

Totally Implantable Ports Placed by Specialist Nurses at a Tertiary London Hospital: A Review of 65 Consecutive Patients



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ABSTRACT: Totally implantable ports (TIP) are placed beneath the skin for external connection to the intravenous system. The objective of the study was to demonstrate the feasibility of the nurse-led TIP service at a tertiary London hospital. The outcomes for safety and efficacy of the service were evaluated for 65 consecutive TIP cases inserted by two clinical nurse specialists (CNSs), from October 2010 to March 2013 (30 months). All data were collected retrospectively. Follow-up of patient outcomes were at least 12 months long unless the patient deceased prior. We included procedure details of a TIP insertion. A literature review was performed to identify studies in nurse-led implantable venous access services. Ninety-one percent of the ports were inserted for malignancy treatment. Eight cases experienced insertion-site difficulties, but only two cases required a second attempt. The mean follow-up time of the study was 14 months. Only one case required unplanned removal due to inflammation at the insertion site. The complication rate was at an acceptable 1.5%. The delegation of work to a CNS will release radiologist resources and have positive cost implications for the hospital. This case series is the first study in peer review literature demonstrating a nurse-led TIP service is safe, feasible, and sustainable. (J Radiol Nurs 2016;35:238-242.)

KEYWORDS: Vascular access devices; Port catheters; Interventional radiology; Nursing.

INTRODUCTION

A totally implantable port (TIP) is a device that consists of a catheter and a port with a self-sealing synthetic membrane able to withstand hundreds of repeated punctures (Smiths Medical, 2012). They are

placed beneath the skin for external connection to the intravenous system. TIPs are widely accepted by patients as they provide a reliable and convenient access with the absence of an external line. They are recommended for people who need frequent and intermittent intravenous access for >30 days (Pratt et al., 2007). The usage of a TIP has been shown to shorten hospital stay and improve quality of life (Goossens et al., 2011; Ignatov et al., 2009). A further advantage is that it requires minimum care and maintenance when not in use (Kock et al., 1998). Some TIPs are also designed to withstand higher pressures required by pump injectors used for contrast computed tomography (CT) imaging, further increasing their utility in oncology patients requiring multiple CT scans (Smith, 2008).

In comparison to peripherally inserted central catheters (PICCs), the TIP is regarded as a superior method for long-term access (Grannan & Taylor, 1990;

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Kulkarni et al., 2014). However, they are generally more complex to place, requiring tissue incision and suturing, and are more costly than PICCs (Kulkarni et al., 2014). The procedure is commonly performed by surgeons and interventional radiologists. Collaborative working among interventional radiologists, clinical nurse specialists (CNSs), and a researcher with interest in integration of health services has resulted in the development of a comprehensive nurse-led service. This study illustrates the technical aspects of a TIP insertion and demonstrates the feasibility of the nurse-led service at a single tertiary London hospital.

MATERIALS AND METHODS

The outcomes for safety and efficacy of the service were evaluated for 65 consecutive TIP cases inserted by two CNSs, from October 2010 to March 2013 (30 months). Inclusion criteria included all cases from any specialty referred to interventional radiology for a TIP insertion at our hospital and performed by one of the two CNS. There were no exclusion criteria.

The two CNS involved both have a Master of Science degree in Nursing and have >7 years of direct experience as a radiology nurse. Throughout their careers, they also attended various interventional radiology courses and conferences. Furthermore, they were involved in day-to-day training under direct supervision by interventional radiologists for at least 6 months.

All TIPs used in our study were single- or dual-lumen Smiths Medical PORT-A-CATH® (St. Paul, MN) with silicone catheters. All data were collected retrospectively from the electronic patient record system, departmental morbidity and mortality meeting, interventional suite logs, and paper notes. Follow-up of patient outcomes were at least 12 months long unless the patient deceased prior. A literature review was performed to identify studies in nurse-led implantable venous access services. No institutional review board approval was needed for this study.

Procedure Details

Following an appropriate referral to the nurse-led TIP service, the patient is scheduled in to have the procedure in the interventional radiology suite. The CNS will attempt to meet the patient preprocedure. This step is essential to the smooth running of the service, as it is the time when the procedure is fully explained, extra information given, questions answered, and consent obtained.

The TIP insertion is performed under aseptic conditions in the interventional radiology suite. All patients are cannulated, and intravenous sedation and analgesia are administered in the form of aliquots of 1-mg midazolam and 25- μ g of fentanyl. Sedation and analgesia is

prescribed by the on-duty radiologist as per protocol. Oxygen is given before administration of sedation. Blood pressure, pulse, and oxygen saturations are monitored throughout the procedure. Chlorhexidine is used for skin surface preparation. Local anesthesia is used in the form of 1% lidocaine with adrenaline.

The insertion site of choice is the right internal jugular vein (IJV) (Plumhans et al., 2011). If this is not feasible, the vein used for access is the left IJV, followed by the right subclavian vein (SCV) and lastly by the left SCV. No prior identification of vessels was required. The vessel selection algorithm is per protocol. All punctures are performed under ultrasound guidance using a standard 18-gauge arterial puncture needle. A 5-mL syringe is attached to the needle with 2 mL of saline in it to allow aspiration of blood to confirm entry into the vein. After puncture of the vein, a guidewire is inserted. Under fluoroscopic guidance, the guidewire is advanced into the inferior vena cava. Once the guidewire is in a stable position, the port pocket is created. The pocket is generally placed 4 finger breadths below the clavicle (Figure 1). The anticipated site is discussed with the patient and marked on the skin with the patient sitting up before prepping for the procedure. Variations to this are occasionally made due to anatomical factors such as large amount of breast tissue.

There are two types of port used: a single-lumen or double-lumen port. A horizontal incision is made to accommodate the width of the port, and the pocket is created using blunt dissection with forceps and fingers. Further local anesthesia is administered along a track between the port pocket and the IJV puncture site to tunnel the catheter. The pocket is assessed to ensure that it is big enough to accommodate the port. Once the pocket is ready, the port is connected to the catheter and the port flushed with heparinized saline.

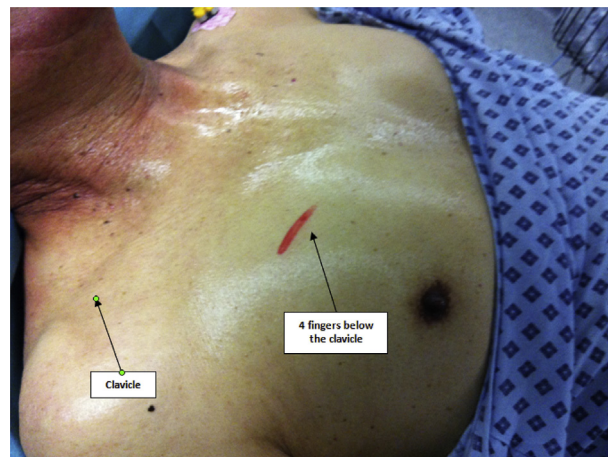


Figure 1. Insertion site of TIP 4 fingers below clavicle.

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