

Treatment of the Ascending Aorta Aneurysm in a Patient with Horse Shoe Kidney

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ABSTRACT

The Horse Shoe Kidney (HSK) is one of the most common congenital malformation of lower poles fusion of kidneys. Despite, HSK is relatively seen with a high incidence of 0.15-0.33%, accompanying with Ascending Aorta Aneurysm is rarely seen. Here, we present the first case to our knowledge that accompanying Ascending Aorta Aneurysm to Horse Shoe Kidney.

Keywords: Horse Shoe Kidney, Ascending Aorta Aneurysm, surgery, treatment

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INTRODUCTION

The Horse Shoe Kidney (HSK) is one of the most common congenital malformation of lower poles fusion of kidneys [1]. The reported incidence ranges from 0.15% to 0.33%. Usually occurred during the 4-6th weeks of gestation. Mostly seen in males with 60-80% vascular anomalies [2]. The coincidence of HSK and an ascending aortic aneurysm (AsAA) is rarely seen. To our knowledge, we report the first case of incidental HSK in a patient underwent Bentall procedure due to Ascending Aorta Aneurysm (AsAA).

CASE REPORT

A 65-year-old male was presented with dyspnea (New York Heart Association Functional Class II-III). He had a history of hypertension. His blood pressure was 140/80 mmHg and heart rate was 90/minute. On physical examination, neither palpable mass nor pain was observed in the abdomen. Peripheral pulses were normal. Renal function and other laboratory tests were within normal limits. The Chest X-ray showed an enlarged AsAA. Computed tomography angiography (CTA) scanning showed an AsAA measuring 55 mm with no other aneurysms elsewhere and a coexistent HSK with a lower pole fusion (**Figure 1a, 1b**). The transthoracic echocardiography revealed 60% of left ventricular ejection fraction, mild mitral and severe aortic regurgitation. A coronary artery

angiography was performed before the surgery and coronary arteries were found free of disease. Routine preparation for surgery was made and informed consent was taken. Median sternotomy and standard cannulation were performed. Subsequently, a single dose of antegrade isothermic blood cardioplegia was administered to arrest the heart. Cardiopulmonary bypass (CPB) was performed with moderate hypothermia. Ascending aorta, aortic root and aortic valve were replaced with 23 No valve (St. Jude Medical Inc. St Paul, MN, USA) and 28 No Dacron graft by performing Bentall procedure (**Figure 1c, 1d**). The postoperative course was uneventful and he was discharged with oral anticoagulation. Six months later he was doing well with stable vital signs.

DISCUSSION

Ectopia, malrotation and vascular anomalies are usually seen in patients with HSK and are more prone to ascending urinary tract infections due to intestinal gram-negative organisms. 15-30% of patients with HSK are asymptomatic [3,4]. Despite, HSK is relatively seen with a high incidence of 0.15-0.33% in normal population, accompanying with abdominal aorta aneurysm is rarely seen with an incidence of 0.12% [5]. Unfortunately, there is no data for the incidence rate of association with AsAA. Besides that, the ascending aorta aneurysm is a lethal disease

