

# Endovascular repair of a leaking aortic-arch pseudoaneurysm using graft stent combined with chimney protection to left common carotid artery: Case report and review of literature

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Aortic pseudoaneurysm (PsA) is a rare but serious condition that has high mortality and morbidity rates if untreated. We report a rare case of leaking aortic-arch PsA repaired by thoracic endovascular aortic repair using graft stent with the chimney technique to protect the left common carotid artery. Unlike other cases in the literature, our case was unique, having leaking PsA not related to previous cardiac surgery or aortic dissection. The successful management of this patient using thoracic endovascular aortic repair combined with the chimney technique suggests that this approach may be an attractive therapeutic alternative to treat aortic-arch PsA.

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## Introduction

Pseudoaneurysm (PsA) is defined as a disruption of the inner and medial layers of the arterial wall with extravasation of blood into a del-

icate sac contained by adventitia and/or surrounding mediastinal structures [1]. Aortic PsA is a rare but serious complication of various types of cardiac surgery [2], trauma [3], aortic dissection, and infection [4]. Individuals with aortic PsA may remain asymptomatic for a period of months to

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years, and may be discovered accidentally. Some patients may experience variable symptoms ranging from mass effect on the surrounding structures to chest pain [5]. Untreated aortic PsAs are associated with high mortality (up to 60%) and morbidity rates, owing to their tendency to expand and rupture, and their tendency to be a source of infection and distal embolization [6,7]. Consequently, immediate intervention is necessary to minimize the lethal complications associated with aortic PsAs. The traditional repair options are surgical ligation and grafting, although they have a high mortality rate (7–17%) [8]. In high-surgical-risk patients, there are alternative management options that may include minimally invasive percutaneous approaches using thoracic endovascular aortic repair (TEVAR) [9], coil embolization, and thrombin injection [10]. We report a rare case of leaking aortic-arch PsA repaired by TEVAR using graft stent with chimney technique to the left common carotid artery (LCCA).

### Case report

An 85-year-old female, a known case of hypertension, was referred from a peripheral hospital as a case of retrosternal chest pain occurring over a period of 6 days for workup. Other systemic review was unremarkable. At admission, the patient was fully conscious with normal cognition. Her vital signs were relatively stable with a heart rate of 98 beats per minute, blood pressure of 98/47 mmHg, and a respiratory rate of 26 breaths per minute. She had decreased air entry in the upper lung zones bilaterally. Other than a hemoglobin of 6.8 gm/dl, her initial laboratory findings were normal. She received a packed red-blood-cell transfusion during admission.

A chest X-ray showed widening of the mediastinum and left-upper-zone heterogeneous opacity (Fig. 1A). Baseline electrocardiography was unremarkable. Echocardiography revealed significant septal left ventricular hypertrophy with normal systolic function (ejection fraction = 55%)

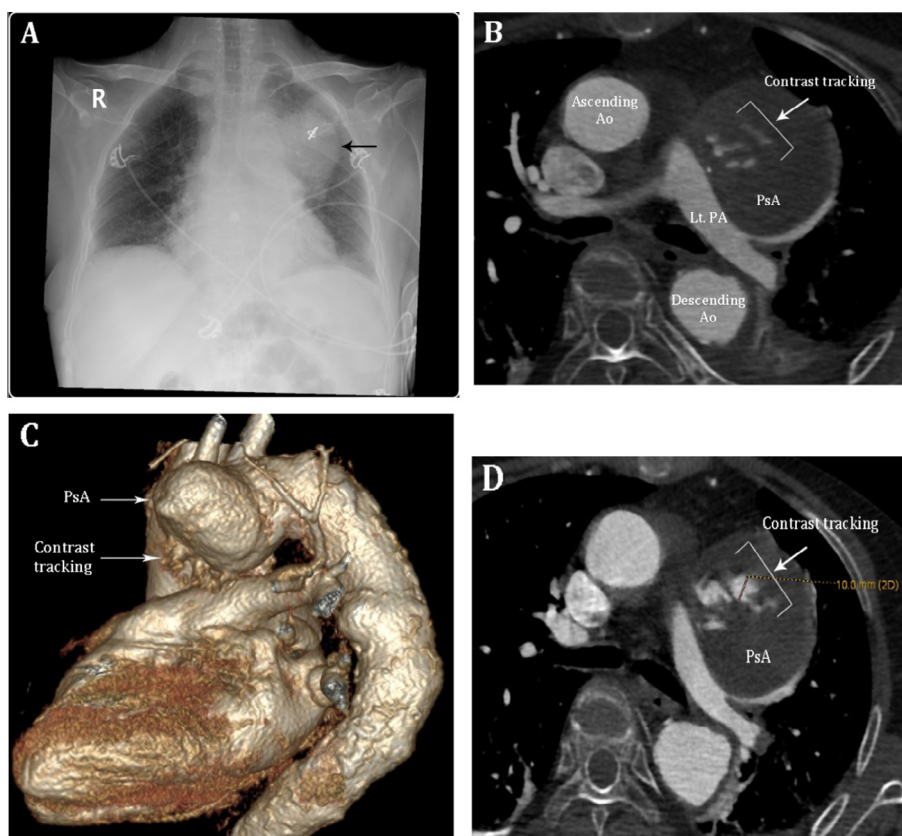


Figure 1. Preoperative chest X-ray and CTA: (A) chest X-ray showing widening of the mediastinum with left upper zone opacity (arrow); (B) and (C) initial CTA demonstrated saccular aortic-arch PsA with contrast tracking; (D) repeated CTA showing a minimal to mild interval increase in PsA size and contrast tracking. Ao = aorta; CTA = computed tomography aortogram; Lt. PA = left pulmonary artery; PsA = pseudoaneurysm.

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