

Meckel's Diverticulum

Meckel's Diverticulum

- Most common congenital abnormality of the gastrointestinal tract
- Remnant of the vitelline duct
- antimesenteric border of the ileum
- Often contain heterotopic tissue- gastric, occasionally pancreatic
- Vast majority of Meckel's diverticuli are clinically silent

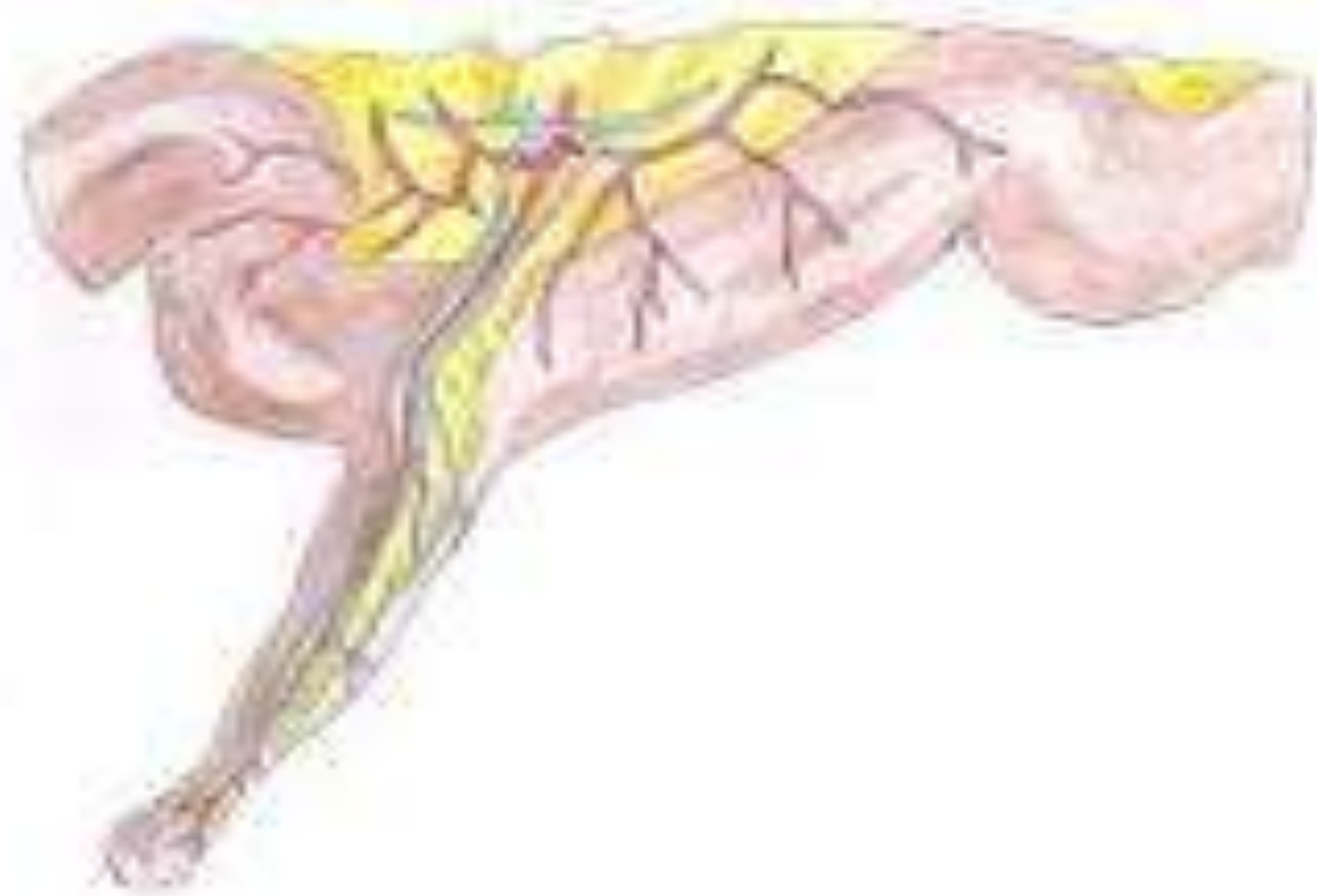


Meckel Diverticulum

- Congenital abnormality of small intestine resulting from persistence of omphallo mesenteric cyst (vitelline duct) .
- It is a true diverticulum (contains all the three layers of bowel wall).

