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Do not yet abandon cephalic vein access for multiple leads in ICD implantation

To the Editor,

We read with great interest the manuscript by Barbhaiya et al. demonstrating the excess lead failure of ICD leads when a multi-lead approach using cephalic vein access was used.¹

This report adds to the controversy of which approach is the best to implant electrodes for pacemakers or ICD systems. Increasing numbers of operators are switching from subclavian to axillary vein puncture because of lower rates of pneumothorax or hemothorax. Cephalic vein access is in the view of many operators more cumbersome. A recent randomized controlled study has demonstrated that ultrasound-guided axillary puncture in physicians naïve to this technique has a higher success rate than cephalic access (98% vs. 55%) and is significantly faster (40 vs. 51 min) with no difference in complication rates.²

The data on lead survival is somewhat limited for axillary access. Cephalic access is considered superior to subclavian because of the lower risk of subclavian crush syndrome. A recent meta-analysis demonstrated more lead failure in subclavian versus cephalic vein access.³ In the same meta-analysis, lead failure in axillary access did not differ from cephalic access.³ In a large retrospective analysis, lead failure was lower in cephalic access than axillary puncture.⁴


Barbhaiya et al. show a surprisingly high failure rate when implanting multiple leads. As already stated in the accompanying editorial by Syska,⁵ implantation techniques might contribute to the observed failure rate as vein ligation can be too tight causing lead-insulation defects. We wonder what the reason was for using the cephalic vein approach in the current study, as it was used in only 18% of patients and even less were multiple lead implantations. The results from Barbhaiya et al. are based on very few multiple lead implantations. The number at risk in their Kaplan–Meier analysis started at 30 patients and decreased to 11 patients at 500 days. In total, six leads failed and there is little data on the failure mechanism. With such a low number of lead failures, it may be of interest to give insight into electrical characteristics for all failures. Furthermore, as the failed leads were extracted, we expect that they were returned to the manufacturers for defect analysis which could give an additional clue to the failure mechanism.

We think it is too early to abandon cephalic vein access even for multiple leads. In the recent meta-analysis success rate was 76% and the complication rate was equal to axillary and lower than subclavian access.³ Analysis of larger numbers of multi-lead cephalic access in a multicentre setting is needed before we can conclude that the lead failure rate is truly higher. However, as the success rate of cephalic

cutdown is only 55%–80%, operators are certainly required to be proficient in a different puncture technique, preferably axillary vein access. It is reasonable to use ultrasound-guided axillary vein access as the first-line approach for pacemaker or ICD electrode implantation.

KEYWORDS

axillary, complications, lead failure, operator

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REFERENCES

1. Barbhaiya CR, Niazi O, Bostrom J, et al. Early ICD lead failure in defibrillator systems with multiple leads via cephalic access. *J Cardiovasc Electrophysiol.* 2020;31(6):1462-1469.
2. Tagliari AP, Kochi AN, Mastella B, et al. Axillary vein puncture guided by ultrasound vs cephalic vein dissection in pacemaker and defibrillator implant: a multicenter randomized clinical trial [online ahead of print]. *Heart Rhythm.* 2020. <https://doi.org/10.1016/j.hrthm.2020.04.030>
3. Atti V, Turagam MK, Garg J, et al. Subclavian and axillary vein access versus cephalic vein cutdown for cardiac implantable electronic device implantation: a meta-analysis. *JACC Clin Electrophysiol.* 2020; 6(6):661-671.
4. Aizawa Y, Negishi M, Kashimura S, et al. Predictive factors of lead failure in patients implanted with cardiac devices. *Int J Cardiol.* 2015; 199:277-281.
5. Syska P. Cephalic access with multiple leads may increase the risk of early ICD lead failure. Time to question the dogma? *J Cardiovasc Electrophysiol.* 2020;31(6):1470-1471.