International Surgery Journal
Mera PA et al. Int Surg J. 2025 Sep;12(9):1549-1551
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20252694

Case Report

Successful endovascular repair of a giant pseudoaneurysm of the innominate artery with a covered stent

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Received: 22 July 2025
Accepted: 19 August 2025

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ABSTRACT

Pseudoaneurysm of the branches of the aortic arch resulting from blunt thoracic trauma is rare; however, when present, it may compromise the integrity of the innominate artery and the aortic isthmus. We present the case of a 54-year-old man with a known history of hypertension and rheumatoid arthritis, who was referred to the head and neck surgery service for consultation, presenting with a pulsatile mass at the base of the anterolateral side of the neck, progressive dysphonia, dysphagia, and progressive weight loss. Computed tomography (CT) angiography of the neck revealed a giant pseudoaneurysm displacing structures of the neck and mediastinum. The patient was eligible for endovascular exclusion of the pseudoaneurysm. The procedure was successfully performed under local anesthesia.

Keywords: Mediastinal displacement, Cover stent, Innominate artery pseudoaneurysms, Endovascular surgical repair, Blunt carotid artery injury

INTRODUCTION

Pseudoaneurysm of the branches of the aortic arch secondary to blunt chest trauma is rare. A blunt injury, when it usually affects, can compromise the integrity of the innominate artery and the aortic isthmus.[1-3] It has been considered that the mechanism by which this occurs is the compression of the artery between the sternum and the spine, and the hyperextension effort of the neck in relation to longitudinal shear.[2] In relation to closed aortic injuries, these have been classified as intimal tear, large intimal flap, pseudoaneurysm and rupture.[4] Blunt injuries of the innominate artery usually correspond to intimal tears and the formation of pseudoaneurysms.[2] Survival after blunt injury of the innominate artery has been reported at 84% and rupture produces the highest mortality.[5]

CASE REPORT

We present the case of a 54-year-old man with a known morbid history of arterial hypertension and rheumatoid arthritis, which arrived via consultation referred by the head and neck surgery service, presenting pulsatile mass at the base of the anterolateral aspect of the neck, progressive dysphonia, dysphagia, and progressive weight loss, 65 pounds on average, for 6 weeks prior to his arrival. He also suffers from terminal renal failure in therapy with peritoneal dialysis, secondary to systemic decompensation and general condition related to rapid weight loss and malnutrition. The interrogation reveals a closed trauma of the chest 6 months prior to the appearance of the symptoms. Computed tomography (CT) angiography revealed a giant pseudoaneurysm of the innominate artery, which produces a mass effect with displacement of the mediastinum to the left, causing almost total occlusion of the esophagus, and displaces displacement to the left of the trachea (Figure 1). He was considered high risk for open surgery due to the patient's poor general condition. as well as the large size of the pseudoaneurysm. Therefore, site planning was performed and underwent endovascular repair. Prior to the procedure, the patient and family provide written informed consent. In the analysis of the case and planning, excessive anteromedial rotation of the aortic arch was observed due to the pseudoaneurysm,

which is why difficulty in moving and supporting the guides is anticipated. An open approach is performed through the right brachial artery. A 12 Fr introducer was placed, angiography was performed, and a giant pseudoaneurysm was observed in the middle segment of the innominate artery. B. Due to the diameter of the artery, a balloon-expandable covered aortic stent (Be-Graft aortic 14×39 mm Bently) was deployed, which extended from the ostium of the innominate artery to 0.5mm from the bifurcation of the origin of the right common carotid and right subclavian arteries, successfully excluding the pseudoaneurysm. An embolic protection device was not used because imaging studies did not reveal any thrombus burden within the region of vascular injury. At the follow-up examination, the stents remained patent and undistorted, with complete regression of the pseudoaneurysm (C and D/Cover). The patient also provided written informed consent for his case report.

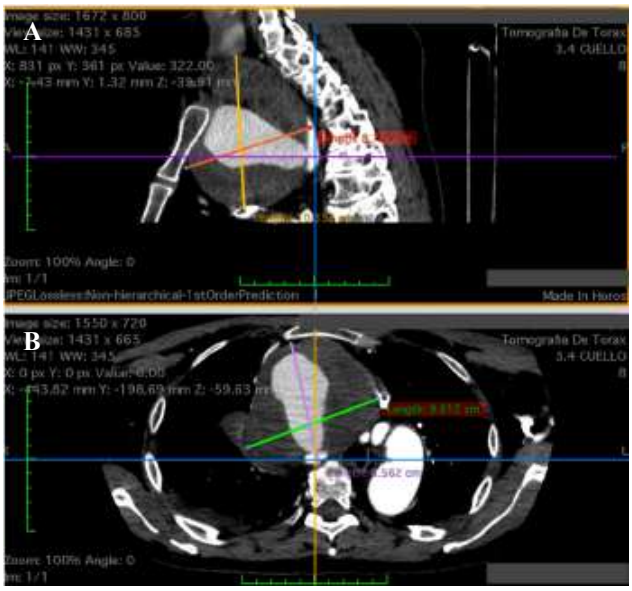

Figure 1 (A and B): Diagnostic angio CT. The large size of the pseudoaneurysms that displaces the structures of the neck and anterior mediastinum.