Omphalomesenteric duct anomalies

- Vitelline duct or omphalomesenteric duct anomalies are secondary to the persistence of the embryonic vitelline duct, which normally obliterates by weeks 5–9 of intrauterine life
- Meckel's diverticulum is the most common vitelline duct anomaly



Embryology

During week 3 of gestation, the midgut is open into the yolk sac, which does not grow as rapidly as the rest of the embryo. Subsequently, by week 5, the connection with the yolk sac becomes narrowed and is then termed a yolk stalk, vitelline duct, or omphalomesenteric duct. Normally, the vitelline duct disappears by gestational week 9, just before the midgut returns to the abdomen

Meckel's Diverticulum

Rule of 2's

- 2% of the population have one
- 1/2 of symptomatic lesions usually present before the age of 2 years old, others most commonly in the first 2 decades of life
- Diverticuli in adult patients only become symptomatic in about 2%
- 2 times more common in males than females
- Usually found within 2 feet of the ileocecal valve
- Usually are about 2 inches in length
- 1/2 contain heterotrophic mucosa (usually gastric, occasionally pancreatic)

Clinical Features

Lower GI bleeding due to ulceration by heterotopic gastric mucosa.

Intestinal obstruction due to internal segmental volvulus or intussusception.

Local inflammation with or without perforation resembling appendicitis due to diverticulitis.

Rare presentations: Neoplasms

Lower GI bleeding due to ulceration by heterotrophic gastric mucosa

- 25-50% of symptomatic presentations
- Usually painless
- Episodic
- Hematochezia (usually maroon but may be tarry or bright red)
- Not infrequently massive bleeding- occult bleeding is rare
- Most common cause of small intestinal hemorrhage in patients under 30 y/o
- Meckel's scan is often positive patients

Pathophysiology

- Most complications of these abnormalities are related to ectopic tissue (gastric, pancreatic, colonic, endometriosis, or hepatobiliary) . Ectopic gastric tissue usually causes bleeding from ulceration of the adjacent ileal mucosa. The ileal mucosa is not equipped to buffer the acid produced by the ectopic gastric mucosa and thus is prone to ulceration. ulceration. The site of the ulceration is most often at the junction of the normal ileal mucosa and the ectopic gastric mucosa

Diagnostic studies

- Difficult diagnosis.
- Most accurate test, especially in children, is “Meckel’s scan” - sodium 99-Tc-pertechnetate, taken up by gastric mucosa (sensitivity 85%, specificity 95%, accuracy 90% in pediatric patients).
- Less accurate in adults due to reduced prevalence of ectopic gastric mucosa in the diverticulum causing false negatives. Accuracy improved by giving pentagastrin (increases metabolism of mucus producing cells), glucagon or H2 blockers (reduce peristalsis and secretions that may flush out the radionuclide).

- In negative scan, abdominal CT scan is often helpful in cases of obstruction by showing a site of high grade partial bowel obstruction in the distal ileum.
- If CT is negative barium studies should be performed which may show the diverticulum (do not do prior to Meckel's scan as barium may interfere) .
- If bleeding with a negative scan, angiography may be helpful.

Treatment

- Symptomatic children with omphalomesenteric duct remnants should be resuscitated before intervention. Those with significant haemorrhages should be transfused
- The incision chosen varies with the symptoms and the age of the patient

Surgical treatment

- Children with Meckel's diverticulitis or a bleeding Meckel's diverticulum are operated on by using a transverse appendectomy incision with medial extension if necessary. Patients with suspected intestinal obstruction should be explored through a generous laparotomy incision.

Treatment

If symptomatic, prompt surgical intervention to resect the diverticulum or segment of ileum containing the diverticulum. If bleeding, the source of bleed is often in the segment of ileum adjacent to the diverticulum.

If not symptomatic and found incidentally at surgery in children under 2 y/o, resection is recommended. In asymptomatic adults, resection is controversial since only about 2% of these patient's will become symptomatic and there is about a 2% incidence of short or long term complications (stenosis, adhesions) after prophylactic resection.





Fig. 5. Techniques employed in diverticulectomy. A, Simple diverticulectomy and enterorrhaphy in laparotomy. B, Diverticulectomy with mechanical stapler after evisceration in the intestinal segment that includes the diverticulum. C, Diverticulectomy via endocutter and endostapler in laparoscopic surgery.

THANKS