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RESEARCH ARTICLE

A RARE CASE OF TRANSMESOCOLIC HERNIATION OF SMALL BOWELTHROUGH A CONGENITAL DEFECT PRESENTING AS A CLOSED BOWEL OBSTRUCTION
- A case report and Literature review of repairs of Internal Hernias

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Abstract

Transmesocolic hernia is an uncommon type of Internal hernia with incidence ranging from approximately 5–10% of all Internal Hernias. To the best of our knowledge, this is the first reported case of a transmesocolic hernia in adults without any surgical history or trauma. Small bowel loops were found herniating into the supracolic compartment through a congenital defect in transverse mesocolon presenting clinically as Small Bowel obstruction. A 20-year-old man was admitted with clinical features of intestinal obstruction. An abdominal X-ray showed multiple small bowel loops with air fluid levels. Contrast-enhanced CT of the abdomen revealed small bowel obstruction not only on the right, but also on the left side of the collapsed descending colon. Emergency Exploratory Laprotomy was performedand bowel loops with discolouration seen enclosed in hernial sac in supracolic compartment which were milked out of defect and observed to have obtained vascularity almost immediately. The postoperative period was uneventful. Preoperative diagnosis of bowel obstruction caused by a transmesocolic hernia remains difficult despite the currently available imaging techniques. Prompt surgery can prevent serious complications such as Bowel gangrene, peritonitis and sepsis.

Introduction:-

Internal hernias may be congenital or acquired, intermittent or persistent. The classification of internal hernias is based on anatomic regions with distinctive clinical and radiographic features: paraduodenal (left>right) (53%), foramen of Winslow (8%), pericecal (13%), intersigmoid (6%), transmesenteric and transmesocolic (8%), transomental (1–4%), and retroanastomotic, supravesical and pelvic (6%). Transmesenteric hernias are of three main types: transmesocolic, through a small bowel mesenteric defect and Peterson's hernia. In adults, common causes of mesenteric defects include prior abdominal surgery, abdominal trauma or intraperitoneal inflammation. (1)

An internal hernia is defined as the protrusion of abdominal viscera, most commonly small bowel loops, through a peritoneal or mesenteric aperture into a compartment in the abdominal and pelvic cavity. Hernial orifices if acquired is caused by inflammation, trauma and previous surgery, like gastric by-pass for bariatric treatment and liver

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transplantation. Due to the growing popularity of these surgical procedures, the overall incidence of internal hernias has been recently increasing.Relatively uncommonly, they represent a potentially life-threatening condition and a surgical emergency since the bowel entrapment in one of the defects can lead to acute intestinal obstructionwith rapid evolution, if left untreated, into strangulation and ischemia.Since there is a short window of time between intestinal obstruction and ischemia a time-consuming diagnostic workup before emergency surgery for an acutely ill patient is contraindicated. CT, with its speed of execution, is the imaging modality of choice for the investigation of acute abdominal conditions and in particular is recommended for the evaluation of patients with acute small bowel obstruction, particularly when clinical and initial plain film radiography indicates a higher grade obstruction or remains indeterminate evaluation of strangulation is suspected. (1,2).

All the more rare is when the cause is congenital like in our case today. According to various investigators, internal hernias cause up to 5.8% of all small bowel obstruction and Transmesocolic herniation 2-10% of all Internal Hernias.The anomaly of congenitaltransmesocolic herniation, which was first reported by Rokitansky in 1836 is an extremely rare type of internal hernia. According to the literature, herniation into the lesser sac can be classified into three basic types according to the site of the aperture.
Type 1 - Through the foramen of Winslow
Type 2 - Through a defect in the Lesser or greater omentum
Type 3 - Through a defect in the Transverse mesocolon

