

infarction in order to avoid delays in reperfusion in patients with a confirmed diagnosis, but the case presented by the authors demonstrates how an alternative management may be appropriate when emergency echocardiography is available. ■

ROBERT F STOREY

*Professor of cardiology and honorary consultant cardiologist,  
Department of Cardiovascular Science, University of Sheffield, UK*

## Reference

- 1 Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC), Steg PG, James SK, Atar D *et al.* ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. *Eur Heart J* 2012;33:2569–619.

## Cardiology registrars and permanent pacemaker complication rates

Editor – We read with interest the article by Leong *et al* exploring complication rates in the 12 weeks after pacemaker implantation in a UK district hospital (*Clin Med* February 2014 pp 34–7). We highlight a later complication that can occur and how to avoid it using a technique which will also be of interest to all physicians performing central venous access techniques.

In the Leong study the subclavian vein was the most frequent route utilised for venous access. As found in this study there is a small risk of pneumothorax. However, in the longer term it also conveys a small risk of a ‘crush’ injury to the pacemaker lead.<sup>1</sup> This is thought to be a result of pressure exerted between the first rib and the clavicle on the lead just before it enters the vein. The first author of this letter has experience of this complication, resulting in transection (Fig 1a and b).

A different approach utilises the axillary vein (Fig 1c). As the puncture is extra-thoracic, there is no longer a risk of crush injury and the risk of pneumothorax is reduced. A number of methods allowing access to this vessel have been described. It can be identified using ultrasound (Fig 1d) with a number of papers describing ultrasound guided insertion with up to 100% success rates, short operator learning curves and low complication rates.<sup>2,3</sup> Various fluoroscopic approaches have been described with very high success rates.<sup>4</sup>

We therefore believe that axillary venous access is safe, useful, easy to learn and therefore of use to all physicians performing central venous access techniques. ■

DANIEL M SADO

*StR in cardiology, The Heart Hospital, London, UK*

WEI YAO LIM

*StR in cardiology, The Heart Hospital, London, UK*

MARTIN THOMAS

*Consultant in cardiology, The Heart Hospital, London, UK*

## References

- 1 Gallik DM, Ben-Zur UM, Gross JN, Furman S. Lead fracture in cephalic versus subclavian approach with transvenous implantable cardioverter defibrillator systems. *Pacing Clin Electrophysiol* 1996;19:1089–94.
- 2 Sharma A, Bodenham AR, Mallick A. Ultrasound-guided infraclavicular axillary vein cannulation for central venous access. *Br J Anaesth* 2004;93:188–92.
- 3 Sommerkamp SK1, Romaniuk VM, Witting MD *et al.* A comparison of longitudinal and transverse approaches to ultrasound-guided axillary vein cannulation. *Am J Emerg Med* 2013;31:478–81.
- 4 Antonelli D, Feldman A, Freedberg NA, Turgeman Y. Axillary vein puncture without contrast venography for pacemaker and defibrillator leads implantation. *Pacing Clin Electrophysiol* 2013;36:1107–10.

Fig 1. (a) and (b) A crush injury a number of months following insertion of a right ventricular pacemaker lead. The lead is transected (arrow). (c) Venogram showing the basilic (BV), cephalic (CV), axillary (AxV) and subclavian (SV) veins. (d) Ultrasound taken at the level shown by the arrow showing the axillary artery (AxA) and vein. The venous nature of the vessel is confirmed using colour doppler and its compressibility under pressure applied to the probe.

