

Minimalist' Trans-Aneurysmal Approach to Coronary Button Pseudoaneurysm

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The case report by Carrel and colleagues [1] should help surgeons approaching pseudoaneurysms of the coronary button anastomoses after composite graft replacement of the aortic root.

We find that such coronary button false aneurysms are uncommon. We have encountered one such false aneurysm among over 500 composite graft root replacements performed (Figure 1). This was in a patient later found to harbor a pathogenic mutation in the TGFBR2 gene (causative of Loeys-Dietz syndrome), which might have contributed to additional tissue weakness. We have repaired several such aneurysms referred from other centers. We believe that careful tightening of the coronary button suture line is of critical importance in avoiding such problems.

In our experience, these anastomotic pseudoaneurysms are seen more commonly at the right coronary artery button. These present a special problem, as there is often an accompanying large pseudoaneurysm located anteriorly under the breastbone and in front of the aorta.

Like Carrel and colleagues [1], we also expose the femoral artery and vein for safety prior to redo sternotomy. Once safely through the bone, we dissect just enough to permit spreading the retractor (Figure 2). We leave the pseudoaneurysm intact. We cannulate

femorally and assume cardiopulmonary bypass. If we have been able to surround the upper aorta (scenario 1), we do not need deep hypothermic circulatory arrest (DHCA). We simply clamp the aorta and move on. If surrounding the upper aorta is not feasible (scenario 2), we go on to deep hypothermic circulatory arrest (we employ a low threshold for DHCA to avoid difficult to control hemorrhage). Either with the aorta clamped (scenario 1) or on DHCA (scenario 2), we open the false aneurysm (Figure 3). Once the clot is scooped away, the RCA button anastomosis is usually easily exposed and well-visible (Figure 4). Like Carrel

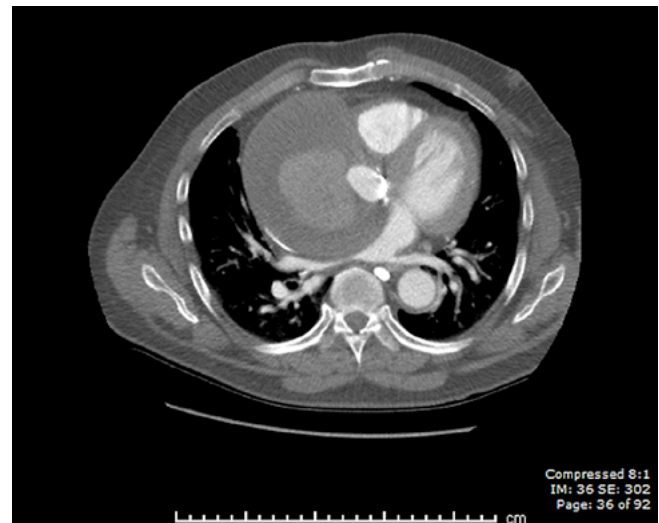


Figure 1. Computed tomography scan demonstrating a large 12.5 cm pseudoaneurysm originating from the right coronary button in a patient after composite graft aortic root replacement.



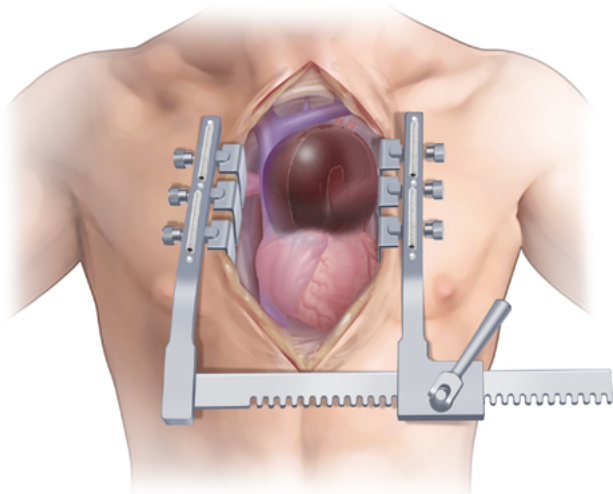


Figure 2. Appearance of the pseudoaneurysm upon re-entry into the chest.

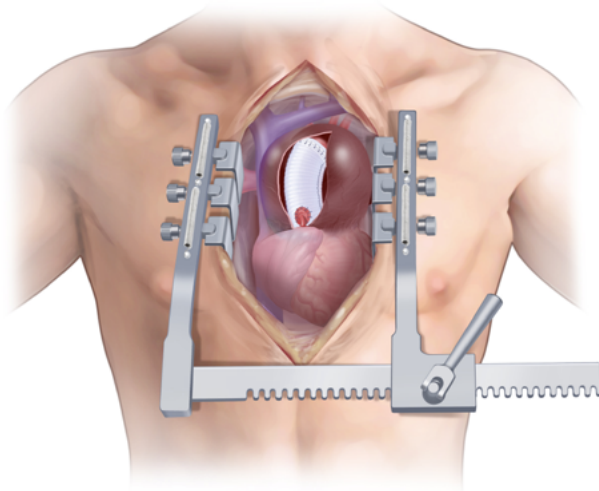


Figure 3. The pseudoaneurysm is opened and the right coronary button with a leaking suture is identified.

and colleagues [1], we find that tightening the anastomosis and placing one or two stitches suffices. In this case (RCA pseudoaneurysm) the sutures are all placed from outside the aortic graft, without ever opening it. We then rewarm and wean from cardiopulmonary bypass.

The two anatomic lesions, LCA and RCA pseudoaneurysm, present different anatomic challenges. In

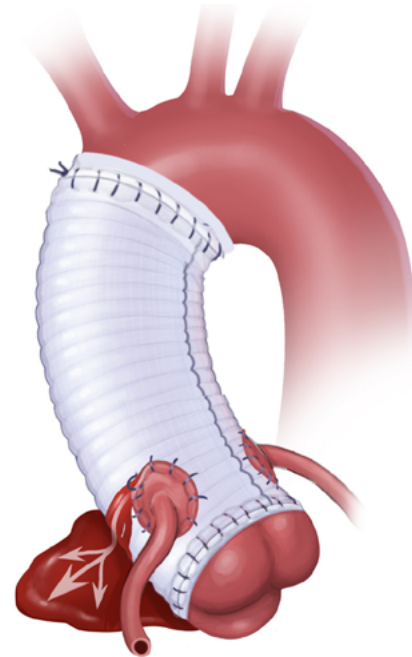


Figure 4. Schematic illustration showing how a loose suture of the right coronary artery button can cause a leak, which ultimately leads to pseudoaneurysm formation.

LCA pseudoaneurysm, the accompanying clot-filled false aneurysm is posteriorly located and is not even exposed surgically. In RCA pseudoaneurysm, the clot-filled false aneurysm covers the aortic region and impairs aortic and cardiac access. The surgeon not only “sees” the clot-filled false aneurysm, but traverses it to accomplish the repair.

Performing RCA pseudoaneurysm repair through the pseudoaneurysm simplifies the procedure immensely, obviating tedious and dangerous dissection to access and dissect cardiac structures directly.

Conflict of Interest

The authors have no conflict of interest relevant to this publication.

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