Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Vascular Surgery

Digital Ischemia Revealing an Isolated Atrial Septal Aneurysm: An Unusual Case Report

LAHLOU Noured-dine[1]*, TAOUSSI Nizar[1], KHADIR Mehdi[1], ELHOUASLI Karima[1], EDDICH Yassine[1], ZOULATI Mohamed[1], BAKKALI Tarik[1], CHTATA Hassan[1]

[1]Department of Vascular Surgery, Mohammed V Military Instruction Hospital, Hay Riad, Rabat, Morocco

DOI: https://doi.org/10.36347/sjmcr.2026.v14i11.001 | **Received:** 21.08.2026 | **Accepted:** 27.10.2026 | **Published:** 02.11.2026

***Corresponding author:** LAHLOU Noured-dine
Department of Vascular Surgery, Mohammed V Military Instruction Hospital, Hay Riad, Rabat, Morocco

Abstract | **Case Report**

Background: Atrial septal aneurysm (ASA) is a rare cardiac anomaly characterized by a saccular deformity of the interatrial septum, often discovered incidentally. It is commonly associated with a patent foramen ovale (PFO) and has been implicated in cardioembolic events, particularly in cryptogenic strokes. ***Case presentation:*** We report the case of a 35-year-old male with no significant medical history, who presented with progressive pain, pallor, and cyanosis of the fingers of his left hand. Vascular imaging revealed complete thrombosis of the radial and ulnar arteries. Cardiac investigations identified an isolated ASA without any PFO or arrhythmia. The patient underwent urgent surgical embolectomy and was initiated on lifelong anticoagulation therapy. Postoperative evolution was favorable, with clinical improvement observed at three-month follow-up. ***Conclusion:*** This case highlights an exceptional presentation of ASA, revealing itself through peripheral arterial embolism in the absence of a PFO. It underlines the potential thromboembolic risk associated with isolated ASA and the importance of considering this diagnosis even in unusual ischemic presentations.

Keywords: Atrial septal aneurysm (ASA); Digital ischemia; Peripheral embolism; Cardiac imaging.

Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Atrial septal aneurysm (ASA) is an uncommon cardiac anomaly characterized by passive protrusion of the septum between the right and left atria. Most often, it is a congenital malformation, frequently associated with a patent foramen ovale (PFO). Diagnosis relies essentially on cardiac imaging, particularly transesophageal echocardiography, which is more sensitive than transthoracic echocardiography. Long considered benign, this condition has drawn growing interest since it was linked to thromboembolic events, particularly neurological ones. Here, we present a rare case of digital ischemia secondary to an isolated ASA.

CASE PRESENTATION

A 35-year-old male with no significant medical history was admitted to the emergency department for digital ischemia of the left upper limb.

Symptoms had been evolving for approximately 15 days, marked by the progressive onset of pain in the fingertips, associated with pallor and coldness of the hand—predominantly digital—followed by distal cyanosis of the finger pulps (Figure 1).

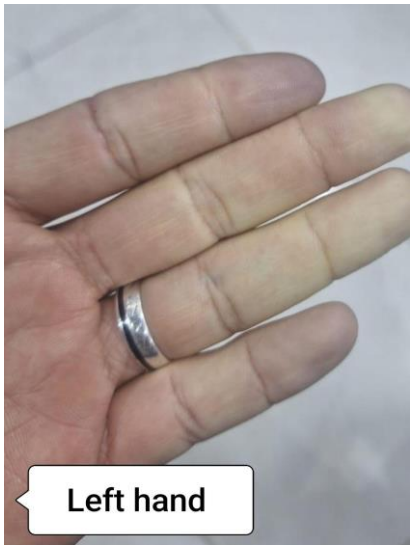


Figure 1: Trophic status of the left hand upon admission showing digital pulp cyanosis

Upon admission, clinical examination showed a hemodynamically stable patient: blood pressure at 130/70 mmHg, heart rate at 90 bpm, and peripheral oxygen saturation at 98% on room air. Radial and ulnar pulses were absent on the left side, whereas other peripheral pulses were palpable. Auscultation of the carotid axis and peripheral arterial axes revealed no abnormalities. No murmurs were audible upon cardiac auscultation.