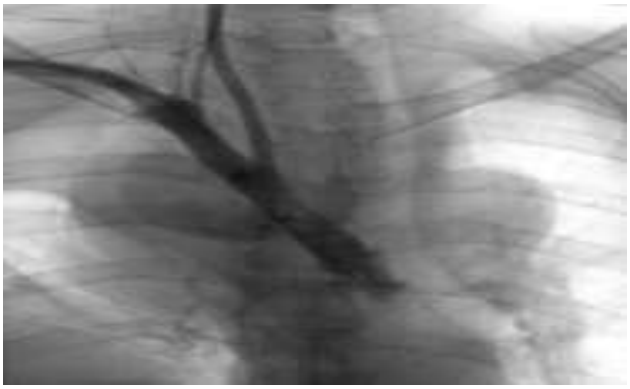

Figure 2: The large pseudoaneurysm. The large number of thrombi in the sac and the loosening are not highlighted in this image.

Figure 3: Total exclusion of pseudoaneurysms without signs of endoleak.

DISCUSSION

Blunt traumatic injury to the innominate artery is rare but often fatal. Clinical findings, chest radiographs and CT scans may suggest the diagnosis, and it can be confirmed by angiography. Our patient had a chronic, atypical presentation, such as monoparesis and signs of chronic upper limb ischemia, as reported by Kota et al since the symptoms were related to the mass effect (dysphonia, dysphagia) and not to hemodynamic or thromboembolic changes or phenomena, which delayed the timely diagnosis.[4] The diagnosis was made with the recommended standard, which is CT angiography. However, it is important to clarify that the initial imaging diagnosis was limited to a chest radiograph only in the context of blunt thoracic trauma long before establishing the vascular diagnosis. Both interposition and bypass are surgical repair methods of choice.[1,2] In our case, having the appropriate tools, we opted for endovascular repair since it was a giant pseudoaneurysm with difficult surgical access and a high degree of technical difficulty and potential complications, as reported by Sibille et al and Tru in more recent reports.[6,7] In our case, the procedure is performed under assisted local anesthesia, without requiring a session in order to monitor the possibility of a cerebral embolism.

CONCLUSION

Traumatic injury to the innominate artery due to closed trauma is relatively rare. Isolated injury to the innominate artery represents the second traumatic injury to large thoracic vessels after the aorta. We have demonstrated that endovascular repair of pseudoaneurysm of the innominate artery is a feasible, safe and effective alternative to open repair.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Liu X. Innominate pseudoaneurysm subtotally compressing the trachea as a result of blunt trauma. Ann Thorac Surg. 2014;97:1066-8.

2. Cordova AC, Bowen FW, Price LA, Dudrick SJ, Sumpio BE. Traumatic innominate artery pseudoaneurysm in the setting of a bovine arch. Ann Vasc Dis. 2011;4(3):252-5.
3. Starnes BW, Lundgren RS, Gunn M, Quade S, Hatsukami TS, Tran NT, et al. A new classification scheme for treating blunt aortic injury. J Vasc Surg. 2012;55(1):47-54.
4. Kota A. Endovascular repair of post-traumatic innominate artery pseudoaneurysm. J Vasc Surg. 2021;74:1015-6.
5. Johnston RH, Wall MJ, Mattox KL. Innominate artery trauma: a thirty-year experience. J Vasc Surg. 1993;17:134-9.
6. Sibille JA, Harding JP, Ballast JK, Hooshmand M, Madjarov JM, Arko FR. Endovascular repair of an innominate artery pseudoaneurysm using the Valiant Mona LSA branched graft device. J Vasc Surg Cases Innov Tech. 2017;3:1-3.
7. Dang T, Bui A, Katz M, Wooster M. Successful endovascular repair of blunt traumatic innominate artery transection with covered stent graft. J Vasc Surg Cases Innov Tech. 2022;8(3):353-5.

Cite this article as: Mera PA, Cid MR, Almonte R. Successful endovascular repair of a giant pseudoaneurysm of the innominate artery with a covered stent. Int Surg J 2025;12:1549-51.