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Ascending Aortic Aneurysm Rupturing into the Chest Wall: A Rare Case Report

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Abstract: ***Background**: Ascending aortic aneurysm rupture is a life-threatening condition with extremely high mortality. Rupture into the chest wall is exceptionally rare and presents unique surgical challenges. **Case Presentation**: A 78-year-old hypertensive female presented with a pulsatile anterior chest wall swelling. Imaging revealed a large saccular ascending aortic aneurysm rupturing into the chest wall with active contrast extravasation. Emergency surgical repair was performed using cardiopulmonary bypass established prior to sternotomy via femoral and axillary cannulation. A 24 mm Dacron graft was used for reconstruction under hypothermic circulatory arrest with selective antegrade cerebral perfusion. **Results**: The postoperative course was complicated by respiratory failure requiring tracheostomy and prolonged ventilation. The patient was gradually weaned off and discharged on postoperative day 28 without neurological deficits. **Conclusion**: Early diagnosis and prompt surgical intervention are crucial in managing ruptured ascending aortic aneurysms. Multidisciplinary care significantly improves outcomes even in high-risk elderly patients.*

Keywords: Ascending aortic aneurysm, rupture, chest wall, cardiopulmonary bypass, hypothermic circulatory arrest

1. Introduction

Aortic aneurysm is defined as a localized or diffuse dilation of the aorta measuring at least 1.5 times its normal diameter. Thoracic aortic aneurysms can lead to catastrophic complications such as dissection and rupture. The incidence of rupture is estimated to be 2–5 per 100,000 persons per year, with mortality rates approaching 97–100%.

2. Case Presentation

A 78-year-old hypertensive female presented to the emergency department with a pulsatile mass over the anterior chest wall (figure – 1). Clinical examination revealed pallor, heart rate of 100/min, and blood pressure of 178/102 mmHg.

Figure 1

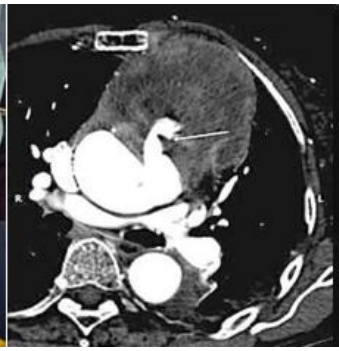

Figure 2

Figure 3

Emergency CT imaging demonstrated a large saccular ascending aortic aneurysm measuring 15 × 12 × 12 cm, rupturing into the chest wall with active contrast extravasation (figure2,3 – arrow pointed towards active contrast extravasation)

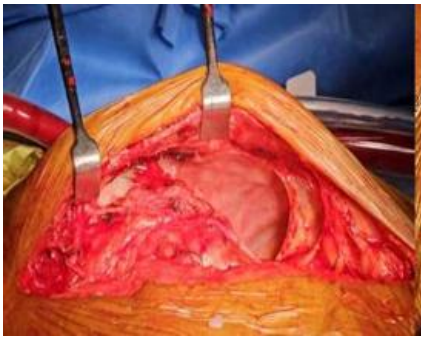

Figure 4

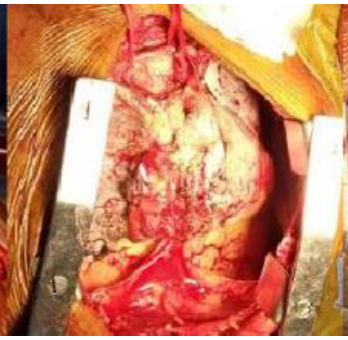

Figure 5

Figure 6

Access to cardiopulmonary bypass established prior to sternotomy with right femoral and right axillary cannulation. Sternotomy and very careful dissection of sac from chest wall (figure - 4). adhesions released (figure -5,6), Arch branches dissected and looped, right superior pulmonary vein venting, Ascending aorta clamped proximal to ostia of right brachiocephalic artery, aneurysm sac vertically opened, thrombus delivered out, direct ostial cardioplegia. Ascending aorta distal to the clamp was unhealthy, patient cooled, arch branches clamped, cross clamp removed, hypothermic cardiac arrest with selective anterograde cerebral perfusion via axillary artery, 24 mm dacron graft - distal anastomosis done in hypothermic arrest at 24 degree, proximal anastomosis to ascending aorta during rewarming. (Figure - 7)

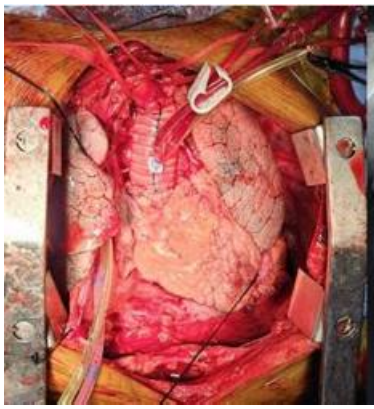

Figure 7

Figure 8

Figure 9

Post operative course was stormy with respiratory failure requiring tracheostomy (figure-8,9) and prolonged ventilation. Gradually weaned off and discharged without any neurological dysfunction on post operative day - 28.

3. Results and Discussion

Aortic aneurysm rupture and dissection are leading causes of cardiovascular mortality. Only about 40% of patients reach the hospital alive. Mortality exceeds 50% within 6 hours and 75% within 24 hours if untreated.

In this case, prompt diagnosis and early institution of cardiopulmonary bypass before sternotomy were critical in preventing catastrophic hemorrhage. The use of hypothermic circulatory arrest and cerebral perfusion enabled safe surgical repair.

4. Conclusion

Early recognition, rapid surgical intervention, and multidisciplinary management are essential to improve survival in patients with ruptured ascending aortic aneurysms. Despite a complicated postoperative course, favorable outcomes can be achieved with timely and appropriate care.

Conflict of Interest

The authors declare no conflict of interest.

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