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Primary Aortoenteric Fistula; Reviewing Surgical Options For Duodenal Repair

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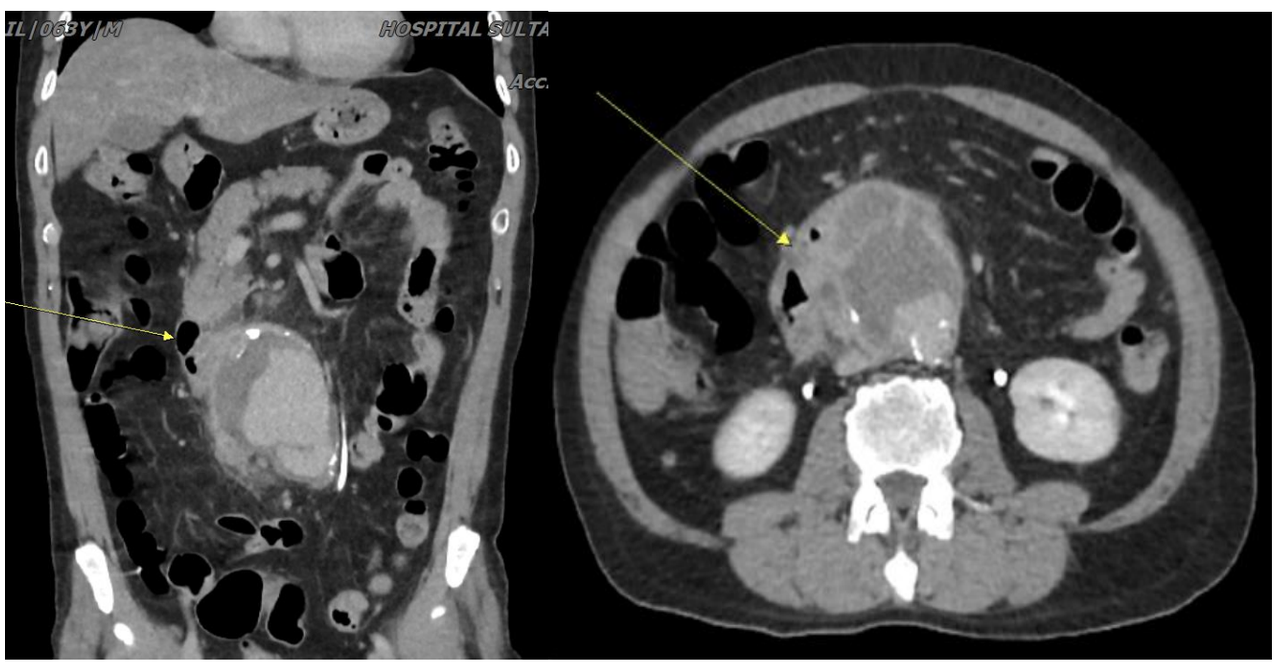
Introduction:

Primary aorto-enteric fistula (PAEF) is a rare, life-threatening condition with an incidence rate of about 0.07% in comparison to the slightly more common secondary AEF with occurrence of 0.36-1.6% (secondary fistulas occur following aortic surgery).(1-3) More than 75% of PAEFs involve the duodenum, mainly the third and fourth parts.(4) Early diagnosis and prompt management is vital however due to the long operation hours for abdominal aortic surgery, the choice for duodenal repair may be suboptimal. Hence, although primary repair of duodenum is the most practiced and deemed adequate, other surgical options should be considered in this case.

Case Report:

We reported a case of a 63year old male presented with classical triad of upper GI bleeding, abdominal pain and a pulsatile abdominal mass. He presented to us with sudden onset of hematemesis with epigastric discomfort and clinically there is a pulsatile abdominal mass palpable. He was in hemorrhagic shock upon arrival at casualty hence urgent esophagogastroduodenoscopy was done where finding was insignificant and we proceeded with Computerized Tomography Angiography (CTA) Abdominal Aorta done as below. Case was referred for vascular expert opinion and emergency laparotomy was done in which aorto-duodenal fistula involving the D4 was confirmed intraoperatively. The aneurysm was repaired using Dacron graft and primary closure of duodenum with omental patch was done. A week later, he underwent another laparotomy for duodenal leak despite successful aortic graft repair. Laparotomy duodenectomy, duodeno-jejunal anastomosis with feeding jejunostomy was performed however intraoperatively there is generalized bile contamination with edematous and thickened small bowel. Despite this, he had to undergone third operation where there is generalized bile and seropurulent collection secondary to leaking jejunostomy and subsequently succumbed to death due to intraabdominal sepsis all the while being managed in intensive care unit.



CTA Abdominal Aorta showing a large abdominal aortic aneurysm from infrarenal artery extending to left common iliac artery which is in close proximity with the third and fourth part of duodenum suspicious of aorto-enteric fistula.

Discussion:

AEFs remains a diagnostic and therapeutic challenge given its rarity. CT scan has up to 85% sensitivity in detecting AEFs and in about two-thirds of cases, exact diagnosis is made intraoperatively and 25% die before any treatment can be offered.(4) It should raise a high degree of suspicion in patients with GI bleeding and underlying abdominal aortic aneurysm and prompt surgical management is necessary.

Principle of surgery for primary AEFs are adequate vascular control, adequate debridement of infected or necrotic tissues, restoration of GI continuity and revascularization. Surgical management of AEFs has now been leaning towards the less invasive endovascular aneurysm repair (EVAR) compared to the traditional open repair due to its reduced short-term morbidity and mortality however it is only possible if there is favourable anatomy for landing an endograft. In addition, EVAR is also proven to be associated with higher risk of recurrent infection and bleeding in long term compared to its counterpart.(4)

While most studies on AEFs often focus on the vascular repair, a 20 years single center study proved that GI complications increase risk of mortality by more than 3 folds post operatively hence failure of bowel repair could be deadly to patients despite successful vascular repair, as in our case, even when diagnosis was made early with emergency surgery.(6)

In many cases, primary repair of duodenum with omental patch is the most practiced and deemed adequate. More complex procedures such as duodenal resection with primary anastomosis and duodenojejunostomy with Roux-en-Y reconstruction may be considered depending on the patient's stability and bowel condition after adequate debridement. Adjunctive surgical procedures like pyloric exclusion and duodenal decompression by duodenostomy or jejunostomy may be considered however there is no evidence to support its benefit given the complexity and rarity of the disease.

No specific type of duodenal repair was proven to be superior than the other and adequate debridement with tension-free repair is considered of utmost importance than the types of bowel repair. However, if complex repair deemed necessary then staged operation should be carried out in as in damage control surgery in unstable patients. Patient could be stabilized first after a long aortic surgery prior to proper repair of duodenum.

Conclusion:

Aorto-enteric fistula is a complicated case to manage. A sound planning must be made as it carries high mortality risk. For our patient, he may have better chance of survival if it was a staged procedure as aortic repair already took long hours of operation and for various factors, adequate debridement and proper duodenal repair may not be achieved in the same setting.

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