The ECG showed a regular sinus rhythm. A 24-hour Holter ECG showed no arrhythmias. Etiological biological workups, namely thrombophilia and inflammatory panels, were normal.

Angio-CT showed complete thrombosis of the left radial artery a few centimeters after its origin, without distal reconstitution, as well as complete thrombosis of the ipsilateral ulnar artery just after its origin, also without reconstitution (Figure 2).



Figure 2: 3D reconstruction of a left upper limb CT angiography showing thrombosis of the radial and ulnar arteries just after their origin (arrows), with no distal reconstitution

Transthoracic echocardiography revealed an atrial septal aneurysm (ASA) with no sign of shunting on color Doppler; furthermore, no atrial dilatation or significant valvular disease was observed (Figure 3).

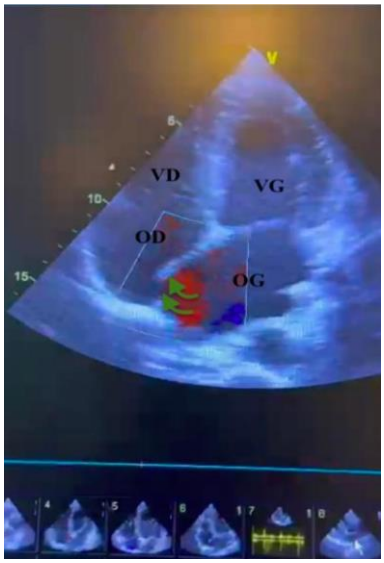


Figure 3: Two-dimensional echocardiogram: apical four-chamber view showing right atrial bulging of the interatrial septum aneurysm (arrows). OD: right atrium; OG: left atrium; VG: left ventricle; VD: right ventricle

Transesophageal echocardiography confirmed the presence of a type 1 ASA. Contrast echocardiography combined with the Valsalva maneuver showed no patent foramen ovale. Duplex ultrasonography of the supra-aortic trunks was unremarkable.

The patient underwent emergency surgery. He underwent Fogarty catheter embolectomy of the radial and ulnar arteries via a humeral artery approach. Antithrombotic therapy was initiated upon diagnosis, starting with unfractionated heparin via syringe driver, then switched to vitamin K antagonists (VKAs).

Postoperative recovery was uneventful, with significant clinical improvement observed in the immediate postoperative period (Figure 4) and at the three-month follow-up.



Figure 4: Postoperative trophic status of the left hand compared to the right hand: Complete resolution of symptoms

DISCUSSION

Atrial septal aneurysm (ASA) is an uncommon but well-documented structural anomaly. It primarily involves the connective tissue of the fossa ovalis and, in most cases, corresponds to a congenital anomaly. However, it has also been suggested that pressure variations between the two atria might play a role in its development. Nevertheless, the occurrence of ASA in patients with normal atrial pressures supports the hypothesis of a probable congenital origin.

Morphologically, ASA is defined by a protrusion of the interatrial septum toward one atrium (right or left), or bilaterally. An ASA is diagnosed when the bulging is greater than or equal to 10 mm, with a base of at least 15 mm. This anomaly has an estimated prevalence of approximately 2.2% in the adult population and is found in nearly 1% of autopsies. Most often, its discovery is incidental during cardiological explorations.

ASA is frequently associated with other congenital anomalies such as a patent foramen ovale (PFO), an atrial septal defect, mitral valve prolapse, or Marfan syndrome.

The clinical relevance of ASA lies mainly in its potential association with thromboembolic events. In this context, several studies have highlighted a link between ASA and embolic atrial or ventricular rhythm disorders. A study by Yetkin *et al.,*[6] showed that patients with ASA had a higher frequency of rhythm disorders, such as extrasystoles, supraventricular tachycardias, or episodes of paroxysmal atrial fibrillation, compared to subjects without ASA.

Furthermore, several publications have reported a direct link between ASA and embolic events, predominantly cerebral, without the identification of an underlying arrhythmia. The exact mechanism remains controversial, but the most widely accepted hypotheses include paradoxical emboli through an interatrial communication, such as a PFO or septal defect, identifiable either at autopsy or via contrast echocardiography. It should be noted that nearly 70% of patients with ASA have an associated PFO, which is thought to multiply the risk of stroke by 33.

