A 79-year-old woman with severe aortic stenosis underwent aortic valve replacement surgery, and had ligation of the left atrial appendage (LAA) using an epicardial approach. On a post-operative echocardiographic evaluation, the distal portion of the LAA was excluded, leaving no communication with the left atrium. The proximal portion of the LAA, however, was in continuity with the circulation and a large thrombus was present within it. While previous reports of incomplete LAA ligation have involved disruption of the suture line, this present report describes a case of incomplete ligation due to persistence of the proximal portion of the appendage. Thus, thrombus formation occurred despite a ‘successful’ epicardial exclusion of the distal LAA.

Discussion

Ligation of the LAA is occasionally performed during valvular surgery to minimize risk of thrombus formation and potential distal embolization. While there are no randomization, prospective data to confirm that appendage exclusion decreases such risk, there are retrospective data which suggest that it might. It is well documented, however, that surgical attempts to ligate the appendage sometimes fail to achieve complete exclusion due to disruption along the closure line. Flow into an area of stagnating blood may actually increase the risk of embolization. This present case differs from prior reports of incomplete LAA ligation in that there was no apparent disruption of the suture line. In this case, a successfully ligated appendage was indeed excluded with no evidence of blood flow into the excluded cavity by Doppler imaging. The proximal half of the appendage, however, was patent with a large (1.3 cm x 1.0 cm) thrombus located just above the suture line (Figure 1). The planned cardioversion was cancelled and the patient was later discharged from the hospital on warfarin without further complication.
In two studies evaluating 58 and 50 patients, respectively, after LAA ligation, the incidence of incomplete closure was 10% and 36%. When ligating the LAA with suturing from the endocardial surface, the surgeon generally takes shallow bites to avoid damage to the left circumflex artery. This present case demonstrates, however, that even with epicardial suturing, LAA ligation may be incomplete, and thrombus formation still possible. Further investigation would be necessary to evaluate the optimal technique for LAA ligation, as well as the clinical effectiveness of this procedure.

References