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Case Report

Bifurcation aortic stent graft placement in a patient with abdominal aortic aneurysm and single kidney with renal artery stenosis

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ARTICLE INFO

Article history:

Received 31 October 2014

Accepted 10 March 2015

Available online 16 April 2015

Keywords:

Abdominal aortic aneurysm

Stent graft

Renal artery stenosis in a single

kidney

EVAR

ABSTRACT

Abdominal aortic aneurysm (AAA) is the most common true arterial aneurysm with an estimated prevalence of 4–9%. Bilateral renal artery stenosis, or stenosis to a solitary functioning kidney, merits specific consideration because of its additional contribution to fluid retention, loss of kidney function, and congestive heart failure. Abdominal aortic aneurysms are managed according to their diameter and the presence or absence of symptoms. Endovascular aneurysm repair (EVAR) is associated with a lower risk of perioperative morbidity compared with open repair for asymptomatic, symptomatic, and ruptured AAA. We report here a case of symptomatic infrarenal abdominal aortic aneurysm with a single kidney, with stenosis of the renal artery supplying the solitary kidney managed by us with renal artery stenting and endovascular repair of the abdominal aortic aneurysm.

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1. Introduction

Renal artery stenosis (RAS) is not uncommon among patients with abdominal aortic aneurysm (AAA), and has been identified in 20–38% of patients with aortic disease studied with arteriography.^{1–3}

Because treatment of RAS can be performed in combination with open or endovascular repair of AAA without the need for additional exposure and/or access, the question of whether RAS should be repaired simultaneously is frequently encountered. Combined repair is considered a standard approach when symptomatic RAS (manifested by severe hypertension and/or ischemic nephropathy) and AAA

warranting intervention coexist, but optimal management is less clearly defined when subcritical or asymptomatic RAS is discovered incidentally during the planning of AAA repair.

The decision to undertake combined repair, therefore, must be individualized based on anatomy, operative risk, clinician experience, and potential patient benefit expected from the added intervention.

2. Case report

A 55 year old male diabetic, hypertensive, smoker with previous history of coronary artery disease and inferior wall

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E-mail address: rgadepalli@gmail.com (G. Ramesh).<http://dx.doi.org/10.1016/j.jicc.2015.03.023>

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myocardial infarction 3 years back was admitted with repeated episodes of abdominal discomfort of two months duration. Patient had underwent nephrectomy of right kidney one year back for recurrent pyelonephritis. He had elevation of renal parameters (creatinine-2.2 mg/dl), his echocardiogram showed moderate left ventricular dysfunction (LVEF-41%) with no MR.

The patient underwent a CECT abdomen (Fig. 1) which revealed a fusiform abdominal aortic aneurysm noted in infrarenal aorta measuring 7.6 cm (cranio-caudal)/5.7 cm (transverse)/5.3 cm (AP) with intraluminal thrombus extending in to aortic bifurcation. An aortogram (Figs. 2 and 3) revealed a 90% stenosis of the left renal artery supplying the solitary left kidney in addition to the infrarenal abdominal aortic aneurysm.

The distance between the renal artery and the origin of the aortic aneurysm (aortic neck length) was adequate for deployment of a stent graft and since the aneurysm was extending in to the aortic bifurcation, deployment of a AAA bifurcation stent graft was planned. Considering the patients general condition and his renal derangement initially the left renal artery was stented since the derangement of renal parameters were thought to be of ischemic in origin. The renal artery was stented with a palmaz blue (cordis corp.) 6*18 mm stent deployed at 10 atm for 20 s.

The aortic stent graft deployment was done in the next sitting under general anesthesia with a bilateral femoral arteriotomy done for the bifurcation stent graft deployment. Initially, an Endurant (Medtronic Inc) 25*139 cm stent graft was deployed in the aorta from just below the stented left renal artery in to right common iliac artery, taking care to avoid the right internal iliac artery ostium (Figs. 4 and 5). The true lumen of the stent graft was entered from the left femoral artery and a check injection was taken to confirm this (Fig. 6).

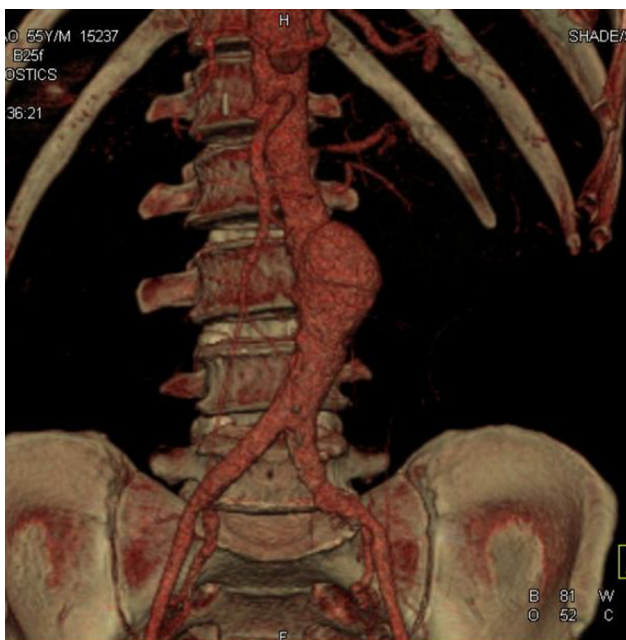


Fig. 1 – CT angiogram showing abdominal aortic aneurysm and renal artery stenosis.



Fig. 2 – Angiogram showing stenosis of left renal artery ostium.

A contralateral Endurant (Medtronic Inc) stent graft 16*82 cm was deployed extending from aortic bifurcation in to the left common iliac artery (Figs. 7 and 8). The end result was good with no endoleak (Fig. 9). The patient was discharged in 5 days time with removal of arteriotomy sutures. Patient is doing well on follow up. The patients follow up renal function (GFR) is normal.

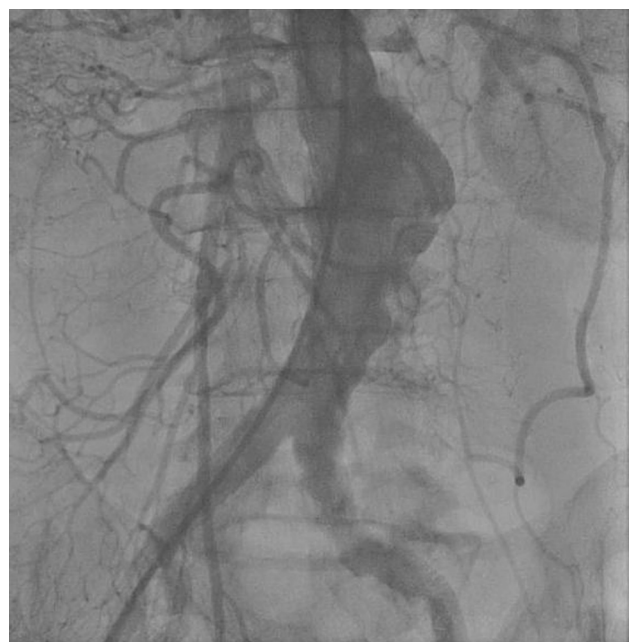


Fig. 3 – Aortogram showing abdominal aortic aneurysm.

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