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POST WHIPPLE CELIAC ARTERY INSUFFICIENCY- A CASE REPORT

Surgery

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KEYWORDS

Introduction

Pancreatoduodenectomy (PD) has become the standard operation for periampullary cancer and can be done with mortality of less than 5% in high volume centers (1). However the morbidity still hovers around 50% which needs to be minimized. The complications may be pancreas specific or general. The technique of PD involves the division of Gastro duodenal Artery (GDA) and resection of pancreatoduodenal arcade. In patients with celiac artery insufficiency, pancreatoduodenal arcade provides the collateral pathway supplying the celiac territory. Hence when PD is done in patients with celiac insufficiency, leads to major hepatobiliary complications and mortality (2). Current imaging technology provides information regarding celiac artery stenosis. Doppler study and GDA clamping test are mandatory in such circumstances. However the case reported here is unique because neither there was a radiological clue nor was there an intraoperative positive finding after GDA clamp test.

Case report

54 year old male patient presented with progressive jaundice, evaluated and diagnosed as periampullary carcinoma. Cross sectional imaging with pancreatic protocol CT revealed an eminently resectable periampullary growth with no other abnormal findings(fig 1). Patient underwent an uneventful pancreatoduodenectomy. An intra-operative GDA clamping test was an integral part of the operation which was carried out and was deemed as normal. The immediate postoperative period was essentially normal except for a slow recovery. There were no pancreas specific complications. However 5 months postop patient came back with severe inanition, bilateral pitting pedal edema, anasarca and malnutrition. Blood investigation revealed a gross hypoalbuminemia. CECT showed severe steatosis of liver and almost complete atrophy of the spleen, both being manifestations of severe celiac artery insufficiency(fig 2). With nutritional support and other supportive medication he improved.

Discussion

Mortality following pancreatoduodenectomy has reached its nadir in high volume centers (1). However pancreas specific complications continue to haunt the surgical community. Ischemic complications are either missed or poorly understood, which can account for mortality (2). Pancreatoduodenectomy done in the presence of significant celiac artery insufficiency interferes with the collateral blood flow through the pancreatoduodenal arcades leading to ischemic complications like HJ leak, liver abscess, liver failure and death. In our case the celiac artery insufficiency was neither detected preoperatively as there were no radiological signs nor it was detected intra-operatively as the GDA clamping test was negative. The celiac artery insufficiency manifested in a delayed manner which presented with severe fatty liver, severe hypoalbuminemia and complete splenic atrophy

The major cause of celiac artery stenosis in patients undergoing pancreatoduodenectomy can be assessed preoperatively. Atherosclerosis and MALS contribute to celiac artery stenosis. Hemodynamically significant stenosis can be detected by Doppler study. Prominent pancreatoduodenal arcade, dorsal pancreatic artery and the classical hook sign are the radiological clues that one has to look for. When celiac artery stenosis is detected intra-operatively, lysis of the median arcuate ligament should be attempted to relieve the obstruction. When release of the ligament fails to relieve the obstruction, one has the choice of revascularization procedure which may add to the complexity of the procedure. Abandoning the procedure followed by angioplasty and stenting, and doing a pancreatoduodenectomy as a second stage after neoadjuvant chemotherapy has also been reported(3).

Conclusion

Celiac artery insufficiency may be a well tolerated and compensated condition as the pancreatoduodenal arcade provides a good source of collateral supply. However when pancreatoduodenectomy is contemplated in the background of celiac insufficiency, it may end up in potentially life threatening complications. Diligent preoperative imaging and intraoperative maneuvers can avoid such scenario to a great extent.

Fig 1: preoperative CECT: Dilated bile duct (secondary to periampullary carcinoma)with normal liver and spleen

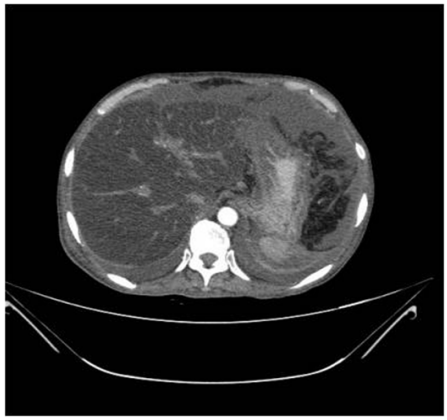

Fig 2: postoperative CT showing severe hepatic steatosis, Ascites and complete atrophy of spleen

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