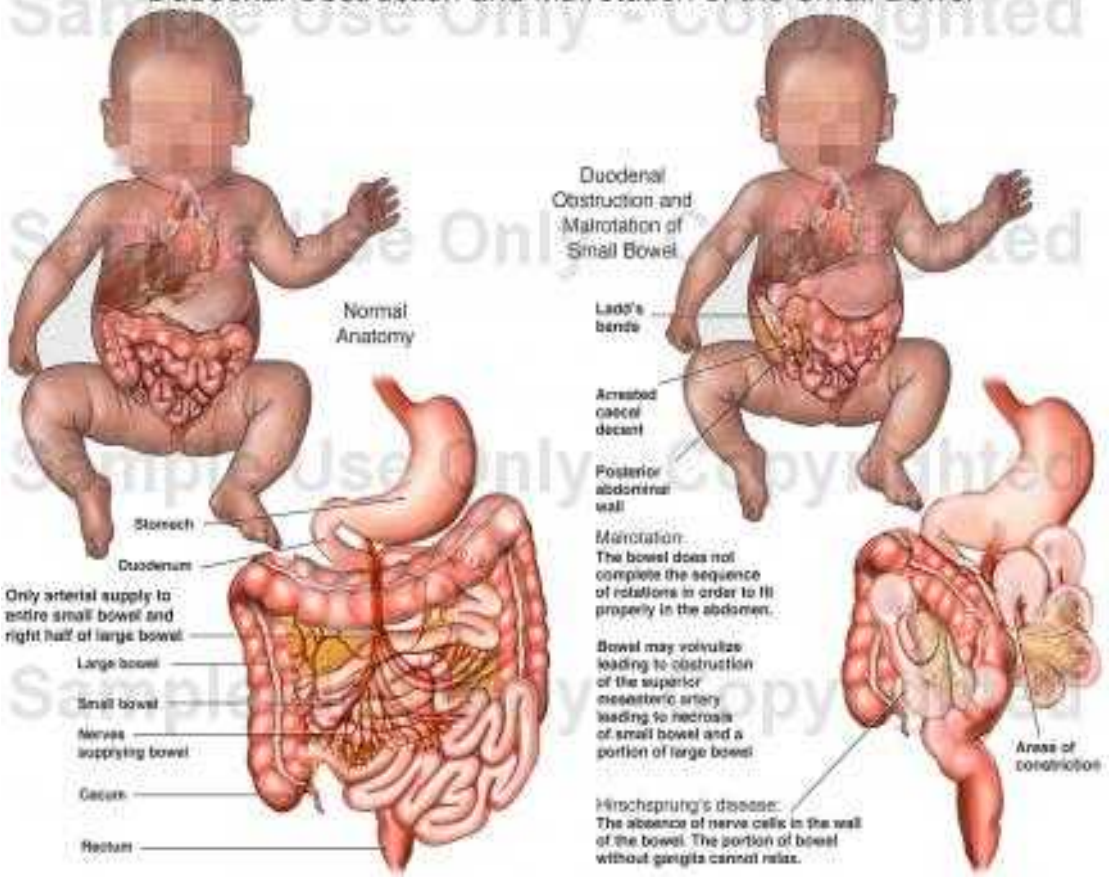
Duodenal obstruction – atresia is commonly intraluminal, consisting of a mucosal web.

Less commonly, there may be a perforation in the web that allows some of the contents to go distally and hence may present later than 1 month of life.

Extra luminal duodenal obstruction is usually due to Annular Pancreas which is caused by abnormal embryogenesis .

Yet another type of duodenal obstruction is that of malrotation of the gut – here the intestinal lumen is not totally blocked; these cases may present at any time early or late when associated with intestinal volvulus.

# Duodenal Obstruction and Malrotation of the Small Bowel



## PRESENTATION:

Antenatal : In any upper GI obstruction i.eupto the proximal jejunum, there may be polyhydramnios. Additionally, there may be the typical large duodenal and stomach bubble.

Postnatal: Since duodenal obstruction is proximal, distension is not a very common feature. These neonates often present with repeated vomiting – bilious in nature. Bilious vomiting in a neonate is always considered to be obstruction until proved otherwise.

