British Association of Perinatal Medicine

Spotlight on Safety Story

Title of Spotlight on Safety Story: Is the "PICC" ture perfect ? Arterial malposition of long line **Name & Role: Nithya Lakshmipathy ST5 Paediatric registrar, Dr Raju Narasimhan consultant neonatologist** **Workplace: Royal Preston Hospital**	
Situation	An extreme preterm neonate developed signs of vasospasm of the upper limb. This was following an inadvertent arterial cannulation during PICC line insertion and infusion of parenteral nutrition. The arterial malposition was identified on retrospective review of serial x- rays .
Background	26 weeker, one of triplets with a birth weight of 800 grams was ventilated for SDLD and had umbilical lines in situ. On day 5 of life a long line was inserted in the left antecubital fossa for TPN administration. No undue complications of line placement were recorded. An x- ray was done to confirm line position which revealed the line was well into the heart **(Fig .1)** .The line was withdrawn and the repeat x- ray after manipulation (**Fig .2)** was deemed satisfactory for use. On day 3 of long line use there were concerns raised regarding the poor perfusion of the left hand. This was attributed to circumferential dressing and the line site was redressed with good improvement in perfusion. Repeat x -ray reassured there was no migration of line position **(Fig.2**). One week into the long line use, the baby was urgently reviewed in view of a pale and poorly perfused left arm (**Fig .3)** with cyanosis of the fingers **(Fig.4)** .
Assessment	The signs of acute vasospasm were recognised and the long line was removed immediately. Topical Glyceryl trinitrate patch was applied and over the next five days there was a gradual improvement of perfusion. No residual ischaemic injury was noted. Serial X -rays were reviewed retrospectively with the consensus that the initial line tip was in the ascending aorta **(Fig. 1)** . After adjustment, the catheter tip was in the subclavian artery but misinterpreted as being in the subclavian vein (**Fig. 2**).
Recommendation	1.It is important to familiarise oneself with vascular anatomy- A left-sided long line should cross the midline to enter the superior vena cava . 2.Always review serial X -rays to assess optimal line position. The most recent x-ray provides a snapshot but does not reveal the full picture. 3. Ensure regular review and documentation of central line positions by senior members of staff. 4.Other clues to arterial placement are blood gas, Colour/flow of blood on cannulation and flow of contrast from the line tip. ECHO can also aid in confirming line position. 5. Remove a PICC line promptly if any complication is suspected. 6.Prompt use of Glyceryl trinitrate minimises residual ischaemic changes.

