

Common Iliac Artery Thrombosis after Pelvic Surgery Leading to Allogeneic Kidney Transplant Failure with Percutaneous Angioplasty Balloon Dilatable Stent

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Citation: Lawrence G (2023) Common Iliac Artery Thrombosis after Pelvic Surgery Leading to Allogeneic Kidney Transplant Failure with Percutaneous Angioplasty Balloon Dilatable Stent. *J Uni Sur*, Vol. 11 No. 3: 96.

Abstract

A 66-year-old woman with end-stage renal disease in the setting of type 2 diabetes, hypertension, nephrolithiasis, and renal artery stenosis received a kidney transplant from a 7 year unrelated living donor before. She also had a history of chronic obstructive pulmonary disease, coronary artery disease, heart failure with preserved left ventricular ejection fraction, and atrial fibrillation (administration of rivaroxaban, an orally active factor Xa inhibitor oral for which she underwent ablation and atrio ventricular node placement a permanent pacemaker. She has excessive uterine bleeding. Test results showed a mass in the pelvis and uterus filled with fluid. She underwent elective hysteroscopy with dilation and curettage, which revealed a pyometra. The surgical process was complicated by bleeding and perforation of the uterus, requiring a total hysterectomy in the abdomen and bilateral salpingo-oophorectomy. She lost 300 mL of blood and received 3.2 liters of crystalloids during surgery. No intraoperative hypotension was noted. Pulse was also palpable in both lower extremities before and after surgery. The patient had anuria in the immediate postoperative period and furosemide (40 mg) was administered intravenously with no response. The patient was intubated because of acute respiratory failure and persistent anuria.

Keywords: Iliac Artery; Thrombosis; Pelvic Surgery; Kidney Transplant Failure

Received: 1-Mar-2023, Manuscript No. IPJUS-23-13569; **Editor assigned:** 2-Mar-2023, Pre-QC No. IPJUS-23-13569 (PQ); **Reviewed:** 16-Mar-2023, QC No. IPJUS-23-13569; **Revised:** 23-Mar-2023, Manuscript No. IPJUS-23-13569 (R); **Published:** 30-Mar-2023, DOI: 10.36648/2254-6758.23.11.03.96

Introduction

Urology was initially consulted and the patient underwent cystoscopy with retrograde uroliothography, which showed normal iodinated contrast and diameter of the ureter and collective endothelial system of the kidney graft. Nephrology was consulted approximately 4 hours after the onset of anuria and recommended bilateral ultrasonography of the renal graft to assess renal vasculature. The study demonstrated flow reversal in multiple renal artery branches during diastole, which is suspicious for arterial or venous occlusion. Notably, the patient was taking tacrolimus and vancomycin, and both serum trough concentrations were therapeutic. The patient was given systemic anticoagulation. The vascular department was consulted immediately and emergency renal and pelvic angiography

was performed within 6 hours of the onset of anuria. Pelvic angiography revealed a thrombus with 99% obstruction of the proximal right common iliac artery. The length of the arterial segment involved is 50 mm [1, 2].

The anastomosis from the kidney graft to the right common iliac artery is clear and pathological. There was no evidence of injury or disruption of the iliac vein to account for anuria. We performed the operation through the retrograde right common femoral artery in the intravascular position. The lesion to blame lies at the origin of the right common iliac artery, 50 mm long. The lesion was crossed intraluminally with a 0.035" Terumo conductor. A 5 × 40 mm Admiral Xtreme balloon (Medtronic, Inc.) was passed through the lead to the lesion and pre-expanded by two inflations to a maximum pressure of 14 atmos. A 7 × 59 mm iCast coated stent (Atrium Medical Corporation, Hudson, NH), a balloon dilatable

stainless steel stent, was then deployed in the right common iliac artery. To control the prolapse of the clamp thrombus (thrombus between the vessel wall and the stent sheath) from the edge of the stent to the intravascular area and to completely cover the margin of the culprit lesion, we implemented the second 7 × iCast stent. 22 was more than mm. Both stents were posteriorly dilated with an 8 × 40 mm Dorado PTA balloon (Bard Peripheral Vascular, Inc., Tempe, AZ) to minimize stent restenosis and stent thrombosis. No residual stenosis and a pressure differential reduced to zero with normal flow was noted through the iliac artery and renal transplant artery. We used a total of 80 mL of Iohexol (Omnipaque, GE Healthcare) because carbon dioxide was not available for angiography during the procedure [3, 4].

Discussion

Late renal failure after pelvic surgery is extremely rare. To our knowledge, this is the first case to report successful rescue of an allogeneic kidney after pelvic surgery by endovascular intervention. A similar case was reported in 1990, although the kidney transplant was completely thrombosed and infarcted. Several cases of iliac artery injury have been reported following pelvic surgery. Causes of vascular complications can be classified as thrombosis and embolism and other causes (external or internal compression or trauma). Thrombosis can occur as a complication of surgical manipulation of vital structures. In our case, arterial Doppler CT of the grafted renal artery showed “diastolic flow reversal”, which could be the result of arterial occlusion or venous obstruction/occlusion similar to limb sputum. Angiography showed near complete occlusion of the right common iliac artery with obvious thrombosis but with an allograft renal anastomosis. Therefore, this late acute graft failure is thought to be due to decreased perfusion pressure of the allogeneic kidney secondary to acute arterial flow obstruction. Timely intervention within 6 hours of initial anuria successfully saved the kidney transplant [5, 6].

Balloon Enlargement versus Balloon Enlargement Trial (COBEST), a multicenter, randomized, controlled trial involving the iliac arteries in patients with severe aortic occlusion, showed that coated stents had a significantly lower initial clearance, better for the Trans Atlantic Consensus Consensus (TASC) of lesions C and D than uncoated stents. Among the balloon dilatable grafts, the

iCast stent is approved in the United States for aortic occlusion or stenosis. In our case, the patient underwent balloon angioplasty with iCast stent on the right common iliac artery. The patient remained symptom-free 8 months after surgery, with excellent transplant kidney function [7, 8].

Conclusion

Our objective was to evaluate the clinical feasibility and efficacy of unprotected left primary Percutaneous Coronary Intervention (ULM) in patients over 75 years of age over a period of 6 years and at follow-up. A 2-year follow-up demonstrates that PCI is a viable revascularization strategy even in the absence of local cardiovascular support. However, the future of these high-risk patients remains hampered by reasonable in-hospital mortality. Older patients had a higher mortality at follow-up (10.0 vs 0.8%, $P = 0.014$), while younger patients had a lower mortality after the acute phase, 7 vs. 8.4%, $P = 0.15$). The incidence of Unprotected Left Coronary Artery Disease (ULM) during diagnostic coronary angiography varies from 4 to 7% [1] and increases with age. Even recent recommendations consider Coronary Artery Bypass Grafting (CABG) as the preferred revascularization strategy for ULM, especially when distal bifurcation is involved and when distal bifurcation is involved have disseminated multivessel coronary artery disease. However, the clinical profile and especially age can significantly increase the risk of surgery and thus, despite the encouraging results obtained in elective patients with arterial disease Coronary ULM treated with Percutaneous Coronary Intervention (PCI) and Drug-Eluting Stents (DES), the outcome in the elderly with ULM (often excluded by randomized trials) is unclear. In this study, we specifically evaluated the feasibility and effectiveness of percutaneous ULM treatment of coronary artery disease in the elderly (over 75 years of age) in a group of patients referred to a medical center. There is no in situ cardiothoracic surgical management competition for acute Coronary Insufficiency Syndrome (SCA) [9, 10].

Acknowledgement

None

Conflict of Interest

None

References

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