Our patient had type 3 transmesocolic hernia. Type 3 is usually secondary to abdominal trauma or prior abdominal surgery with the creation of a Roux-en-Y loop. Approximately 5–10 % of all internal hernias occur through defects in the mesentery of the small bowel congenitally and almost 35 % of transmesocolic hernias are observed among paediatric age group, mainly those aged between 3 and 10 years. In adults, however most mesenteric defects are the result of previous gastrointestinal operations, abdominal trauma or intra peritoneal inflammation a congenital like in our case is an extremely rare occurrence. (1)

The most common manifestation of an internal hernia is strangulating small bowel obstruction, that occurs after a closed-loop obstruction. However, the clinical manifestations range from mild digestive symptoms to acute abdomen, as symptom severity relates to duration and reducibility of the hernia and the presence or absence of strangulation and incarceration. Internal hernias may remain clinically silent if easily reducible, but the larger ones often cause mild discomfort ranging from constant vague epigastric pain to intermittent periumbilical pain as they occasionally show spontaneous reduction, abdominal distention, nausea and vomiting. Physical examination may reveal a palpable mass of herniated loops with localized tenderness.

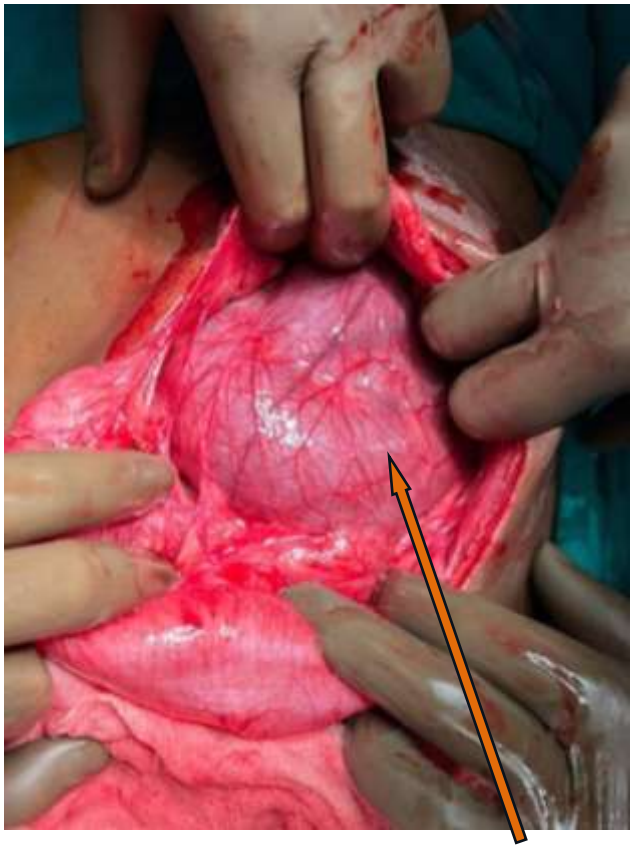
This non-specific clinical presentation often leads to a delay in diagnosis, in most cases made at the time of laparotomy , and consequently in proper treatment, carrying risk of serious complications; therefore, when the possibility of internal hernia is considered, a rapid imaging evaluation is necessary to aid an early diagnosis and a prompt intervention.Computed Tomography (CT), with its wide availability, has become the first line imaging technique in these patients and play an important role in the preoperative diagnosis and planning of surgical intervention. (2,3)

