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RESEARCH ARTICLE

PERCUTANEOUS ANGIOPLASTY FOR A CASE OF CHRONIC MESENTERIC ISCHEMIA: AN ALTERNATIVE TO SURGICAL REVASCULARISATION

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ABSTRACT

Chronic Mesenteric Ischemia is a manifestation of atherosclerotic disease in the mesenteric blood vessels. It can be treated percutaneously. And the endovascular intervention of mesenteric blood vessels has surpassed surgical revascularisation over the past decade due to its lesser peri operative complication rate. Trans-femoral approach of revascularising is limited by its difficulty in coaxial alignment of the guiding catheter and hence brachial artery and recently the Radial approach have been utilized for mesenteric artery revascularisation for over a decade. We presented a case of abdominal angina which had developed in an elderly 74 years male with an associated severe abdominal aortic disease, finally treated by angioplasty. Both Celiac artery and Superior mesenteric artery are stented with same sized 6 X 24 mm Stents. Percutaneous revascularisation via the left brachial artery for the two major abdominal visceral vessels was high lightened in this case.

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INTRODUCTION

A 74-year-old male ex-smoker with hypertension and diabetes was admitted for postprandial diffuse abdominal pain and anorexia over the past 3 months. There was history of 12 kilograms weight loss over last 6 months. He has been visiting gastroenterologists for the past 3 months. His Upper Gastro-intestinal (UGI) endoscopy and abdominal ultrasonography were unremarkable. The abdominal CT angiography revealed 80-90 % occlusion of proximal Celiac artery (CA) and Total occlusions of superior mesenteric artery (SMA) and the inferior mesenteric artery (IMA). Surgical consultation was advised to the patient, which he and the patient relatives refused due to age factor. He was advised to undergo Aortic endovascular graft in lower abdominal aorta with chiminy trunks to mesenteric and renal vessels. Due to financial constraints he was finally subjected for mesenteric revascularisation.

Treatment done in hospital: Interventional procedure

Our primary objective was to treat Celiac artery stenosis and open up the totally occluded Superior Mesenteric Artery.

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Directly the procedure was planned and we took a left brachial artery access after giving local anaesthetic. An 7F JR guide (Cordis®, USA) was used to hook the CA from above (Figure 1) and we tried to wire across the lesion with Coronary wire SION BLUE (Asahi®, Japan) successfully. (Figure 2) Next the Stent INVATEC HIPPOCAMPUS RX 7.0 mm x 24 mm (Medtronic®, USA) was placed just from the ostium of CA and stented to attain a good flow into celiac artery. (Figure 3) Next objective was to focus our efforts to treat the chronic total occlusion of the SMA keeping in mind that at least two of the main abdominal visceral vessels must be revascularised completely to make the patient symptom free. After Hooking the guide catheter near the ostium of SMA, a CTO (Chronic total occlusion) Coronary Wire Gaia 2 (Asahi®, Japan) was used to cross the lesion successfully. (Figure 4) Then Firstly, a 1.25 mm x 8 mm Tazuna ® rapid exchange coronary balloon catheter was used to cross the lesion and dilated. Then a 3 mm x 15 mm NC coronary balloon (NC TREK balloon) (Abbott vascular®, USA) was used for balloon dilatation of the Osteoproximal SMA lesion. Finally a 7.0mm x 24 mm INVATEC HIPPOCAMPUS RX stent was chosen and placed across the osteal SMA (Figure 5). The patient was maintained on dual anti platelet drugs and anti coagulation during and after the procedure. At the time of discharge his abdominal angina

symptoms had improved and in the follow-up period of 3 weeks post procedure, the patient had no complaints and has a good quality of life.

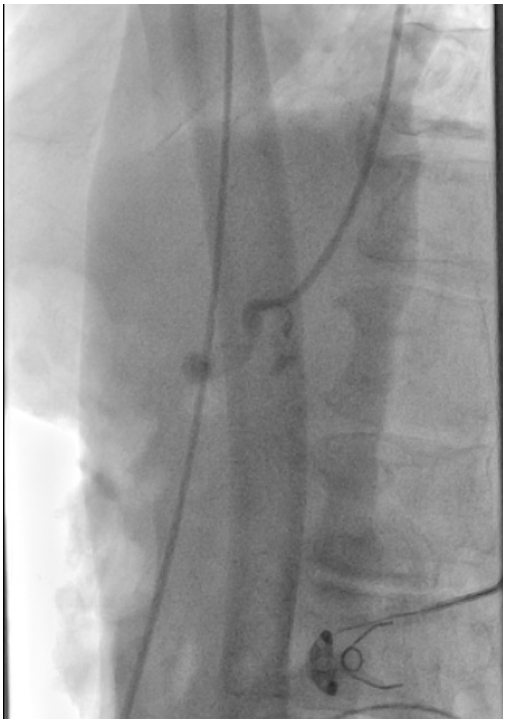

Figure 1. Image depicting Hooking of the Celiac artery with a 7 F Judkins Right Catheter. Note the stenosis at the proximal part with under filling of vessel distally

Figure 2. Image depicting the crossing of lesion in celiac artery with a coronary wire

