

## **Case Series**

# **Aortobronchial fistula after coarctation repair treated with extra-anatomic graft**

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## **ABSTRACT**

Two cases of aortobronchial fistula are presented which developed several years after successful aortic coarctation repair. These were successfully managed with extra-anatomic conduit graft. (Rawal Med J 2010;35: ).

## **Keywords**

Aortobronchial fistula, coarctation of aorta, hemoptysis.

## **INTRODUCTION**

Aortobronchial fistula (ABF) is a rare postoperative complication of thoracic aortic surgery. Outcome is serious with 100% mortality, if not diagnosed timely and intervention carried out promptly and meticulously.<sup>1</sup> Diagnosis should be suspected in patients presenting with hemoptysis who previously had undergone aortic surgery. Once ABF is suspected, patients should have emergent CT or MRI.<sup>2</sup> After the diagnosis is established, patient should have either surgical repair or endovascular stenting. Following are the two cases of ABF, who developed this complication several years after successful aortic coarctation repair. Both were treated successfully using an extra-anatomic conduit graft.

## **CASE 1**

A 30 years old woman was admitted with large hemoptysis. It settled spontaneously and rapidly. This happened six years after a diamond patch aortoplasty for her aortic coarctation repair. On

physical examination, she had temperature of 39°C. Her blood pressure was 160/70 mm Hg and a regular heart rate of 85/minute. Chest was clinically clear with a soft systolic murmur audible over the left anterior chest. Both femoral pulses were present. Laboratory investigations did not reveal any abnormality. Chest roentgenogram showed a mass adjacent to the aortic knuckle. CT and aortography confirmed the presence of an aneurysm around the aortic coarctation site eroding through the left bronchial tree. There was, however, no recurrent coarctation.

Hypertension was controlled with labetalol infusion and and left posterolateral thoracotomy was performed through the 4<sup>th</sup> intercostal space. Pseudoaneurysm was left untouched. A 24 mm gelatin impregnated polyester graft was selected and a partial occluding clamp was applied on to the ascending aorta and the graft was anastomosed to it end to side. Fistulous communication between the left upper lobe and descending aorta was identified and closed. Repair was covered with mediastinal pleura. Postoperatively, she developed loculated hemothorax with left lower lobe collapse and pyrexia and her white cell count was high. She was returned back to operating room and clots were removed from her left chest, tracheostomy was also performed and she was slowly weaned off the ventilator. Patient was discharged home on day 20.

## **CASE 2**

A 46 years old man, who underwent Dacron onlay graft repair of aortic coarctation 8 years ago, was admitted with hemoptysis. Soon after his coarctation repair he was returned to the operating room for bleeding which proved difficult to control. Whilst able to move his legs after the initial procedure, he became paraplegic following the second operation. He had partial recovery and was eventually discharged home on walking sticks. On this admission, physical examination did not reveal any abnormality. Laboratory investigations were normal. Chest X ray demonstrated a peri-hilar mass on the left and a flexible bronchoscopy was normal. CT revealed aneurysm at the previous coarctation site. He was taken to the operating room and and left posterolateral thoracotomy through the left 4<sup>th</sup> intercostals space was performed and extended through the sternum at the same level. Pericardium was opened and a partial occluding clamp was applied onto the ascending aorta and end to side anastomosis was performed using a 20 mm gelatin impregnated polyester conduit. It was then routed to the descending aorta and anastomosed onto it using a partial occluding clamp and aneurysm was repaired using an interposition graft and

aortobronchial fistula was closed. Omentum was then brought up to the chest and repair covered with it. Patient had an uneventful recovery and was discharged home day 10.

## COMMENTS

The etiology of ABF is infection and/or inflammation at the surgical repair site or possible mechanical stress due to pressure wave reflections causing erosion of the suture line, creating fistula with the adjacent bronchus.<sup>3</sup> This is a serious sequela of previous successful surgery as the patients can exsanguinate and die, if not treated promptly. These patients present with hemoptysis several years following coarctation aortoplasty. A multidisciplinary approach with a strong input of an interventional radiologist with expertise in endovascular stenting is extremely useful.

Operative mortality in emergent repairs is high. A two stage repair by stenting as a first stage followed by complete surgical repair few months later has been advocated.<sup>4</sup> Endovascular stenting of thoracic aorta is an emerging technology and is successfully used in centers where expertise and resources are present. Though, surgical mortality for such repairs is around 15-30% some authors have reported 100% success rate with no mortality using endovascular grafts.<sup>5</sup> However, surgical repair is the only hope for patients with no endovascular stenting facilities.

There are various approaches used in the surgical management. Lawrence et al used median sternotomy with cardiopulmonary bypass and hypothermic arrest to repair ABF by extra-anatomical technique.<sup>1</sup> Even endovascular grafts can get infected leading to ABF. This can also be treated successfully by an extra-anatomic bypass using an ascending to descending aortic conduit.<sup>6</sup> The benefit of using an extra-anatomical bypass technique is not just to reduce recurrence and infection of the graft but also that spinal cord protection is better. By placing the graft first, lower limb perfusion is also not jeopardized. This is indeed a simple technique and in most cases, cardiopulmonary bypass and hypothermic circulatory arrest can be avoided.

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