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Cardiologists should have basic surgical skills training

Ali Khavandi,1 Stephen Hamilton,2 Adam Fitzpatrick,3 David J Wright,4 Michael Lewis,5 Alun Harcombe,6 Edward Rowland7

Over the past two decades cardiology has become an increasingly interventionist speciality. Pacemaker implantation is now a common practice and is undertaken in most UK hospitals. Advances in pacing technology and an increasing adult congenital population have seen cardiac rhythm device implantation in younger patients. The need for a cosmetically acceptable scar is increasingly important in this population who will require several box changes within their lifetime. There is also a trend towards ‘hybrid’ procedures in surgical theatres or hybrid cardiac catheter laboratories. Surgical principles and basic surgical skills have an increasing relevance and importance for cardiology trainees, but despite this very few cardiologists receive any formal surgical training.

Pacemaker pocket infection is a serious complication, with rates between 1% and 5% reported. This can lead to life-threatening infections (triple the risk of death) such as endocarditis and septicaemia and the need for a potentially complex repeat procedures with associated risk to the patient.1 6 The average economic cost of device infection treatment has been estimated at £34 000 per patient.7 Pocket haematoma is a frequent early complication after device implantation, with quoted rates of approximately 5%.8 This accounts for 17% of early re-operations and contributes to patient morbidity and prolonged hospitalisation.9 10 It is estimated that 60% of all surgical site infections are confined to the incision.11

Incisions placed in the triangle over the anterior chest from the shoulders to the xiphoid line may have an increased tendency to develop into hypertrophic and keloid scars (especially in younger patients) as a result of respiratory forces acting across the wound. Simple principles such as reducing tension across the wound by placing pocket incisions parallel to lines of relaxed tension (‘Langer’s lines’) (figure 1) and optimal wound closure techniques help camouflage scars and minimise widening and hypertrophy.

Many unsightly scars, uncomfortable or prominent pocket sites and surgical complications such as haematoma or wound breakdown can be attributed to poor techniques. Moreover, pacemaker box changes that can often be delegated to the most junior trainees are potentially extremely complex with higher rates of infection. Significant fibrotic tissue reactions and scar require experience in the correct use of diathermy for the dissection of leads to achieve an optimal pocket. For these reasons we believe that trainees who are attempting the insertion of pacemakers should be competent in basic surgical principles.

Traditionally, a cardiology trainee would develop the necessary surgical knowledge and skills for device implantation by observing senior colleagues and extrapolating basic skills, which may have been acquired as a junior doctor during surgical attachments. However, even among senior and experienced cardiologists the standard is variable (as they also would not have had formal standardised training) and basic principles of surgical practice are often poorly applied. Basic errors and non-standardised skills are then passed down to future generations. In the era of modernising medical careers, this issue may be exacerbated as trainees are more likely to start specialty training without rotating through surgical or emergency posts for a significant portion of time. Moreover, they are less likely to have had opportunities to learn surgical/procedural skills due to a shift towards more senior operators.

We believe that competency in basic surgical principles and skills is integral to competency in device implantation. The new cardiology curriculum does specifically refer to ‘surgical skills in opening, manipulating and closing wounds’ with reference to pacemaker implantation as part of the core syllabus. These skills are to be evaluated by direct observation of procedural skills by supervising consultants. The current difficulty for trainees (and assessors) is that there is no standardised guidance or training specific to device implantation and very few points of reference within cardiology. We have been unable to find any pacing texts that describe surgical skills adequately. Equally, we have found no papers or online learning resources specifically for device implantation. Most device courses are currently led or sponsored by device companies and some have good modules on simple pocket formation and suturing skills but obviously cannot focus on basic surgical skills training.

Clearly, more standardised guidance and training is required from within the speciality. Surgical trainees are required to attend a basic surgical skills course under the Royal College of Surgeons, preferably in the first year of surgical training and before membership of the Royal College of Surgeons. This is mandatory and ensures a basic level of competency and standardised core principles that the trainee can build on. The course comprises 2.5 days and provides teaching, assessment and certification. There are modules on theatre etiquette (gowning and scrubbing), correct instrument handling, suturing and correct suture selection, knot tying and wound care, all of which are relevant to cardiologists. However, there are modules that are less relevant to cardiologists such as vessel anastomosis, orthopaedics and laparoscopic skills.

It is clear to us that more attention needs to be focused on basic surgical skills from the point of view of the curriculum and subsequent assessment of competency. We would advocate surgical skills as specifically applicable to cardiologists to be included in the core curriculum for all specialist trainees. The first step is to establish a clear standardised cardiology-specific syllabus. Thereafter, we believe the best way to disseminate appropriate skills and knowledge nationally will be through practical ‘hands-on’ training courses. This will require close collaboration between surgeons (including plastic surgeons) and experienced cardiologists with an interest in device implantation to translate core surgical skills to cardiac device implantation and interventional procedures. Initially, these courses should be aimed at all trainees irrespective of their
level of experience to produce a uniform national standard. Once established, we would suggest that all trainees should be required to complete a course in the first year of specialist training. This will provide a national minimum standard of practice, a point of standardisation and reference for trainees (and assessors) and an accepted reference of competence in the UK. We anticipate that these interventions in cardiology training will translate to significant improvements in patient care and outcomes nationally.

Competing interests The authors represent the faculty of a new surgical skills for cardiologists training programme in conjunction with Heart Rhythm UK, the British Cardiovascular Society and the Royal College of Surgeons of England.

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