

Case Report

COMMON ILIAC ARTERY TO RENAL ARTERY BYPASS USING A SAPHENOUS VEIN GRAFT –AN ALTERNATIVE TO AUTO TRANSPLANTATION

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ABSTRACT

Management options for patients with renal artery stenosis resulting in renovascular hypertension (RVH) include medical management, endovascular treatment and surgical revascularization. Medical management of hypertension is the preferred initial treatment in these patients. Early interventional therapy (angioplasty/surgery) is indicated when contra lateral kidney is involved with some parenchymal disease. Surgical intervention is required in patients with failed medical management and endovascular procedures. We report a case of right renal artery stenosis with aortic aneurysm in a young man where revascularization was done by common iliac artery (CIA) to renal artery (RA) bypass with saphenous vein graft (SVG).

Keywords: Ileo Renal Bypass, Saphenous Vein Graft, Renovascular Hypertension (RVH), Renal Artery Stenosis

INTRODUCTION

Stenosis or occlusion within the renal vasculature promotes hypertension via the rennin angiotensin aldosterone pathway, resulting in renal insufficiency. The advent of ACE inhibitors and angiotensin receptor blockers had improved the management of RVH. Minimally invasive techniques and stenting have provided alternatives to surgical bypass in many patients. Despite advances in pharmacotherapy and degrees of invasiveness, surgical revascularization is indicated when RVH is resistant to drug therapy and endovascular therapy fails or not possible. Endovascular therapy and aorto renal bypass procedures are usually not possible in severe atherosclerosis of the aorta or aneurysm of the aorta. So in these cases, these extra aortic procedures can effectively restore the renal blood flow and these are less hazardous than aortic replacement and concomitant renal revascularization (Libertino *et al.*, 1980). CIA to RA bypass is another simple alternative to auto transplantation of kidney in these patients. The conduit can be saphenous vein or a synthetic prosthesis. Usually CIA to RA bypass can be done between renal artery and ipsilateral common iliac artery (see Figure). The contra lateral iliac artery is an option if ipsilateral disease is present.

CASES

Thirty seven year old male patient presented with breathlessness and cough with expectoration. He was a known hypertensive for the past 5yrs on four anti hypertensive drugs. He was from a rural area where he was not investigated for the etiology of hypertension and referred to our centre for further management. His blood pressure was 180/110 mmhg, serum creatinine was 2.3mg/dl. The ultrasound of the abdomen was suggestive of contracted left kidney with grade2 echoing pattern of right kidney. Doppler study of the aorta and renal arteries revealed thrombotic aneurysm of supra renal and infra renal aorta with distorted ostium of right renal artery. So, a diagnosis of renal artery stenosis with renovascular hypertension (RVH) was made and the patient was further investigated with MR angiogram. MR angiogram revealed chronic partially thrombosed saccular aneurysm of aorta with stenosed ostium of right renal artery at its origin. Because of the unfavorable morphology of aorta percutaneous trans luminal angioplasty (PTA) was not attempted. The patient was taken up for the CIA to RA bypass with SVG as both color Doppler study and MR angiogram were showing good blood flow in right common iliac artery. He was advised regular follow up with ultrasound abdomen for every 6months to detect any expansion of aortic aneurysm. A

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midline abdominal incision was given. Colon mobilized from hepatic flexure to iliac vessels. A saphenous vein graft of 15cm length was harvested. The foot end of the SVG was anastomosed to right common iliac artery in end to side technique with 7-0 prolene using vascular clamps in standard fashion. Right renal artery ligated at its proximal part and transected. Groin end of the SVG anastomosed to renal artery in an end to end fashion using similar vascular anastomosis techniques (see Figure). The anastomosis time was 9 minutes and Kidney perfusion was good after releasing vascular clamps. The patient was discharged on the 10th postoperative day. The patient is being followed up for the last 1year, his renal parameters are stable with serum creatinine 1.1mg/dl and blood pressure was 120/90mmhg with single antihypertensive drugs. In the angiogram obtained 1year after surgery right kidney was well vascularized with a patent right CIA to RA bypass graft.