Since the obstruction is is distal to the opening of the bile duct, bilious vomiting is common.
No passage of meconium is more in favour of a total atresia, whereas, passage of meconium one or more times is a sign that obstruction is not complete, and thus the child may have either Annular Pancreas, a duodenal web with a central opening, or Malrotation of the gut.

## ASSOCIATED DEFECTS:

Duodenal atresia is very often associated with Down's Syndrome. The other common associated anomaly is a congenital cardiac defect.

## INVESTIGATIONS :

Radiological investigations are the best method of diagnosis –

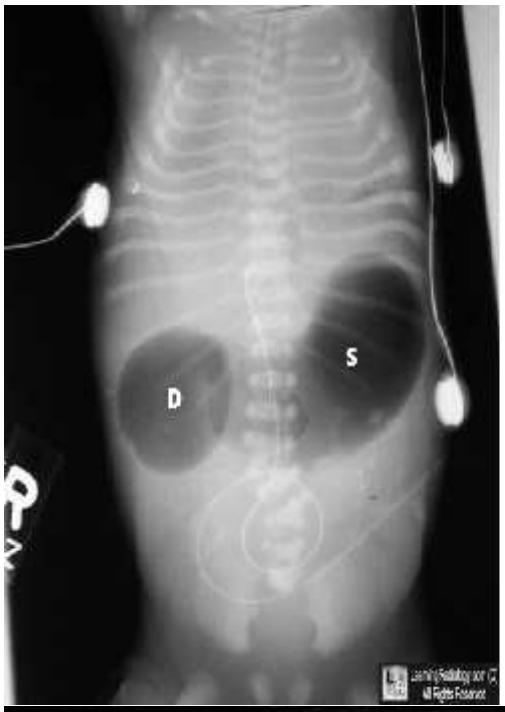
### Plain X Ray Chest & Abdomen :

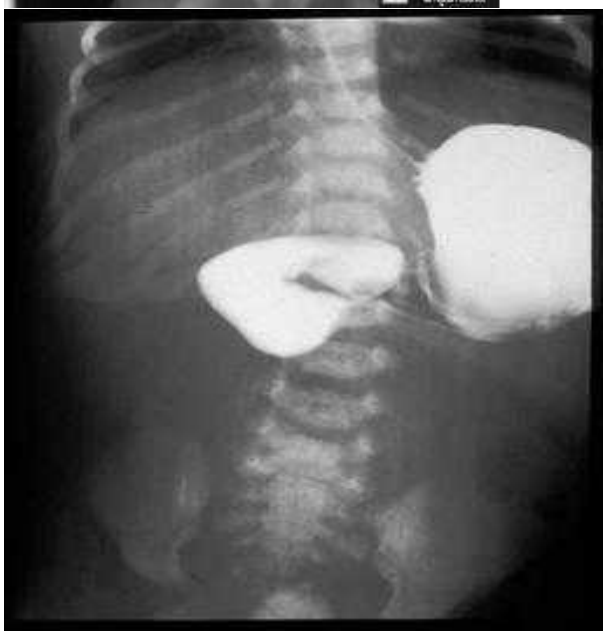
**Double Bubble appearance** is characteristic. There is no otherairshadow is seen in the rest of the abdomen this is typical of total atresia. However, if there is a double bubble appearance with scattered gas shadows all over the abdomen means a partial obstruction : Ladd's bands, Duodenal web with opening, annular pancreas. Gasless abdomen with all other signs of intestinal obstruction could be a gas in the obstructed bowel has been absorbed completely over a period of time.

DudenalatresiaXRay :

show double bubble appearance

.D_dudenum>S_stomach



Dudenal web

**Contrast Study** : Usually performed using fine Barium or a diluted Conray / Gastrografin– will show a large stomach and duodenal shadow. An abrupt cut off – total in case of duodenal atresia, a rounded curved cut off but with small amount of the contrast going distally will be evidence of annular pancreas or web with a central opening. At times there will be a large duodenal shadow, no sudden narrowing, but the contrast is going distally, however, there may not be the typical C of the duodenum seen, which is suggestive of amalrotationof the gut with the DJ flexure on the left of the midline.