It has also been suggested that the aneurysm itself may constitute a thrombogenic source, as evidenced by certain reported cases of thrombotic material found within the aneurysmal sac at autopsy or intraoperatively.

Mattioli *et al.,*[7] reported that in patients under 45 years of age hospitalized for stroke, ASA was the only identified embolic source in 13 cases.

Some studies report that interatrial septum thickness exhibits interindividual variability, with an estimated average of around 2.5 mm. An increase in this thickness could be correlated with a higher embolic risk. However, current data do not formally establish a critical threshold above which this risk becomes significant.

Echocardiographic imaging remains the gold standard for diagnosing ASA. Transesophageal echocardiography (TEE), especially when combined with a contrast study and the Valsalva maneuver, is more sensitive than the transthoracic approach for detecting both the aneurysm and any interatrial communication.

Currently, no consensus guidelines guide the management of ASA. In cases of incidental discovery in an asymptomatic patient, no treatment is required. Conversely, in symptomatic patients, anticoagulant or antiplatelet therapy is justified. No clear superiority has been demonstrated between aspirin alone and oral anticoagulation with VKAs in preventing recurrent embolic events at two years.

Percutaneous closure of patent foramen ovale (PFO) has proven more effective than medical treatment alone in preventing recurrent cryptogenic stroke, according to the multicenter CLOSE study. Although this approach is favored, surgical closure of the PFO constitutes an effective alternative in certain cases, particularly in the absence of contraindications, with favorable outcomes even without postoperative anticoagulation.

The case we report is particularly original due to the occurrence of digital ischemia linked to an isolated ASA, in the absence of a PFO. The absence of any other thromboembolic cause in the etiological workup, notably arrhythmia, reinforces the hypothesis that the migration of an intra-aneurysmal thrombus originated the ischemia.

Given the severity of distal ischemic lesions, surgical management was performed, consisting of forearm artery embolectomy using a Fogarty catheter, with limb salvage as the objective. Lifelong anticoagulant therapy was subsequently introduced as a preventive measure against embolic recurrences.

In all cases, the detection of an ASA should lead to close monitoring, even in the absence of symptoms, due to its embolic potential.

Conflict of interest declaration

The authors declare that they have no competing interests related to this article.

REFERENCES

1. Kariyanna PT, Jayarangaiah A, Adrah R, Sharma A. Huge Interatrial Septum Aneurysm. *Am J Med Case Rep*. 2016;4(3):111-114.
2. Aubry P, Juliard JM. Embolie paradoxale: mythe ou réalité? *Ann Cardiol Angeiol (Paris)*. 2017;66(6):433-440.
3. Patel S, Ahmed M, Al-Ani M, Malik B. Atrial septal aneurysm: an incidental finding or a clinically significant anomaly? *Cureus*. 2022;14(11):e31258.
4. Villines Z. Interatrial septal aneurysm: causes and treatment. *Med News Today*. 2024 Jan 24.
5. Mügge A, Daniel WG, Angermann C, Spes C, Khandheria BK, Kronzon I, *et al.,*Atrial septal aneurysm in adult patients: a multicenter study using transthoracic and transesophageal echocardiography. *Circulation*. 1995 Jun 1;91(11):2785-92.
6. Yetkin E, Ileri M, Korkmaz A, Ozturk S. Association between atrial septal aneurysm and arrhythmias. *Scand Cardiovasc J*. 2020;54(3):169-173.
7. Mattioli AV, Aquilina M, Oldani A, Longhini C, Mattioli G. Frequency of atrial septal aneurysm in patients with recent stroke: preliminary results from a multicenter study. *Clin Cardiol*. 2001 Apr;24(4):297-300.
8. Mas JL, Derumeaux G, Guillon B, Massardier E, Hosseini H, Mechtouff L, *et al.,*Patent foramen ovale closure or anticoagulation vs. antiplatelets after stroke. *N Engl J Med*. 2017 Sep 14;377(11):1011–1021.
9. Zahdi O, El Bouhali S, El Hamraoui I, Hormat-Allah M, El Bhali H, Sefiani Y, El Mesnaoui A, Lekehal B. Anévrysme isolé du septum interauriculaire : cause exceptionnelle d'ischémie digitale. *Ann Cardiol Angeiol (Paris)*. 2020 Apr;69(2):100-102.