SHORT REPORT

Splenomesenteric Arterial Bypass in Mesenteric Ischemia as an Alternative Revascularization Technique

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We report a case of a proximal SMA injury during a radical nephrectomy, repaired by an end-to-end anastomosis between the splenic artery and SMA. This technique enabled a quick revascularization with one anastomosis without clamping the aorta. Although further evaluation is needed, we believe that it may be applied as a treatment method in certain cases with mesenteric ischemia, if the celiac artery is free of disease.

Keywords: Mesenteric ischemia; Splenomesenteric bypass; SMA injury.

Introduction

Injury to the superior mesenteric artery (SMA) is an uncommon, however, a devastating entity with high mortality rates. Exsanguination is the major cause of death. Those, who survive are prone to late complications such as sepsis, multiorgan failure and consequences of bowel ischemia.1

The injury requires a prompt intervention to stop the bleeding and to re-establish the mesenteric circulation. Hereby we report a case with SMA injury during a radical nephrectomy, repaired by an end-to-end anastomosis between the splenic artery and SMA. A search of the literature resulted in one report, describing the same technique in a similar setting.2

Case Report

A 68-years-old female presented with a history of left flank pain a year ago. An attempted resection of a left kidney tumor was unsuccessful. Biopsy of the tumor revealed a high-grade renal transitional cell tumor. She was put on chemotherapy, which consisted of cisplatin and gemzoar. A magnetic resonance imaging (MRI), after the chemotherapy, showed that the size of the renal tumor had reduced to $5 \times 4 \times 3$ cm$^3$. However, the fatty plane between the abdominal aorta and the lesion was not detectable for half of the circumference of the tumor and the lesion had invaded through the left psoas muscle.

Surgical exploration revealed a resectable renal tumor, in close contact with the aorta. A left radical nephrectomy was planned. During the dissection between the left kidney and the aorta a massive bleeding occurred. Examination by the vascular surgeons revealed a transected SMA at the origin, no pluses in the mesentery and a grade II splenic injury, which had occurred during the efforts to achieve hemostasis. The distal end of the SMA was prepared and splenectomy was carried out. The splenic artery and the distal end of the SMA were anastomosed end-to-end (Fig. 1).

The patient had an uneventful postoperative period. The DSA, performed on the second postoperative day showed a patent splenomesenteric bypass (Fig. 2). She started enteral feeding on the same day and she did not experience any postprandial abdominal pain. The patient was referred to the oncology department for adjuvant chemotherapy on the 7th postoperative day. The histopathologic examination of the specimen confirmed the previous diagnosis. The patient is being followed on her 2nd month without any morbidity.
Discussion

The incidence of a superior mesenteric artery (SMA) injury is estimated at 0.09%.\(^1\) Optimal repair in this setting include lateral arteriography in simple injuries, vein patches, interpositioning grafts of vein and PTFE and end-to-end anastomosis.\(^1\) This report focuses on a different technique carried out in an iatrogenic SMA injury.

Fullen et al.\(^3\) made a classification of SMA injuries regarding the anatomic site of the injury along the course of the artery. This classification takes the degree of ischemia into account and is correlated with the outcome of the patient. The SMA injury in this patient was in Fullen’s zone I. The spleen had a grade II injury. The pulse at the celiac and the splenic artery was promising so the splenic artery seemed to be a promising inflow site. It is well known that the splenic artery may supply an efficient blood flow in organ vascularization such as in splenorenal bypasses and pancreatic grafts.\(^4,5\) A digital subtraction angiography, which was carried out on the 2nd postoperative day, revealed a patent splenomesenteric artery anastomosis with well vascularized mesenteric circulation in this patient.

This technique enabled a quick revascularization with one anastomosis and a lesser dissection of the aorta in a quicker manner without any need to clamp the aorta. Although further evaluation is needed, we believe that it may be applied as a primary treatment method in certain cases with mesenteric ischemia, if the celiac artery is free of disease.

References


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