## THERAPY: -

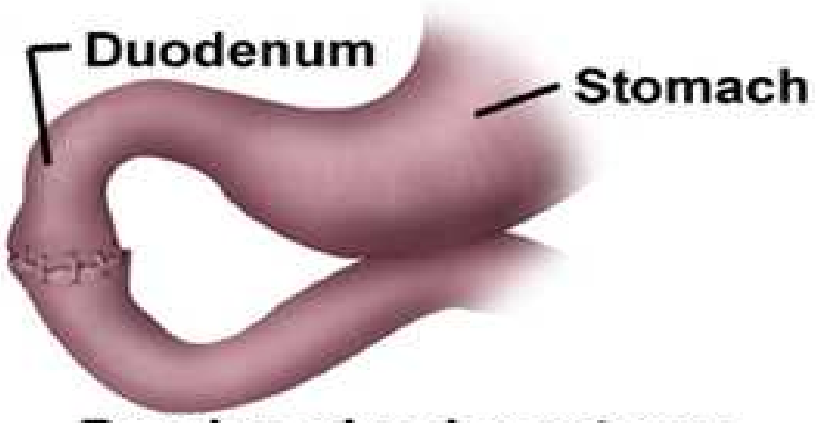
Surgical intervention :is advised as soon as possible after the diagnosis is made.Routine preoperative care of the neonate is as always – by admitting into the NICU, and taking care of the Monitoring of the pulse respiration and temperature. Intravenous line for drawing blood for investigations, antibiotics, fluids and electrolyte administration. Insertion of an infant feeding tube for decompression of the bowel, aspiration of the contents avoid vomiting.

## SURGICAL THERAPY:

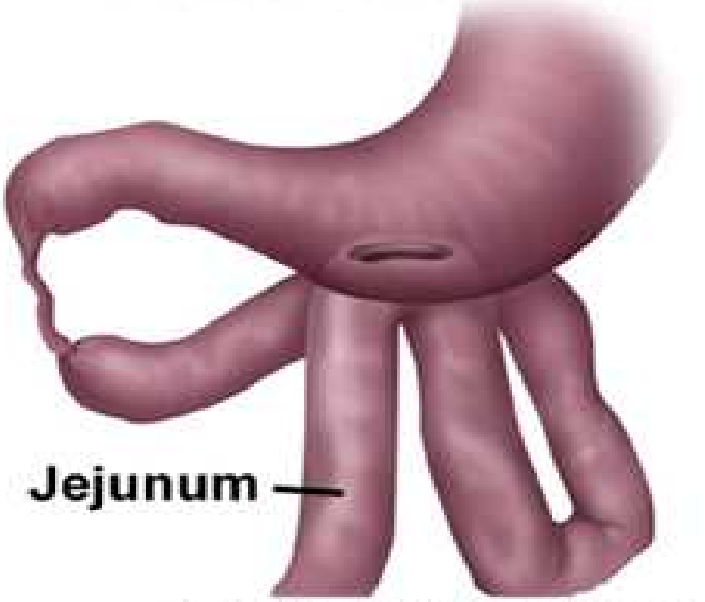
Duodenal atresia : Ideally, a Duodeno – duodenostomy is done, if not possible, then aduodeno – jejunostomy is done. Pushing air through the feeding tube after completion of the anastamosis is essential to rule out any further obstruction hitherto undetected.
Duodenal web with central opening: Duodenostomy along the long axis is done to reveal the web which is then excised and the duodenum is closed transversely.

Annular Pancreas : Duodeno – duodenostomy is done to bypass the obstruction.

Malrotation of gut : Laparotomy with untwisting of the volvulus of the intestine if present is followed by release of the Ladd's Bands, straightening of the DJ flexure, on the right of the midline and placement of the IC junction in the left Iliac fossa to widen the root of the mesentery. Pushing air through the feeding tube again is useful to detect another obstruction if any. In some cases, the child is explored late and due to the volvulus, there is gangrene of the bowel extending from the DJ flexure till the mid transverse colon the segment of bowel supplied by the Superior mesenteric artery. Resection of the gangrenous bowel can later lead to short bowel syndrome requiring parenteral hyperalimentation for a long period of time.




Duodenoduodenostomy




Gastrojejunostomy

# JEJUNAL & ILEAL ATRESIA

This is always complete obstruction and is of 4 types :

Type I: Continuity of the bowel wall lumen is blocked by one or more septa.

Type II: Two blind ends of the gut connected by a fibrous cord of varying length. The mesentery is either intact or may show a V shaped defect.

