

Duplex confirmed equivalent durability of open and endovascular intervention for the treatment of chronic mesenteric ischemia

Purpose: Percutaneous angioplasty / stenting (PAS) continues to evolve as a primary and secondary intervention in the treatment of visceral artery atherosclerotic occlusive disease. We analyzed mid-term results in a group of patients with chronic mesenteric ischemia (CMI) followed by duplex surveillance after surgical or endovascular interventions for de novo and recurrent mesenteric artery stenosis.

Methods: Over an 11-year period, 55 patients (31 women and 24 men, mean age 62 yrs) experiencing weight-loss and post-prandial abdominal pain were treated for CMI. Surgical reconstruction (SR) was undertaken in 29 patients (47 vessels treated) and PAS was used in 26 (33 vessels treated). Evaluation of group demographics, visceral artery revascularization details, procedural outcomes, need for secondary intervention, and patency rates were performed.

Results: Combined celiac artery (CA) and superior mesenteric artery (SMA) SR was completed by bypass (n=11), bypass and endarterectomy (n=5), or endarterectomy (n= 2), while 11 had single vessel bypass alone. PAS was performed in 23 single visceral vessels (SMA, n=17; CA, n= 5; IMA, n=1) and two-vessels in 5 (SMA/CA, n=4; SMA/IMA, n=1) patients. Mean length of stay and ICU days were longer for the SR group 22 and 8 days as compared to PAS group 4 and 1 days ($p < 0.01$), respectively. Development of a systemic inflammatory response syndrome (SIRS) in the immediate postprocedural period occurred in 12 (41%) SR and 2 (8%) PAS patients ($p < .01$). Thirty-day outcomes between the SR and PAS treatment groups were similar with regards to mortality (10% vs. 12%) and wound or cardiopulmonary events (46% vs. 40%). During a mean follow-up interval of 36 months, no patient developed intestinal infarction, and survival (life-table estimate) at 3-years was 83% in SR patients and 73% in PAS patients. PAS visceral artery primary patency (defined as # vessels with $< 75\%$ restenosis / # vessels treated) as assessed by visceral duplex / arteriography was less than SR primary patency at 3-years (54% vs. 81%; log rank, $p=0.03$). Based on duplex surveillance, endovascular intervention for recurrent asymptomatic (n=8) or symptomatic (n=7) visceral artery/graft stenosis was needed in 11 (42%) PAS and 4 (14%) SR patients ($p < .03$). Assisted primary patency rates improved to 95% and 92% at 3-years for PAS and SR survivors, respectively, with endovascular re-interventions.

Conclusion: Endovascular treatment was as effective as open surgical revascularization in patients presenting with symptomatic CMI and may be better suited for high medical risk patients or patients with recurrent stenoses. Duplex surveillance was an essential component of postoperative care as one-quarter of patients required re-intervention for repair-site restenosis and this approach resulted in similar assisted patency rates following SR or PAS procedures and avoidance of late death by mesenteric infarction.