Our experience with peripherally inserted central catheters (PICC) at a tertiary orthopaedic hospital- A analysis of complications over the last 5 years.

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BACKGROUND

PICCs are non-tunnelled vascular access devices which are usually inserted into the deep veins of the upper limbs. PICCs are easy to insert, safe to use and thought to have a lower risk of infection compared to central venous catheters.

At the RNOH in London, there is a central venous access service. Other than a dedicated weekly half-day session, 5 anaesthetic consultants are available to insert and manage PICCs during routine working hours. Most PICCs at our hospital are inserted for the medium to long term treatment of infection. Our aim was to examine the complication rate associated with PICCs inserted for parenteral antimicrobial administration.

Fig 1- illustration of a vygon PICC

METHODS

Between 1st April 2015 and 28th Feb 2020, a clinical nurse specialist followed up all patients on a routine basis. Follow up consisted of a weekly telephone call where questions were asked and concerns were addressed and a six-weekly face-to-face clinic appointment. Patients were encouraged to contact us if there were any further problems

RESULTS

Total - 498 PICCs lines inserted, 247(49.6%) males and 251(50.4%) females, average age 64 years(range 6-82). The overall complication rate was 12.65% and 2.82 per 1000 PICC days. On average the incidence of symptomatic upper extremity venous thrombosis (UEVT) and infection was 2(0.40%) and 5(1%) respectively. The rate of migration showed a progressive decline from 7(4.43%) in 2015-16 to 1(2.56%) in 2019-20. The overall numbers of PICCs that occluded range from 8(5.06%) in 2015-16 to 3 (7.69%) in 2019-20, The percentage increase could be attributed to a reduction in overall PICC line numbers.

	2015/16	2016/17	2017/18	2018/19	2019/20
PICC numbers	158	149	81	71	39
PICC line days	6630	6666	3743	3137	2146

Indications	PICC nos
Prosthetic joint infections	369(74%)
Osteomyelitis	68(13.65%)
Spinal infections	46(9.23%)
Miscellaneous	15(3.01%)
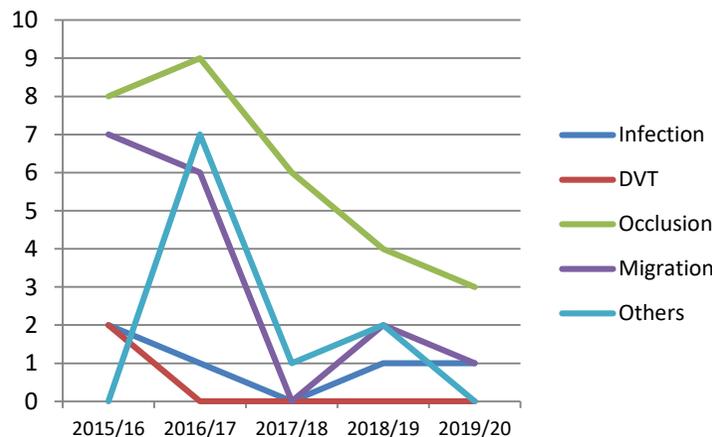
Graph showing complication rates yearly

DISCUSSION

The overall insertion numbers have reduced after the OVIVA trial in 2015.
Our overall complication rate of 2.82 per 1000 PICC days was significantly lower than that reported by a retrospective study which evaluated PICC line complications (9.2 per 1000 PICC days) in patients who needed long term antibiotics[1].
Our low rate of complications could be attributed to use of **single lumen and smaller calibre PICCs** which are associated with low thrombosis risk. Low infection rates may be atleast partially secondary to **strict aseptic technique under USG guidance in the theatre environment, the use of Curos port protectors which are a passive continuous disinfection device and patient education about PICC handling.**
Reduction in the rate of migration and occlusion may be due to **immediate use after fluorscopic confirmation of position, the change from STATLOCK device to the Vygon Grip-Lok and the use of Vygon TKO bionector which reduces the reflux of blood into the catheter.**

OUR RECOMMENDED PICC BUNDLE TO REDUCE COMPLICATIONS

• Multi-disciplinary team with consultant and specialist nurse input
• Strict asepsis in the theatre environment
• USG guided insertion at the mid-arm level
• Single lumen and small calibre 4Fr PICC line
• Immediate confirmation of position with fluoroscopy
• Curos Port protector
• Vygon Grip-Lok
• Meticulous followup: telephone and face to face
• Patient education and information &troubleshooting booklet.

REFERENCES-1) Valbousquet Schneider L, Duron S, Arnaud F et al. Evaluation of PICC complications in orthopaedic inpatients with bone infection for long term intravenous antibiotics therapy. *Journal of vascular access.* 2015: 16; 299-308.