Type III: Multiple atresia – the segments of bowel producing an appearance of " string of sausages"

Type IV: Apple peel atresia – the intestine is found to be arranged in a spiral around a central mesenteric vessel, the mesentery runs like a spiral staircase from the central vessel to the intestine.

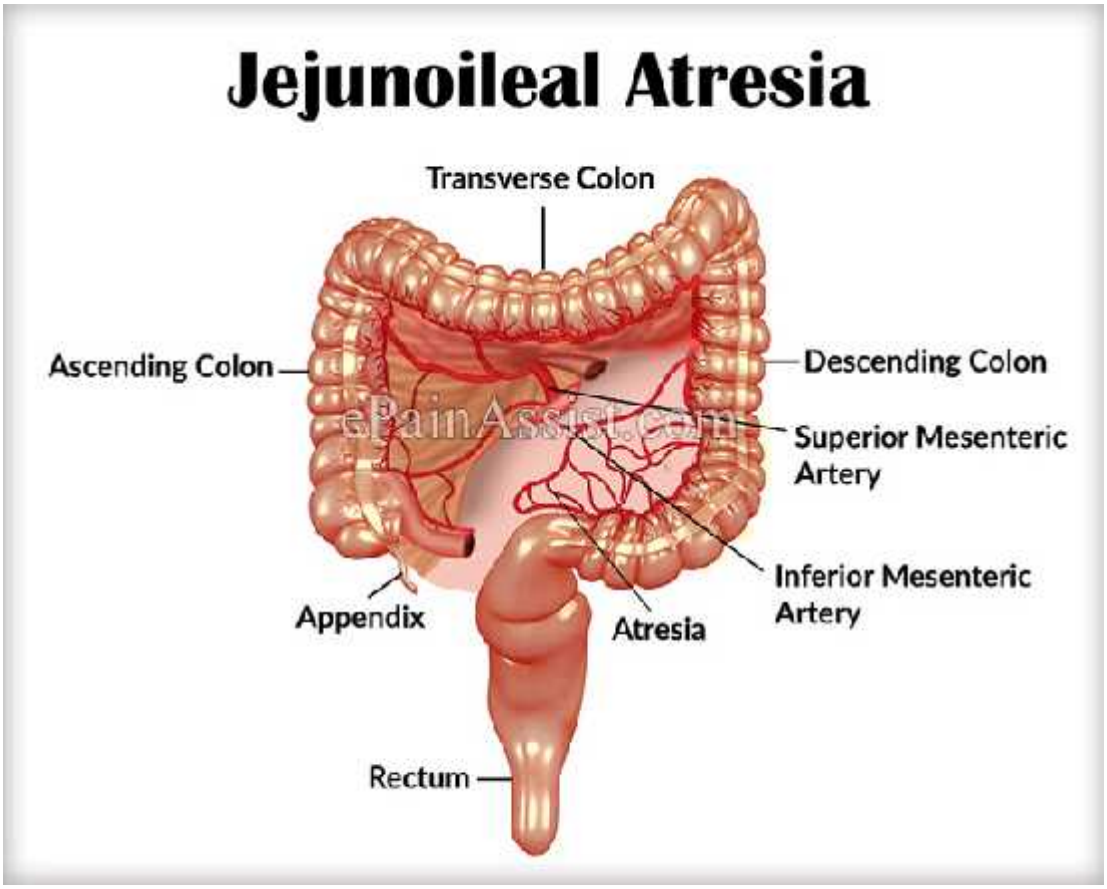
## ASSOCIATED DEFECTS

These are uncommon in Jejunoilealatresias. The incidence being < 10 %.

## PRESENTATION :

Antenatal : Polyhydramnios is suspicious of upper proximal intestinal obstruction.Ultrasonography shows multiple dilated bowel loops .

Postnatal : Bilious vomiting is obstruction unless proved otherwise.Abdominal distension also is suggestive of intestinal obstructon especially taken with vomiting.Visible loops of intestine which are dilated cannot be mistaken for anything but obstruction.No passage of meconium since birth inspite of a normal anal opening again is consistent with obstruction.




INVESTIGATIONS: -

Plain X Ray Chest & Abdomen : Vertical : This is the most important investigation and will show multiple bowel loops with air fluid levels. Lessor the number of loops the more proximal is the site of obstruction, and more the number, more distal is the site of obstruction.