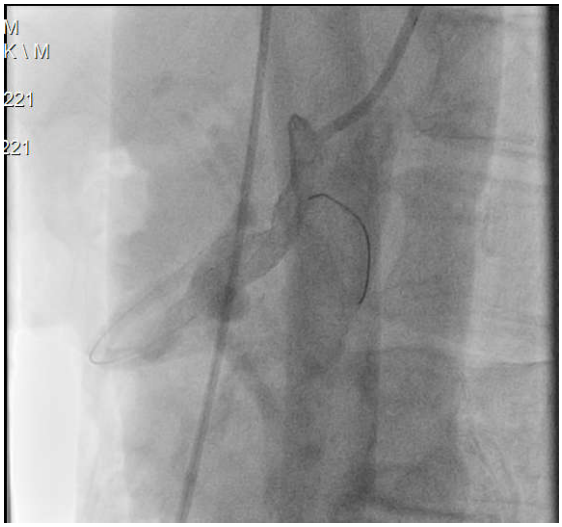

Figure 3. Image depicting a Stent INVATEC HIPPOCAMPUS RX 7.0 mm x 24 mm (Medtronic®, USA) placed from ostium of celiac artery. Note the brisk Post stent flow into the Celiac artery

Figure 4. Image showing the Crossing of SMA CTO with a coronary wire Gaia 2 (Asahi®, Japan)

DISCUSSION

Chronic Mesenteric Ischemia (CMI) is a rare disease defined as intestinal ischemia caused by stenosis or occlusion of one or more of the following three intestinal arteries: the celiac artery, the Superior mesenteric Artery, and the Inferior mesenteric artery. It is also called as intestinal angina, and refers to episodic or constant hypoperfusion of the small intestine. It can present as postprandial abdominal pain associated with significant weight loss, food fear, nausea or vomiting. Surgical revascularization continued to be the gold standard for the treatment of CMI but endovascular intervention has been gaining popularity because of lesser complication rate (Oderich *et al*., 2009; Mateo *et al*., 1999) and a higher procedural success rate (up to 96%) and a comparable short-term patency rate (Silva *et al*., 2006; Fioole *et al*., 2010)

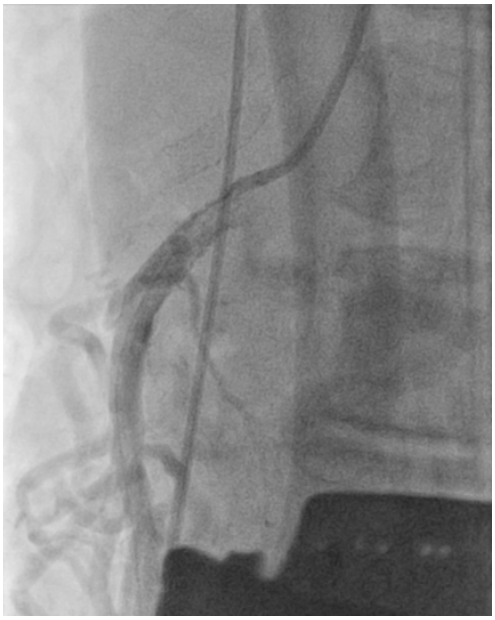

Figure 5. A Stent 7.0mm x 24 mm INVATEC HIPPOCAMPUS RX was placed across the Osteoproximal SMA. Note the Celiac artery stent body above SMA stent and the brisk flow across SMA after dye injection

Individuals with CMI commonly have stenosis or occlusions of at least two or more mesenteric arteries (celiac artery, superior mesenteric artery, inferior mesenteric artery), and complete revascularization is the standard treatment. But relieving the symptoms of abdominal pain requires revascularization of at least two of the three major abdominal blood vessels (Schermerhorn *et al*., 2009). If residual stenosis is more than 50% of the expected arterial lumen after balloon angioplasty, then it is advisable to stent (Aksu *et al*., 2009; Ahanchi *et al*., 2013). The trans-femoral approach of revascularising the mesenteric vessels is limited by difficulty in coaxial alignment of the guiding catheter, which in turn leads to insufficient back-up support and aborting the procedure. The brachial artery and recently the radial approach have been utilized for mesenteric artery revascularisation for over a decade (Cohn *et al*., 1999; Soga *et al*., 2008). In the present case, first the stenotic Celiac artery (CA) was stented followed by successful opening and stenting of the superior mesenteric artery SMA CTO lesion. Inferior mesenteric artery revascularisation was not attempted because the IMA was nearer to more ulcerated part of atherosclerotic infra Abdominal aorta. The whole procedure was completed within 2 hours and successfully. The next important point to be noted in the above case was the site of approach for stenting the abdominal vessels. In endovascular interventions for mesenteric vessels, the trans-femoral approach is limited mainly by the difficulty in coaxial alignment of the guiding catheter. The guide catheter and other hardware cannot take up and cross across the acute angulations bend formed by these arteries. Therefore, approaches involving via the upper limb may be appropriate because these vessels run anterior and vertically along the abdominal aorta.

Conclusion

Abdominal angina caused due to chronic mesenteric ischemia can be treated by percutaneous angioplasty with very high success rates. And this case is a very good example of endovascular revascularisation done via the brachial artery approach to facilitate the 7F sheath and complete the procedure. We should never hesitate to adopt a trans-radial or trans-brachial approach for the stenting of the abdominal vessels which have an acute angle of origin from the aorta. This case also showed that the Endovascular therapy for two of the three major abdominal vessels is sufficient to relieve symptoms in a critically ill patient.

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Conflict of Interest

All the authors have read the manuscript thoroughly and accepted the final draft. There is no conflict of interest among the authors mentioned above.

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