

## Circumferential Dissection Of The Ascending Aorta: A Rarity

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### ABSTRACT:

The current report describes an unusual case of type A (Stanford type A) aortic dissection of complete circumferential detachment of ascending aortic intima with intact adventitia. The ascending aorta was repaired by its replacement with number 24 decron graft with sparing of the aortic valve.

**Key-words:** Left Ventricle (LV), Left Ventricular Ejection Fraction (LVEF), Cardio-pulmonary bypass (CPB).

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### INTRODUCTION:

Aortic dissection (Stanford type A) is a life threatening condition. It requires immediate surgical intervention to prevent the gravities consequences. We came across circumferential dissection of the ascending aorta. Very few reports have been published so far, to the best our knowledge.

### CASE REPORT:

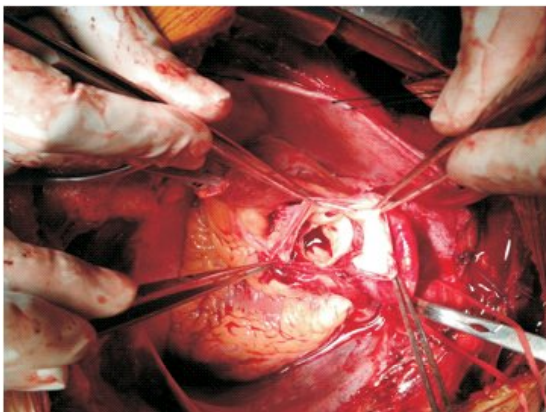
A 54 year male was referred to our institute with a complaint of acute chest pain, dyspnea (class III) and vomiting for two days. Earlier, he was admitted elsewhere and offered symptomatic treatment. He was referred to our tertiary care center for further management. He was a recently diagnosed case of hypertension and was inadequately treated. He had no syncopal attack. On examination, there was a significant difference in blood pressure of the upper (90/50 mmHg) and lower limbs (120/70 mmHg; invasive method); pulsation in both upper limbs had low volume and in both lower limbs it was high volume. Both carotid pulses

appeared a low volume with similar character. He had no neurological deficit and adequate urine output. Cardiac examination revealed normal heart sound and 2/6 systolic and 3/6 diastolic murmur over the left ternal border. On respiratory examination, bilateral basal crepts with equal and adequate air entry were detected.

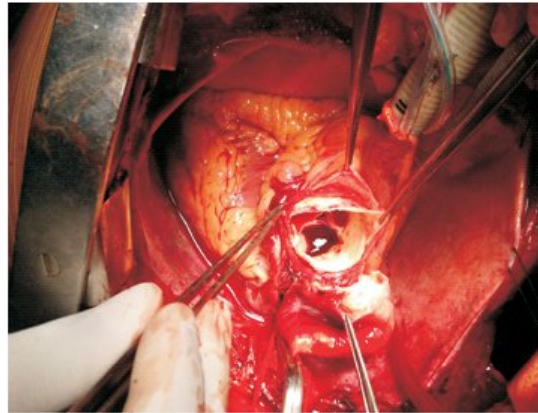
**Investigations:** Chest radiography revealed enlarged cardiac silhouette and pulmonary congestion. Twelve leads electrocardiography showed normal sinus rhythm with no ischemic changes and left ventricle strain pattern. Blood urea and creatinine were 110 mg% and 2.3 gm% respectively. Other investigations were within normal limits. Two dimensional trans thoracic echocardiography revealed moderate dilatation of aortic root and severe aortic regurgitation with normal LV dimension and left ventricular ejection fraction (LVEF) of 55%. However, the aortic valve leaflet appeared normal in morphology. There was a large flap seen in ascending aorta extending to arch and great

vessels that was visualized on supra-sternal view. Epigastric view showed flap in descending aorta. The patient already had high creatinine and therefore, no radiological investigations were performed and the patient was subjected to emergency surgery.

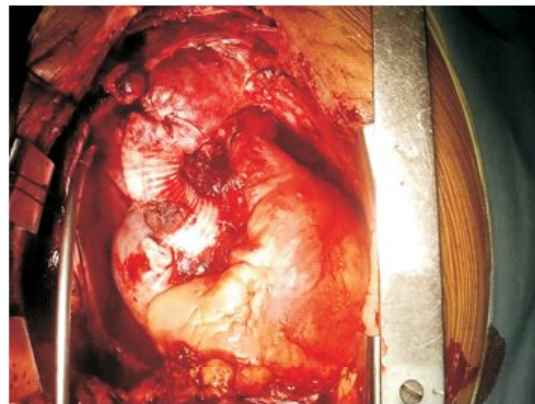
**Surgery:** Two arterial invasive monitoring was placed; one each in the right radial artery and a left femoral artery. Cardiopulmonary bypass (CPB) was established with femoral and right atrial cannulation and the patient was cooled to 28°C. Large clots were found all around the heart on opening the pericardium. All clots were removed. Ascending aorta was severely dilated tapering towards great vessels. A small area was cleared proximal to the innominate artery for aortic cross clamp. The aorta was vertically opened at the most dilated part after cross clamping. Dissection was found in the complete circumferential manner and intima was completely detached with intake surrounding adventitia (Figure-1). The dissection was well away from both coronary ostia (Figure-2). Aortic valve was found to be morphologically normal when examined on the table and seen on two dimensional trans thoracic echocardiography (Figure -2). We decided to preserve aortic valve and coronary ostia. We created proximal and distal cuff of aorta with Teflon felt taking care to suture adventitia and intima in a single layer.



**Figure-1** Complete Circumferential dissection with intact adventitia



**Figure-2** Morphologically normal coopting aortic valve



**Figure – 3** Complete replacement of ascending aorta

We replaced ascending aortic segment with number 24 Decron graft. The patient was weaned from cardiopulmonary bypass. Radial and femoral pressure was the same as opposed to the preoperative condition. The Chest was left open with the packing of the intracardial cavity with gauze and sponge due to diffused oozing. Next day, chest closure was performed and the patient was extubated 72 hours after surgery. A complete repair was evident (Figure -3).

The Patient did not require any inotropic support. Drains were removed at 96 hours post-surgery with a total drain amount of 500ml. Renal function improved gradually. The radial and femoral pressure remained the same. The Patient was discharged on the 10<sup>th</sup> postoperative day. Postoperative trans thoracic echo on discharge show no flap in aorta and trivial AR with normal LV Function.

**DISCUSSION:**

The primary event was a tear in the aortic intima. Its incidence is estimated at 2.6-3.5/ 100,000 people, Years. Systemic hypertension is the most important predisposing factor for acute aortic dissection.<sup>1,2</sup> If untreated, acute dissection of the ascending aorta (Stanford type A) is associated with a mortality rate of 60 % in first 24 hrs, 80% within 15 days and 90% within 3 months. Early diagnosis and surgical treatment improve survival preventing a number of sequels (hemorrhagic shock, cardiac tamponade secondary, aortic rupture or acute occlusion of major aortic branches and cardiogenic shock due to aortic regurgitation).<sup>3,4</sup> Successful surgery of circumferential dissection of the ascending aorta is rarely reported.<sup>5</sup> However, we replaced ascending aorta only and the root was spared due to the normal coaptation of the aortic valve. Continuity of the true lumen was maintained here so that false remains will subsequently get thrombosed preventing extension of dissection in either direction. This was confirmed with equal pressure in all four extremities. The rarity of the condition demands a long term follow up of surgical correction and a technical challenge to surgeons.

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