Contrast Study : This is rarely necessary unless the diagnosis is not clear on plain x-ray and history. Barium Enema is useful to detect Hirschsprung disease, Meconium Ileus, Meconium plug syndrome etc.A micro colon is a sign of an unused colon suggestive that meconium has never passed through the colon at any time.

# THERAPY

Preoperative stabilization of the neonate as described previously is a must before the specific therapy.

Surgical Therapy :Exploratory Laparotomy with resection of the atretic segment along with about 10 cms of proximal dilated bowel segment followed by an end to end anastamosis. In complex atresia, when viability of the bowel is in doubt, or if there is associated peritonitis, it is safer to bring out the proximal bowel out as a stoma.Postoperative critical care is required with decompression of intestines, parenteral hyperalimentation, antibiotics. Return of intestinal function is obvious when gastric aspirate changes from green to clear .

## *Hirschsprung disease*

*is caused by an arrest of neuronal (ganglion*

cell migration to the distal bowel before the 12th week c gestational age.

symptom: 1)chronic constipation toms

delayed pass meconium more than 24.

Sign:by inspection <<progreesiveabdomianl distention &visible peristalsis.

By palpation:doughy mass in Lt.iliac fossa.

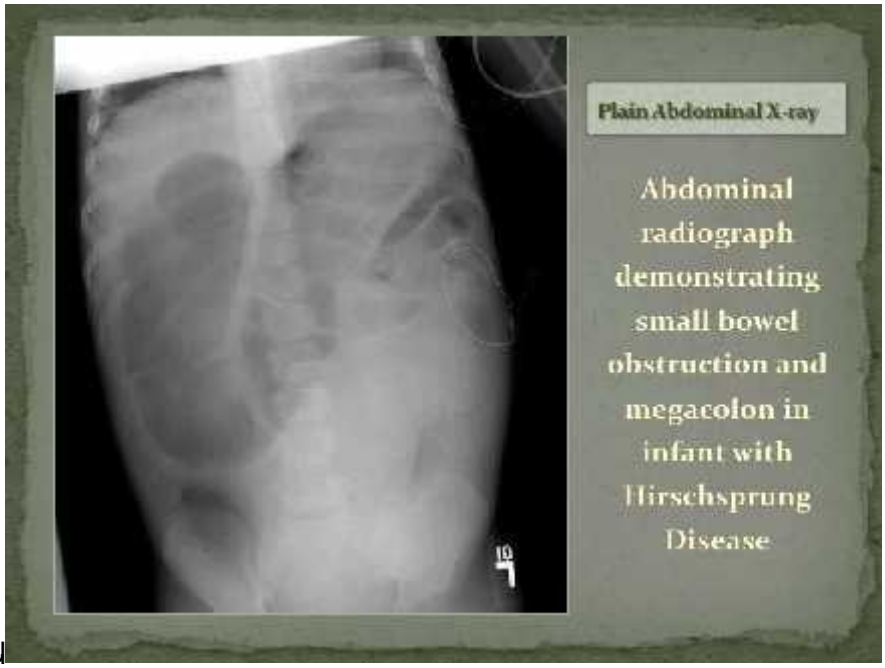
By percussion tympanic resonant.

By auscultaion: increase in intestinal sound.

By DRE:embtyrectum,stenoticsegement grip on finger,gus of stool on fingr.

Investigated by >>1)PLAIN XRAY: show large bowel obstructi

2)Barium swallow:narrowagangloincsegement with proximal colon diltation.


Plain Abdominal X-ray
Abdominal radiograph demonstrating small bowel obstruction and megacolon in infant with Hirschsprung Disease