DISCUSSION

Surgical revascularization is indicated in cases of failed PTA or where endoluminal therapy not possible (Libertino and Selman, 1982). The surgical options to revascularize the right kidney include aorto renal bypass, hepatorenal bypass and ileo renal bypass (Chibaro *et al.*, 1984). We have done CIA to RA bypass in this case because aneurysm of aorta made it as an unsafe vessel for both PTA and aorto renal bypass. The hepato renal bypass was also an alternative in this case (Libertino *et al.*, 1976). But this requires knowledge of anatomical variations of hepatic circulation and surgeons experienced in dissection at portahepatis. So, we had preferred CIA to RA bypass as a substitute for auto transplantation as it is technically straightforward, allowing for a shorter cold and warm ischemic time. The amount of blood flow achieved by auto transplantation can be assured the right kidney in the CIA to RA bypass without transecting the renal vein or mobilizing the kidney. Surgery and exposure of vessels for the CIA to RA bypass is not different from regular kidney transplantation. SVG has an advantage that it is readily available; intima is less thrombogenic than prosthetic material and closely approximates the size of the renal artery. The drawbacks of this surgery are during the long term aortic disease may progress to common iliac vessel and may produce chronic ischemia of kidney or SVG in the renal position may be subjected to both diffuse and aneurysmatic dilatation (Robicsek and Vajtai, 1984) and there is a risk of rupture of thrombotic aortic aneurysm. So, these patients need close follow up with serum creatinine and color doppler study for every 6months and MR angiogram annually to detect any changes in graft patency or blood flow.

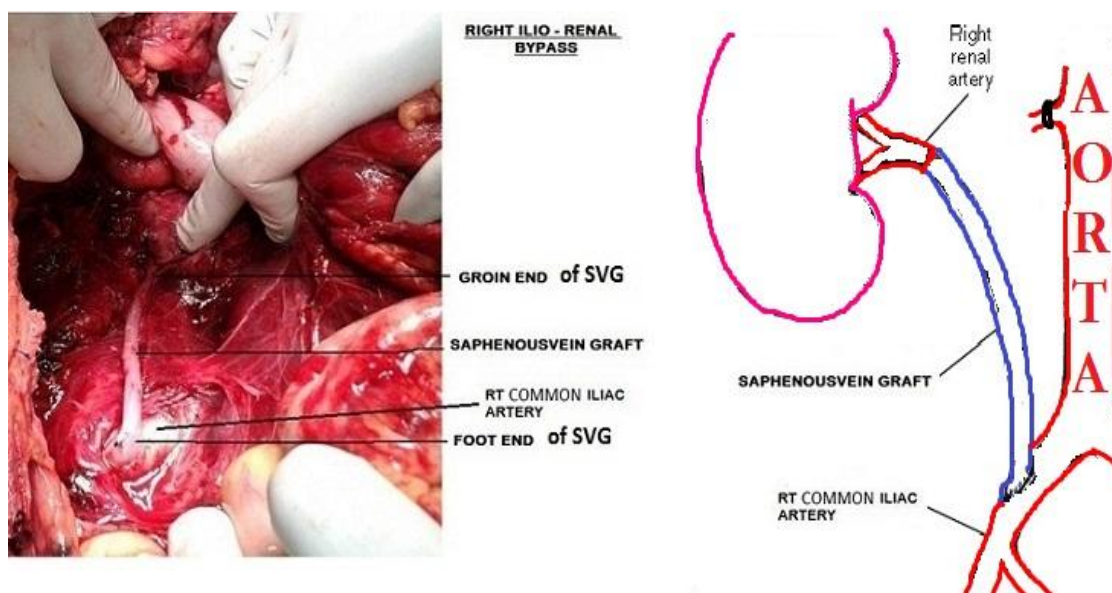


Figure1: Ileo Renal Bypass Using a Saphenous Vein Graft between Right Renal Artery and Right Common Iliac Artery

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Conclusion

CIA to RA bypass using SVB can be done as an alternative to auto transplantation in selected cases where other bypass procedures are not possible. CIA to RA bypass can be safely done by any urologist who had expertise in vascular skills and doing kidney transplantation. Selection of the bypass procedure depends on the clinical situation and the expertise of the surgeon.

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