Up, up and away! Atrial septal pouch thrombus: an unexpected encounter during transeptal puncture

Juan G. Ripoll[1], Sushil Luis[1], Mohamad A. Alkhouli[1], and Ratnasari Padang[1]

[1]Mayo Clinic Minnesota

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Abstract

Atrial septal pouch is a common anatomic variant of the interatrial septum and a nidus for thrombus formation. Left-sided atrial septal pouch has been associated with an increased risk of cryptogenic stroke. We described a case of left-sided atrial septal pouch thrombus, incidentally found prior to transseptal puncture during Watchman device placement. This case highlights the importance of a thorough echocardiographic evaluation of the atrial septum prior to transseptal access and recognition of this finding as a potential cardiac source of embolism.

Case Image

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Juan G. Ripoll, M.D.,[1] Sushil A. Luis, M.B.B.S., Ph.D.,[2]

Mohamad A. Alkhouli M.D.,[2] Ratnasari Padang, M.B.B.S, Ph.D.[2]

[1]Division of Cardiovascular Anesthesia, Mayo Clinic, Rochester, Minnesota, U.S.A.

[2]Department of Cardiovascular Medicine, Mayo Clinic, Rochester, Minnesota, U.S.A.

Address for correspondence:

Dr. Ratnasari Padang,

Department of Cardiovascular Medicine,

Mayo Clinic,

200 First Street SW,

Rochester, MN 55905,

United States of America

Tel : + 1 507 284 2541

Fax : + 1 507 266 0228

Email : padang.ratnasari@mayo.edu

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ABSTRACT

Atrial septal pouch is a common anatomic variant of the interatrial septum and a nidus for thrombus formation. Left-sided atrial septal pouch has been associated with an increased risk of cryptogenic stroke. We described a case of left-sided atrial septal pouch thrombus, incidentally found prior to transseptal puncture during Watchman device placement. This case highlights the importance of a thorough echocardiographic evaluation of the atrial septum prior to transseptal access and recognition of this finding as a potential cardiac source of embolism.

CASE IMAGE

A 80-year-old woman with chronic atrial fibrillation on long-term anticoagulation was diagnosed with normal pressure hydrocephalus and referred for ventriculoperitoneal shunt placement. Due to heightened bleeding (HAS-BLED score=4) and stroke (CHA2DS2-VASc score=4) risks, left atrial appendage occlusion with Watchman device was recommended prior to neurosurgical intervention.

Baseline transesophageal echocardiography (**Panel A-D**) demonstrated a left atrial septal pouch (ASP), formed by two distinct parallel inter-atrial septal layers, creating a tunnel-like inter-atrial chamber that communicated with the left atrium (LA; broken line) and which contained a thrombus (arrowhead) within its cavity (**Video-1;** asterix marks mouth of the ASP; RA, right atrium**)** . Recognizing this, a SENTINEL^{TM}cerebral embolic protection device was placed prior to transseptal puncture. A slight shift in thrombus position was noted during septal tenting (**Panel E**) and, unfortunately, transseptal puncture resulted in thrombus extrusion from the tunnel into the left atrium before embolizing systemically (**Panel F-H; Video-2**). Following the Watchman device placement, assessment of the ASP showed development of spontaneous echo-contrast (yellow star) within the pouch cavity despite the newly created left-to-right shunt at the transseptal puncture site (**Panel I**). A decision was made to obliterate the body of the ASP cavity to prevent future thrombus formation, utilizing a Cardioform septal occluder (**Panel J-K**). The remainder of post-procedural course was uncomplicated. No thrombus was identified on examination of the SENTINEL^{TM} device post-procedure. Intraprocedural cerebral angiography performed at case conclusion was also negative for intracranial embolism (**Panel L**). The patient was admitted overnight for observation and was discharged home the next day without clinical evidence of systemic embolization.

Atrial septal pouch is a common anatomic variant of the interatrial septum and a nidus for thrombus formation, which may be associated with thromboembolic complications.[1] Left-sided atrial septal pouch has been associated with an increased risk of cryptogenic stroke.[2] Left-sided atrial septal pouch thrombus should be considered a relative contraindication to transseptal puncture. This case highlights the importance of a thorough echocardiographic evaluation of the atrial septum prior to transseptal access and recognition of this anatomic septal variant as a potential cardiac source of embolism.

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FIGURE LEGEND

Figure. Finding of atrial septal pouch thrombus during transseptal puncture.

VIDEO LEGEND

Video 1. Left atrial septal pouch with in-situ thrombus

Video 2. Transseptal puncture causing embolization of atrial septal pouch thrombus.