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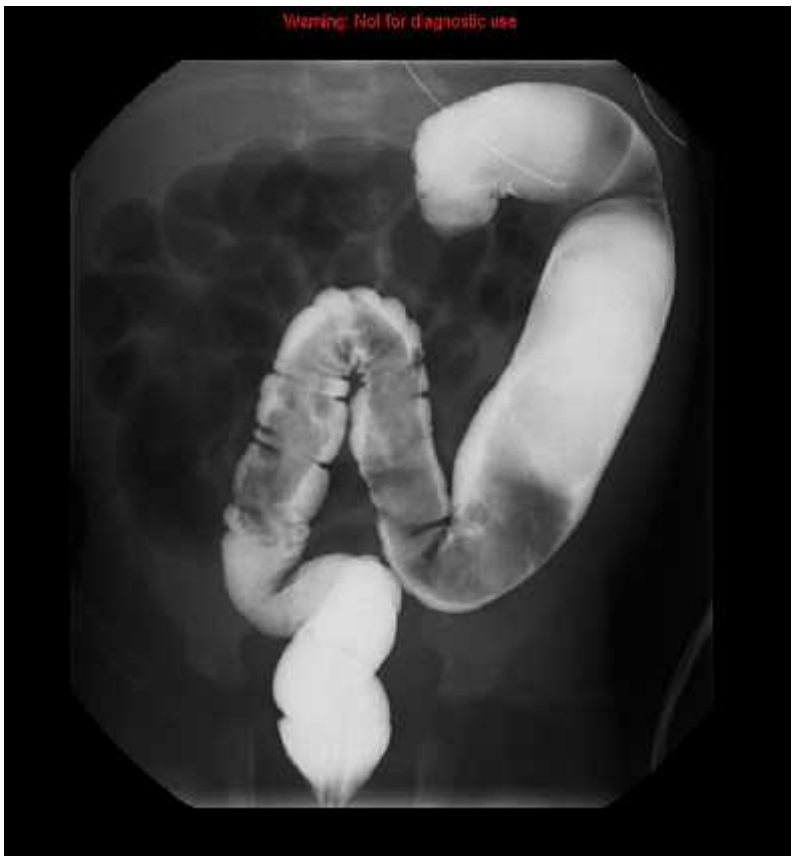

Warning: Not for diagnostic use

Anal atresia,also known as “imperforate

anus,” is a condition of unknown cause in which there is the absence of a normal anal opening.

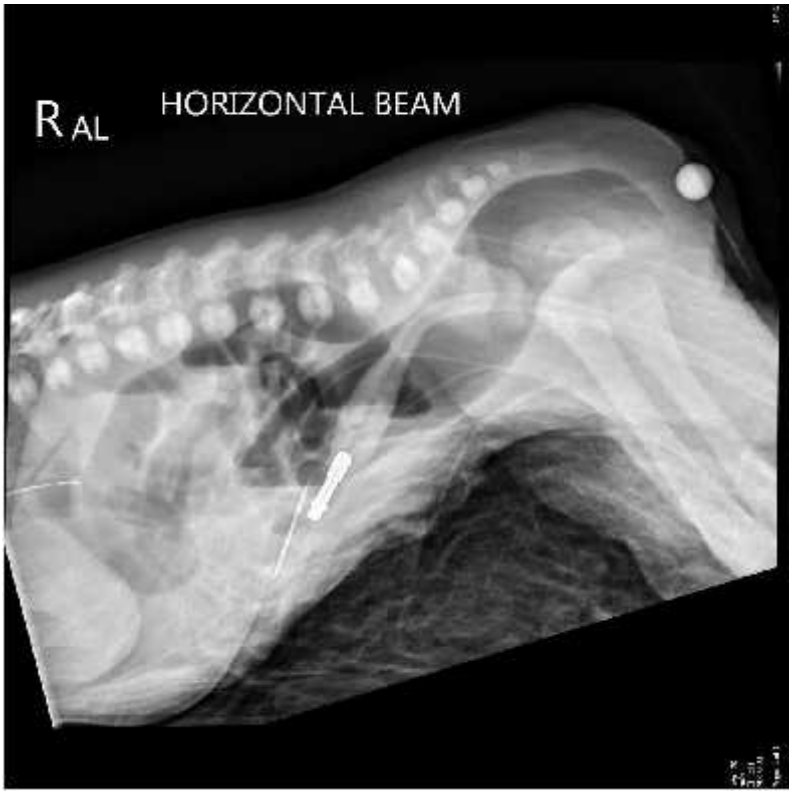
Newborns with anal atresia usually present with such signs of lower intestinal obstruction

as failure to pass meconium and abdominal distentiontreated by :

High anomaly by :1)temporary colostomy , 2)anorectal pull through

3)closure of colostomy

Low anomaly : only by perineal surgery




ANAL ATRESIA

# Thank you