

# Importance of anchoring sleeve in pacemaker implantation

Santosh Kumar Sinha, Vikas Mishra, Ramesh Thakur, Nasar Abdali

Department of Cardiology, LPS  
Institute of Cardiology, Kanpur,  
India

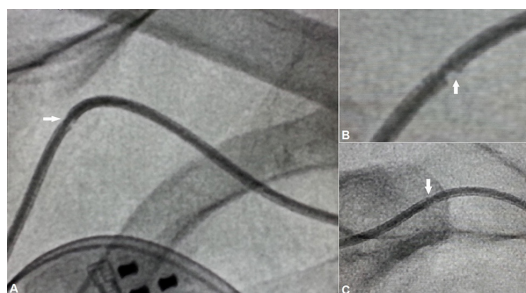
**Correspondence to**  
Dr Vikas Mishra,  
dr.vikasmishra@gmail.com

Accepted 10 April 2017

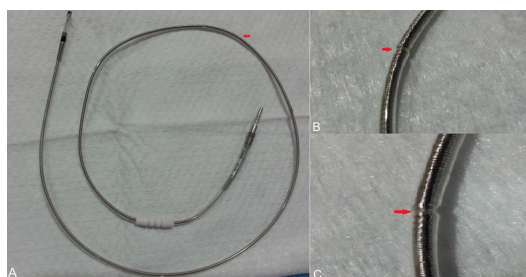
## DESCRIPTION

The greatest benefit of the cephalic approach is its margin of safety compared with that of the axillary/subclavian stick as there is almost no risk of pneumothorax or haemothorax.<sup>1</sup> Permanent pacemaker was implanted in a 60-year-old man with sick sinus syndrome from right side by cephalic cut-down approach. On the next day, patient complained of one episode of syncope. Pacing interrogation revealed minimally elevated impedance with intermittent failure to capture. Fluoroscopic examination (figure 1A–C) showed partial lead transaction (concomitant conductor fracture and insulation defect). It occurred because of a very tight knot which was put directly over the vein to anchor the

lead as there was no fixation sleeve between the lead and inner wall of cephalic vein causing direct mechanical trauma of lead. The lead was removed and replaced with another lead via subclavian route. Lead conductor fracture is associated with infinitely high lead impedance if the insulation remains intact. However, impedance may stay unexpectedly normal or little elevated in face of partial lead transaction (figure 2A–C) as the fluid in the vicinity may complete the circuit, thus allowing some amount of current to pass across the breach in the coil. As the current reaching the ventricle is less than normal, it will generate a pacing artefact but there will not be a capture as in our case.<sup>2</sup>



**Figure 1** Fluoroscopic examination showing partial transaction of lead (white arrow showing site of entry into cephalic vein (A)). Magnified view showing partial transaction (white arrow (B, C)).



**Figure 2** Explanted lead with transaction (red arrow (A)). Magnified view showing partial transaction (red arrow (B, C)).

## Learning points

- ▶ Anchoring sleeves should be used with all leads to distribute the tension created by suture. Failure to use the suture sleeve may result in damage to the lead's insulation or the conductor coil.
- ▶ Do not tie the sutures around the suture sleeve too tightly as this may result in excessive stress applied to the lead body.
- ▶ Lead conductor fracture can manifest as early as within 24 hours with definitive treatment being replacement.

**Contributors** SS and VM: manuscript preparation. RT: Intervention. NA: patient care.

**Competing interests** None declared.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

© BMJ Publishing Group Ltd (unless otherwise stated in the text of the article) 2017. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

## REFERENCES

1. Sarveswaran J, Burke D, Bodenham A. Cephalic vein cut-down verses percutaneous access: a retrospective study of complications of implantable venous access devices. *Am J Surg* 2007;194:699.
2. Levine P. Evaluation and management of pacing system malfunctions. In: Ellenbogen K, Wood M, eds. *Cardiac pacing and ICDs, fourth edition*. Massachusetts: Blackwell publishing:329. 978-1-4051-0447-0.



CrossMark

**To cite:** Sinha SK, Mishra V, Thakur R, et al. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-220356

Copyright 2017 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.  
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact [consortiasales@bmjgroup.com](mailto:consortiasales@bmjgroup.com)

Visit [casereports.bmj.com](http://casereports.bmj.com) for more articles like this and to become a Fellow