A Novel Surgical Approach to Calcified External Iliac Artery in Renal Transplants

Daanish Sheikh[1], Shri Timbalia, MD[2], Mahnoor Zia, MD[3], Yusuf Mufti[1], Maham Rahimi, MD, PhD, RPVI[2]. [1]UTHSCSA Long School of Medicine, San Antonio, Texas, USA; [2]Department of Cardiovascular Surgery, Houston Methodist Hospital, Houston, Texas, USA; [3]Department of Surgery, Houston Methodist Hospital, Houston, Texas, USA.

Objectives: Severe atherosclerosis poses a significant challenge in clamping calcified arteries during renal transplant. This case report describes a novel method by which a renal anastomosis site was constructed without clamping in a patient with heavily calcified arteries.

Methods: We describe a 54 year old male presenting with Type II Diabetes Mellitus, ischemic myopathy, pulmonary hypertension, and end-stage renal disease who had been admitted for heart failure and listed for a dual cardiac-renal transplant. Cardiac transplant was conducted without complications the day prior, but the iliac arteries were found to be extensively calcified during the renal transplant stage. Vascular surgery was consulted intraoperatively. Proximal endovascular control of the left external iliac was established by contralateral access of the common femoral artery and balloon control of the ipsilateral distal common iliac artery and proximal external iliac artery. Distal control was then obtained by passing a Fogarty catheter distally through an arteriotomy made in a 1.5 cm non-calcified region of the external iliac artery. Inflation of the balloons occluded flow, achieving a similar effect to that of clamping. A cadaveric conduit was then guided to the site of the arteriotomy by threading over the distal control Fogarty catheter. Anastomosis was performed and the renal artery was anastomosed to the conduit (**Figure 1**).

Results: Intraoperative signs of perfusion following renal anastomosis were evident and left extremity pulses were found palpable postoperatively. Doppler imaging 13 days post-transplant indicated sufficient renal perfusion and the patient was discharged in a stable condition.

Conclusions: Extensive atherosclerosis presents a challenge to renal transplant due to risk for clamp injury. We present a novel one-stage method by which intravascular occlusion was used to control the external iliac artery in a patient with heavily calcified arteries. This approach reduces surgical complexity and reduces ischemia time when compared to previously described methods of iliac artery reconstruction.

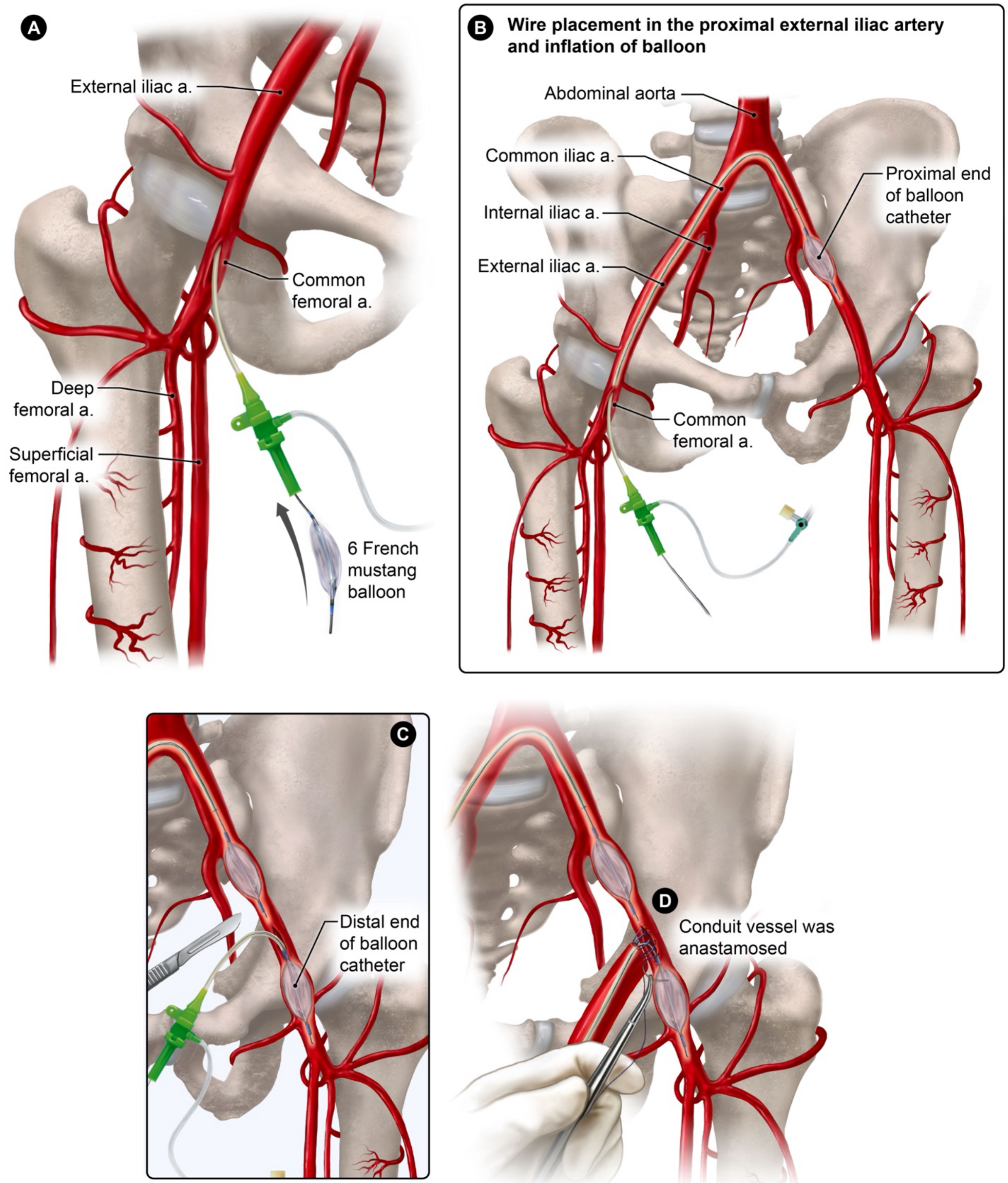

Figure 1: Proximal control was of the left external iliac was obtained by insertion of a balloon catheter through the right common femoral artery **(A)**, passed "up and over" the abdominal aorta to the proximal left external iliac artery **(B)**. An arteriotomy was made in the left external iliac artery to pass through which a second balloon catheter was passed to establish distal

control **(C)**. The conduit vessel was guided to the incision site using the distal balloon catheter wire and anastomosed **(D)**.