Case Report–

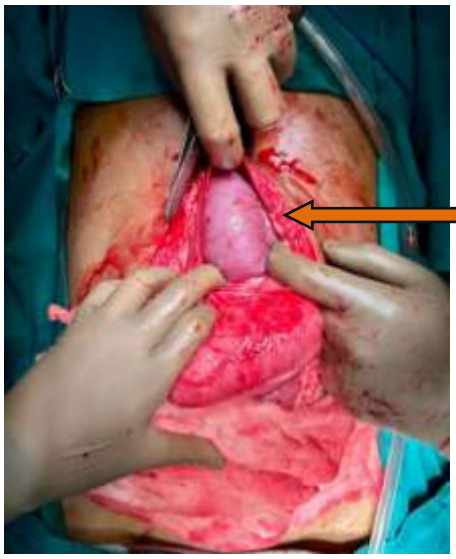
A 20 year old adult male presented withmultiple vomiting episodes, acute pain abdomen and non passage of stool since 1 day along with sudden onset abdominal distention and pain in abdomen since 2 days.On inspection of the patient presented with dehydration features like sunken eyes and dry tongue, the abdomen grossly distended with sluggish IPS.On per rectal examination fecal staining of glove seen, with increased anal tone. On admission an X-ray errect abdomen was done and the patient started on fluid resuscitation and IV antibiotics. X-ray revealed multiple (>3) air fluid levels and fecal impacted caecum and large bowel as shown in Image 1.A CECT abdomen was also done which was suggestive of possible stricture/ surrounding adhesions or possible Internal Herniation as twisting of mesenteryafter abrupt narrowing of ileal loops is seen.CT findings also include Minimal free fluid in pelvis and granulomatous lymphadenopathy. Radiological images and findings attached in images above. After resuscitation the patient was taken in for Emergency Exploratory Laparotomy which on exploration revealed herniation of small bowel loops into the supra colic compartment in the lesser sac through a congenital defect in transverse mesocolon.The bowel loops were milked out from the defect after accessing the loops from within the lesser sac opened superiorly, a short wide band was seen behind transverse mesocolone and ileum, possibly congenital. The vascularity of the band was in question, so vascular clamps applied, and vascular insufficiency

checked in bowel loops, No colour change observed and after confirmation the band was ligated and dissected. The hernial sac defect was wide and could not be closed without tension so the hernial sac was repaired then inverstedand sutured along the walls of defect.Intraoperative images attached of above-mentioned steps and procedure. Mesh was not placed in view of possible infection and possible future adhesions. The free peritoneal fluid found in cavity was sampled and sent for cytology and culture. Lymph node excision also done and the sample sent for biopsy. The cytology revealed Exudate protein level and sugar levels in peritoneal fluid. However the biopsy revealed reactive lymphadenitis with sinus histiocytosis. The post operative period was uneventful and the patient discharged on post op day 7 after observing normal bowel function.

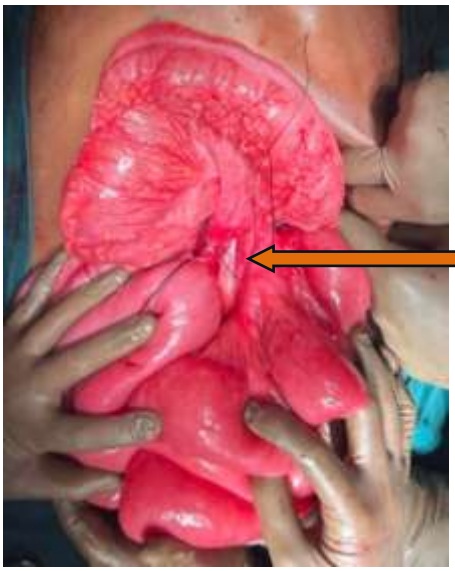
Instrument passing through the Transmesocolic defect caused by congenital band.



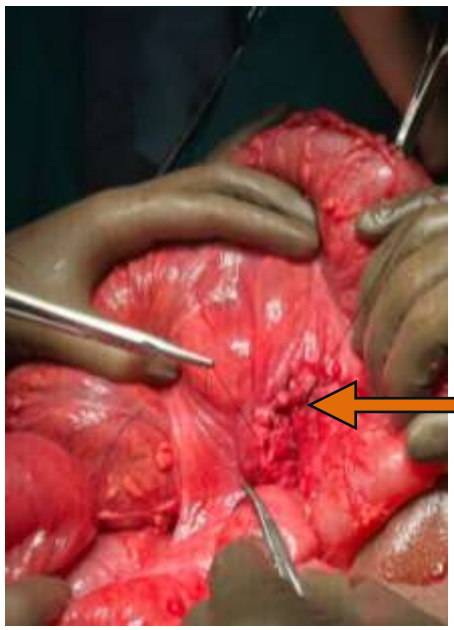
Lesser sac accessed superiorlyinsupra-colic compartment and small bowel loops seen enclosed in hernial sac.



