The naughty knot in catheterisation laboratory

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DESCRIPTION

A 60-year-old man presented to the emergency department with multiple syncopal episodes. A 12-lead ECG revealed complete heart block with a ventricular rate of 50 bpm (figure 1). Emergency temporary pacing was performed through the transjugular route without fluoroscopic guidance (as the patient arrived at our institute at night) and ventricular capture confirmed (figure 2). The patient did well overnight but at the time of morning rounds he started having giddiness again. ECG showed complete heart block with no pacing spikes. The patient was taken to the catheterisation laboratory. Fluoroscopy revealed a knot in the pacing lead (figure 3, video 1). Emergency pacing was achieved through the transfemoral route. Now we planned to unknot 'the naughty knot'. We tried to manipulate the lead through the jugular route but this was unsuccessful. Ultimately we took a 0.035" J tipped guide wire (Terumo Interventional Systems). We approached the knot through the femoral route and the knot was opened by hooking the J tip in it and the lead was retrieved successfully (figure 4, video 2). Knotting of an intravascular catheter was first reported by Johansson *et al* in 1954.¹ Knotting together of temporary and permanent pacemaker leads has also been described.² Various methods of unknotting can be used, for example, putting a long sheath through the same

route and covering the knot with the sheath,³ which was unfortunately unavailable in our laboratory that day. Other methods can be: snares—either commercial or indigenous, retrieval baskets, endomyocardial biopsy forceps and angioplasty balloon inflation. Knotting of intravascular devices like catheters or leads is a rare complication but a significant cause of morbidity. Unknotting can be performed percutaneously in most cases but surgical retrieval is required in some cases with extensive knots with large lengths or when the knot is intracardiac fixed. Most case reports show pulmonary artery catheters to be the most common victims. Excessive manipulation without fluoroscopy can lead to such complications. In the current era knotting is most commonly seen during radial catheterisation.

Learning points

- ▶ Knotting of temporary pacemaker leads can be avoided by careful visual control under fluoroscopy while inserting.
- ▶ Knotting is a significant cause of morbidity.
- ▶ If knotting ever happens, unknotting can be performed successfully by percutaneous methods.

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Figure 1 Twelve-lead ECG revealing complete heart block.

Figure 2 Twelve-lead ECG post-transjugular temporary pacing.

Figure 3 Fluoroscopy anteroposterior view with a knot in the lead.

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Contributors HM was involved in writing the article. SKKR and DR developed the idea of writing a case report and performed the procedure. CNM provided the finishing touches and was involved in obtaining all the required permissions.

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Video 1 Fluoroscopy AP view with a knot in the lead.

Figure 4 Fluoroscopy anteroposterior view postpartially opened knot with J tipped wire side-by-side.

Video 2 Fluoroscopy AP view post partially opened knot with J tipped wire side by side and retrieval of lead.

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