

“Collaterals a savior” in superior mesenteric artery injury post radical nephrectomy and retroperitoneal lymph node dissection

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ABSTRACT

Superior Mesenteric Artery (SMA) during renal surgery is rarely reported but potentially devastating complication. It can rarely occur in patients with distorted vascular anatomy like in large left renal tumors with vascular infiltration and bulky lymphadenopathy, or in the setting of re-do surgery with extensive scarring. Failure to recognize and repair an SMA injury may result in ischemic bowel and consequently high mortality. Herein, we present a case scenario of injury to the SMA during radical nephrectomy missed intraoperatively and managed conservatively in the post-operative period in view of collateral circulation to the gut.

1. Introduction

Injury to the superior mesenteric artery (SMA) is a rare and possibly an underreported complication during left radical nephrectomy. The consequences of an acute iatrogenic and unrecognized occlusion of the SMA can be disastrous for the patient. An untreated SMA occlusion with acute midgut ischemia is almost universally fatal and invariably need immediate repair in majority of cases.

However in exceptional cases injury to superior mesenteric artery is theoretically viable by extensive visceral collateral circulation.

We report one such case of missed case of accidental SMA ligation with extensive collateral circulation during a left radical nephrectomy and its successful conservative management.

2. Case report

A 14 year old female patient presented with a incidentally detected large left retroperitoneal mass at renal hilum causing compression of ureter with grade 1 hydronephrosis on ultrasonography. The computed tomography (CT) scan revealed a well-defined heterogeneous enhancing interpolar mass about 7 × 6x5 cm bulging into the renal sinus abutting the PCS with no vascular involvement. Multiple enlarged left Para aortic and aorta caval nodes are seen, largest 20 mm in short axis with central cystic changes and encasing the left renal vessels and aorta obscuring the vascular anatomy at the aorta making identification of SMA difficult. An artery appeared to be coursing parallel to the renal vein poster superiorly and entering the renal hilum. This was thought to be the renal artery. Following hiliar control, the renal tumor was mobilized with difficulty from the surrounding tissues in view of desmoplastic reaction. A big retroperitoneal mass (multiple enlarged paraaortic and aortocaval nodes) completely obscuring the vascular anatomy around the aorta was removed making the identification of SMA difficult. Multiple vessels entering the mass were ligated to mobilize it. At this time, vascular surgery consultation was made to look for the integrity of the major vessels from aorta. Surgical gastroenterology consultation was also made to look for the vascularity of the gut. SMA injury was not suspected at this time by the vascular surgeon because there seemed to be good expansile pulsation palpable in the root of the mesentery and the intestine appeared well perfused as attested by the surgical gastroenterologist. The rest of the procedure remained uneventful and the patient was successfully extubated and shifted to postoperative ward. In the postoperative period patient developed prolonged postoperative ileus with hypokalemia with bilious vomiting. The patient was managed as case of postoperative ileus treated conservatively with Ryle’s tube decompression, abdominal girth monitoring and regular tracking of serum electrolytes, serum lactate and...
D-dimer levels. The hemodynamic parameters were stable, and there were no signs of abdominal distension or peritonism with normal serum lactate levels with no signs of vascular compromise. Electrolyte imbalance was corrected. A bedside ultrasound of the abdomen 12 h after surgery reported normal gut vascularity with obscured SMA course with dilated small gut with mucosal edema of the ileum. An urgent CT abdomen/pelvis with angiogram films on post-operative day 1 showed an abrupt cutoff at the origin of the SMA (Fig. 2) likely as a result of ligation of SMA in view of distorted anatomy starting 7.5 mm after its origin for a length of 2.6 cm with retrograde contrast enhancement of the distal artery by pancreatoduodenal arcades. However whole of the gut showed normal contrast enhancement attesting normal gut perfusion (Fig. 3). The patient was discharged on full oral feeds on post-operative day 10. She is on regular follow-up for one month now with no tolerating full orals with no intestinal sequelae. Final histopathology of the lesion is non-clear cell carcinoma and is on tyrosine kinase inhibitor-cabozantinib.

3. Discussion

Iatrogenic injury to the SMA during radical nephrectomy is not well reported in literature and its management protocol has not been well defined. Only four cases of iatrogenic SMA injury during radical nephrectomy have been reported from the NWTS database. These injuries are far more common during surgery for left-sided renal tumors. The presence of hilar adenopathy can add to the difficulty of the surgery increasing the risk of such injuries.

The mesenteric branches of the aorta can be displaced and stretched over the large mass making it difficult to differentiate from a similar sized renal artery during a difficult hilar dissection and when missed during intraprocedural period. The longest duration for which the bowel can safely tolerate SMA occlusion is not well defined. It has been suggested that the bowel can tolerate a 75% decrease in SMA perfusion in the presence of collaterals and a patent inferior mesenteric artery (IMA). In most of the cases of SMA occlusion an immediate revascularization surgery is warranted.

In most cases, an end-to-end anastomosis of the divided ends suffices to restore bowel perfusion Autologous vascular grafts, synthetic grafts, and direct reimplantation to the aorta have also been described as methods to repair the SMA. However no study or case series is available in the literature regarding the expectant management of iatrogenic SMA injury depending on the level of SMA injury. Therefore more studies are needed to risk stratify the patients at risk of gut gangrene from iatrogenic SMA injury during radical nephrectomy and the patients who will be benefitted from revascularization procedure.

4. Conclusion

The clinical appearance of the intestine following SMA injury may not help diagnosis, and hence, a high index of suspicion is necessary for early diagnosis. Most cases may need urgent repair however minority of carefully selected patients can be managed conservatively in the presence of abundant collateral circulation.

Declaration of competing interest

Nil.
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Nil.

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