Hernial sac excised opened to exploded herniated small bowel loops which appear mildly discolourated and subsequently were milked out of the defect.



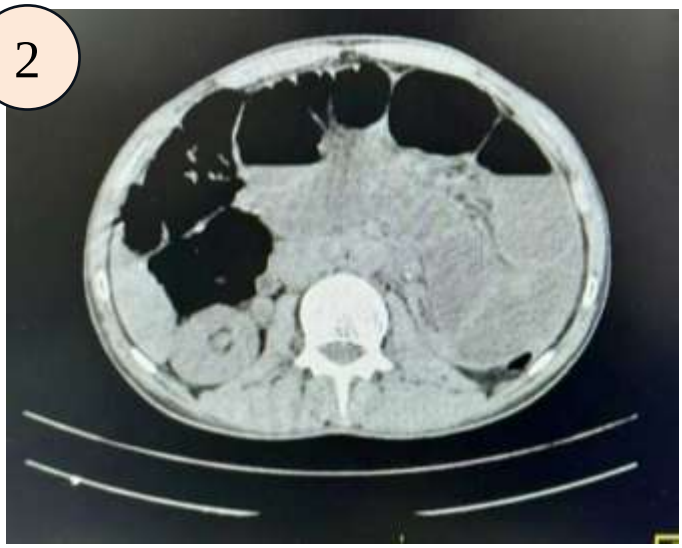
Band ligated before dissection and any discolouration of bowel observed.



Hernial defect repaired and hernial sac inverted and sutured along the walls of the defect.

1.

2



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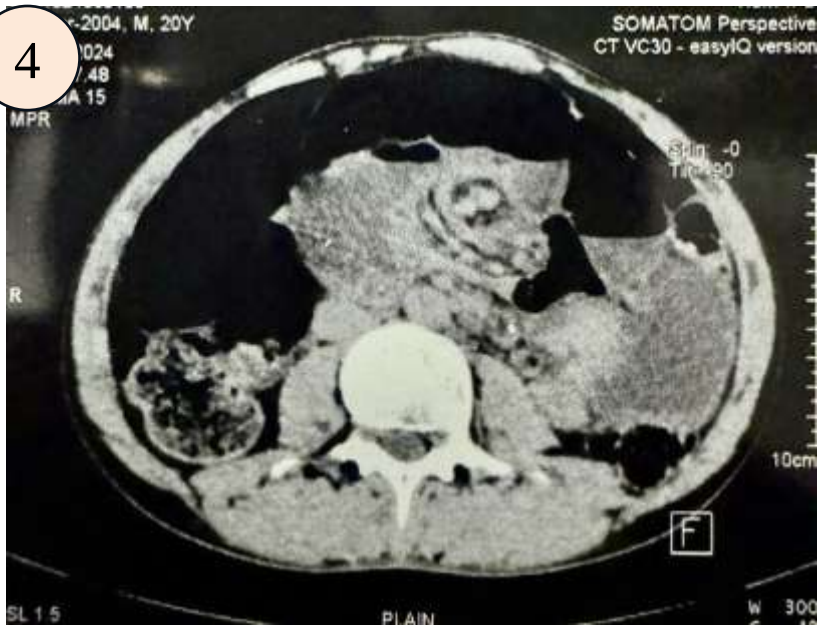

X-ray revealed multiple (>3) air fluid levels and fecal impacted caecum and large bowel as shown in Image 1. A CECT abdomen was also done which revealed dilatation of the mid, distal jejunal loops, proximal and mid ileal loops with abrupt narrowing seen involving the distal ileum (Image 2) (maximum diameter measuring approx 4.6cm of ileum). There is fecal filled dilatation of the caecum, ascending colon along with dilated transverse colon. CT suggestive of possible stricture/ surrounding adhesions with changes of bowel obstructionas seen in Image 2 and mild twisting of mesentery was seen secondary to bowel obstruction possibly due to Internal Hernia (Image 3) . Minimal free fluid in pelvis and granulomatous lymphadenopathy.

