

Removal of a chronically implanted active-fixation coronary sinus pacing lead using the Cook Evolution[®] lead extraction sheath

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In this case, a unipolar active-fixation coronary sinus lead (Star Fix[®]) had to be removed because of severe system infection. Therefore, a mechanical dilator sheath (Evolution[®]) was used. Because of the potential risk for severe complications in this kind of extractions, active-fixation coronary leads should only be implanted, if there are no other options.

Case report

An 80-year-old man with an implanted resynchronization therapy pacemaker device was referred to our institution in October 2011 to perform a transvenous lead and generator removal for a severe pocket infection.

As left ventricular pacing lead, an unipolar active-fixation coronary sinus (CS) lead (Attain StarFix[®] 4195 OTW, Medtronic Inc.), positioned in a lateral coronary vein, had been used.

For lead removal, a venous lead entry site approach with a transvenous mechanical dilator technique, using polypropylene sheaths (Cook Intravascular Inc.) was used. However, the Attain StarFix[®] lead could not be extracted with a sheath and a locking stylet, as its polyurethane lobes, expanded in the lateral coronary vein, could not be relaxed.

We decided to try to mobilize the lobes with a 9F mechanical dilator sheath (Evolution[®], Cook Inc.), which was carefully advanced via the CS into the lateral coronary vein. Little movements back and forth, combined with several mechanical tip rotations of the Liberator[®] sheath every 5 mm made it possible to reach and finally loose the tip of the StarFix[®] lead. After fluoroscopic confirmation of a proper sheath position, the extraction of the complete lead, using continuous traction, could be accomplished (Figure 1). Immediately after the procedure, a discrete pericardial effusion was seen. This effusion disappeared without the need for pericardiocentesis within 3 days.

Discussion

Compared with passive-fixation CS leads, active-fixation leads with anchor lobes near the tip decrease the risk for lead dislodgement and are thus an attractive alternative for the operator.

During implant, withdrawal of the push tubing relaxes the lobes to allow repositioning or removal of the lead. However, relaxation of the lobes can be impossible in chronically implanted leads due to significant fibrotic tissue in-growth between the lobes. Extraction of these leads can thus be extremely challenging or impossible, even few weeks after implantation.¹ Various techniques for removal of the Attain StarFix[®] lead are described, ranging from sole direct traction to the use of locking stylets, to mechanical, cutting, or laser extractions sheaths. Direct traction alone seems to be sufficient for complete Attain StarFix[®] lead extraction only when the lead has been implanted <1 month before.¹ In contrast, passive-fixation CS leads seem to require less extensive extraction efforts to gain complete lead removal despite longer implant durations. Bongiorno *et al.*² described a cohort of 37 subjects with an extraction of passive-fixation CS leads. Despite an average implant duration of 19.5 months, 73% of the leads could be removed with direct traction only.

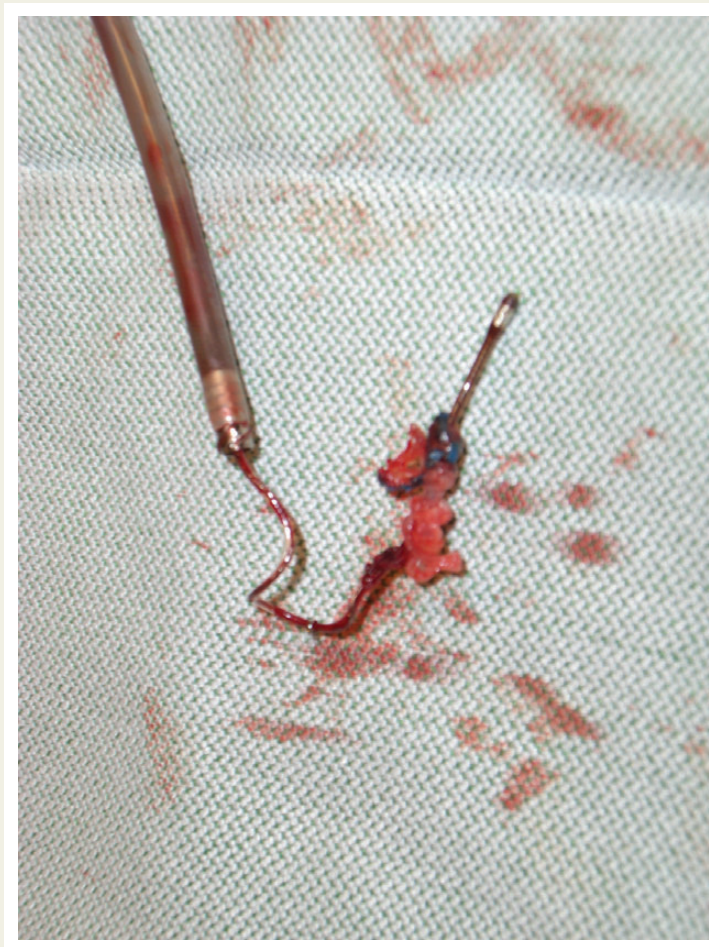


Figure 1 Evolution[®] device with extracted Star Fix[®] lead.

As illustrated by our case, chronically implanted Attain StarFix[®] leads can be extracted with the help of a mechanical extraction sheath. However, these removals may inherit potential risks and should only be performed by experienced operators with cardiac surgical standby. We conclude that in young patients or those at higher risk for device infection, Attain StarFix[®] leads should only be implanted, if all other transvenous left ventricular pacing options were exhausted.

Conflict of interest: none declared.

References

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