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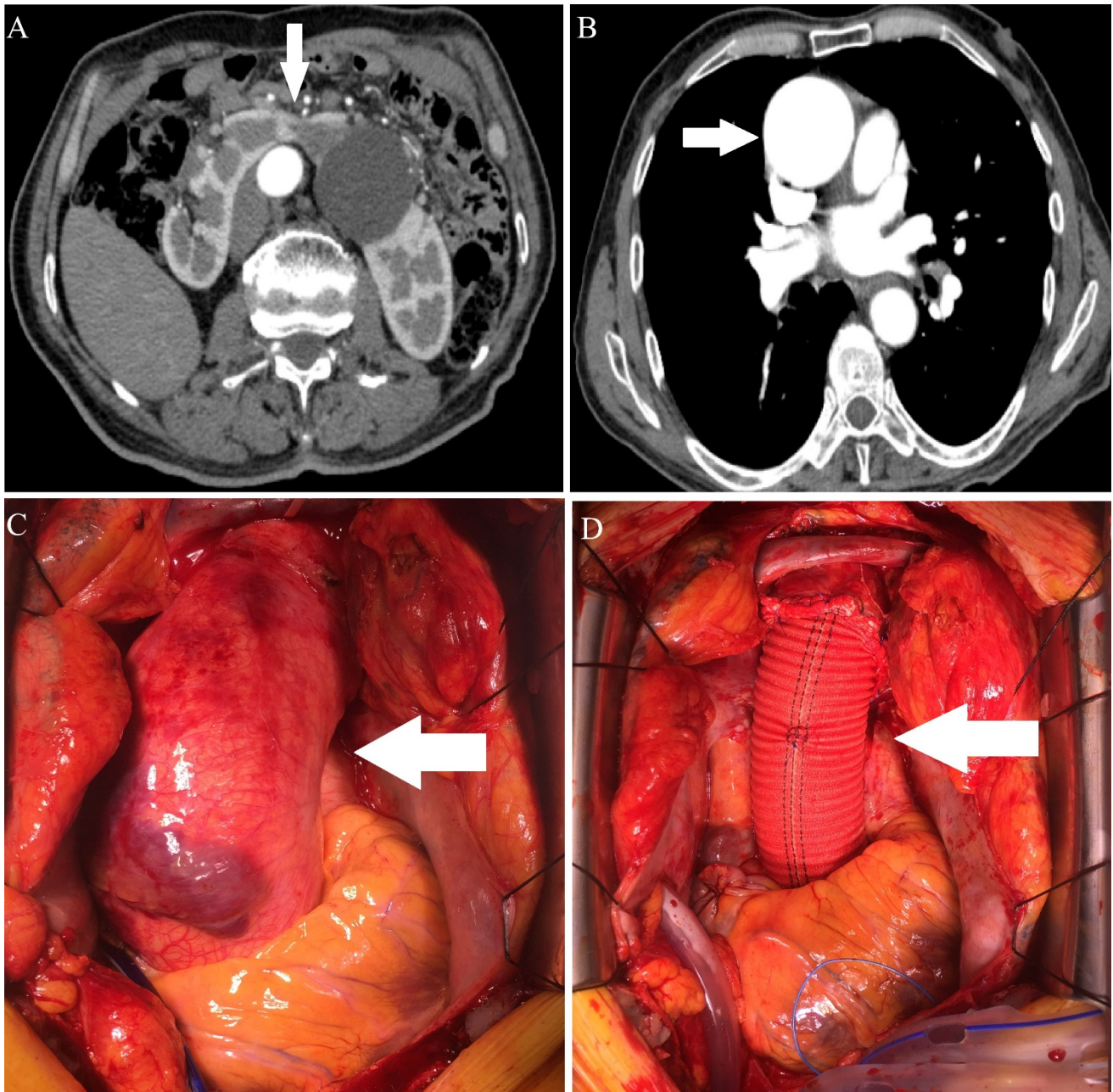


Figure 1. Preoperative two-dimensional computed tomography angiography (CTA) image of Horse Shoe Kidney (white arrow shows) (A) and Ascending Aorta Aneurysm (white arrow shows) (B). Perioperative external view of the Ascending Aorta Aneurysm (white arrow shows) (C), replacement ascending aorta and aortic root with a Dacron graft (white arrow shows) (D)

and usually found incidentally during transthoracic echocardiography. Aortic rupture and dissection are the potential complications due to weakened wall structure and hypertension. Surgical repair remains the gold standard treatment method in patients with a > 5.5 cm in diameter [6].

In conclusion, HSK is rarely seen with AsAA as it is in our case. The patient's history and Chest X-ray give us preliminary information. Clinicians should pay attention to the enlargement of the aortic shadow on Chest X-ray for possible ascending aorta aneurysm. Functional aortic valve insufficiency is a common condition in ascending aorta and aortic root aneurysm. Pre-operative transthoracic echocardiography gives information about the functions of

heart valves. The prevention of hypertension during surgery will also prevent an undiagnosed ascending aorta aneurysm rupture or dissection. Therefore, the anesthesiologist must consider this condition and adjust the patient's hemodynamics and medication accordingly.

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