Discussion:-

A transmesocolic hernia is difficult to diagnose preoperatively and often requires resection of the affected intestine during surgery. While some patients with internal hernias are asymptomatic, others have non-specific symptoms such as intermittent colicky abdominal pain and vomiting, with or without abdominal distension. As hernia orifices are small, mechanical small bowel obstruction usually occurs in cases with transmesocolic herniation unlike our case where the hernial orifice was a larger sized defect with a short wide band which possibly was the cause of obstruction and also the reason for delayed presentation of our case in adulthood. While studying this case in retrospect this case may have continued without diagnosis if not for the short wide band as the lumen of the defect was large enough to accommodate the bowel and not cause obstruction.(4)

During surgically reported cases reviewed we found a patient with congenital transmesenteric type internal hernia presented with intractable colick epigastric pain by Gomes et al. Furthermore a case oftransmesocolic hernia presented with small intestinal obstruction reported by Frediani et al; Two patients presented with acute small intestinal obstruction due to internal hernia during immediate post operative period following laparoscopic hernia repair was reported by Agresta et al. (4,5,6)

The clinical signs and symptoms of lesser sac hernia are non-specific and include abdominal pain, nausea, vomiting and distension. These rare lesser sac hernias can be lethal. Therefore, immediate diagnosis and surgery is essential. In the literature, only few cases of internal hernias have been documented. (7)

The CECT diagnosis of transmesocolic hernias is even more challenging compared with other subtypes, because of the lack of a confining sac resulting in a more variable appearance.However, the CT findings considered to be specific for these internal hernias include engorgement of the mesenteric vascular structures, right or left displacement of the descending colon and dilation of small bowel loops. However, differentiation of the aforementioned types of internal hernias based on clinical and radiological findings is often impossible.In our case, abdominal CT revealed dilatation of the mid, distal jejune loops, proximal and mid ileal loops with abrupt narrowing seen involving the distal ileum. There wasfecal filled dilatation of the caecum, ascending colon along with dilated transverse colon. Although there are anecdotal reports of transmesocolic hernias of the ascending colonin the PubMed search engine, this entity has not been reported affecting the descending colon. (7,8)

For our case pre operative diagnosis was favouring internal herniation of bowel loops in view of which the patient was managed with exploratory laparotomy, our case presented with a. triangular shaped defect which was large and not possible to suture without tension so alternative approach was opted for so as to close the hernial defect. Mesh was not applied due to risk of infection as there was free fluid, and secondarily the unavailability of immediate access to a biological mesh as this diagnosis was made intraoperatively. Hence in our case the defect was repaired using the inverted hernial sac and sutured it along the edges of defect effectively obliterating the defect. (8)

Conclusions:-

Although internal hernias are uncommon conditions, they must be considered in the differential diagnosis of acute abdominal pain, especially in cases of closed small obstruction or of strangulated bowel loop cases without external hernias or history of previous surgery or trauma. In the acute setting a prompt imaging diagnosis is mandatory in order to avoid intestinal ischemia and necrosis. Radiologists play a key role in detection of internal hernias and it is very important for them to be familiarized with the anatomy, aetiology and CT signs of these hernias to aid an accurate and quickly preoperative diagnosis and improve patient's outcome guiding surgeons to ensure the appropriate management in order to reduce morbidity and mortality rates.Diagnosis of intestinal obstruction in an adult caused by a congenital mesocolic hernia remains difficult preoperatively despite the techniques currently available, so it is important to consider the possibility of a transmesocolic hernia in a patient with ileus. Management of these cases can be assessed intra operatively but the preparation for need for a biological or synthetic mesh, or management using repairing of the defect should be anticipated when exploring a patient with acute intestinal obstruction.

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