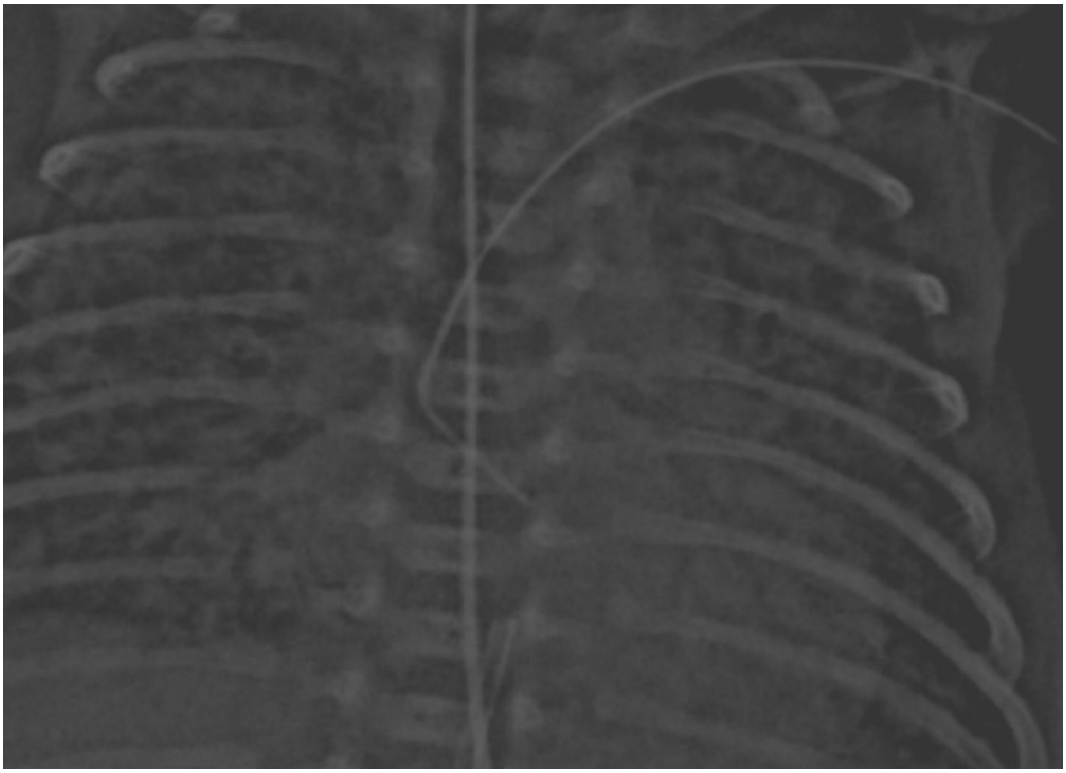

Fig 1 first x ray after long line insertion

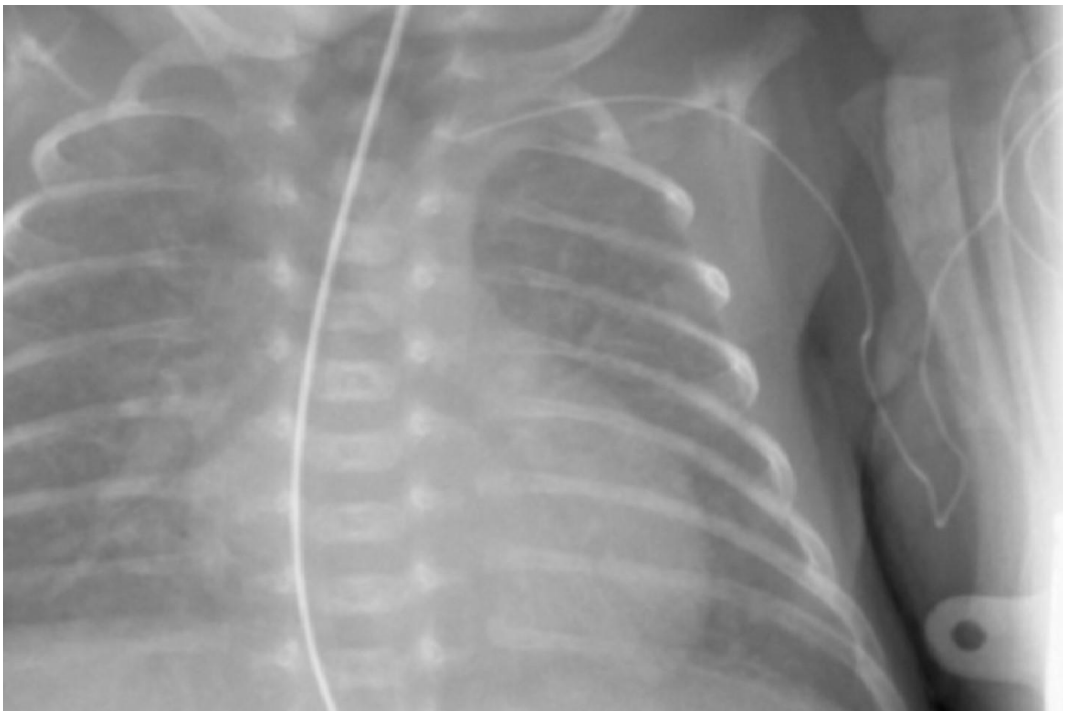

Fig 2 X ray after long line manipulation

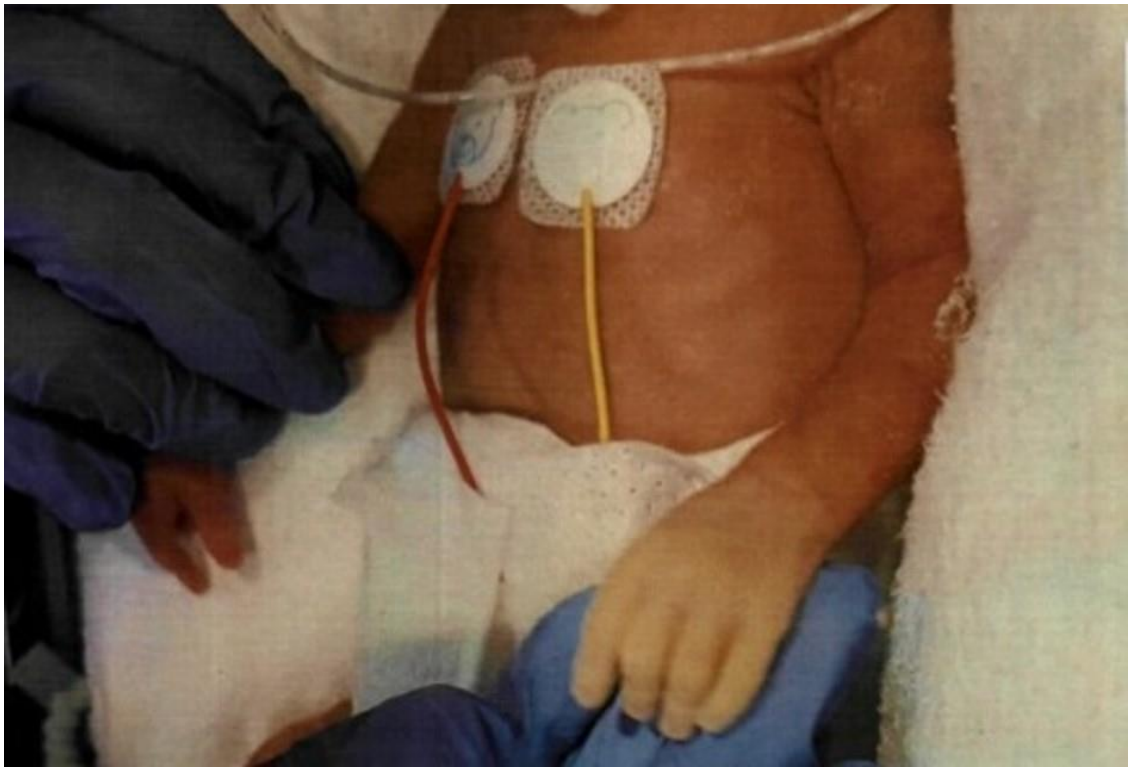

Fig 3 Vasospasm of the left arm

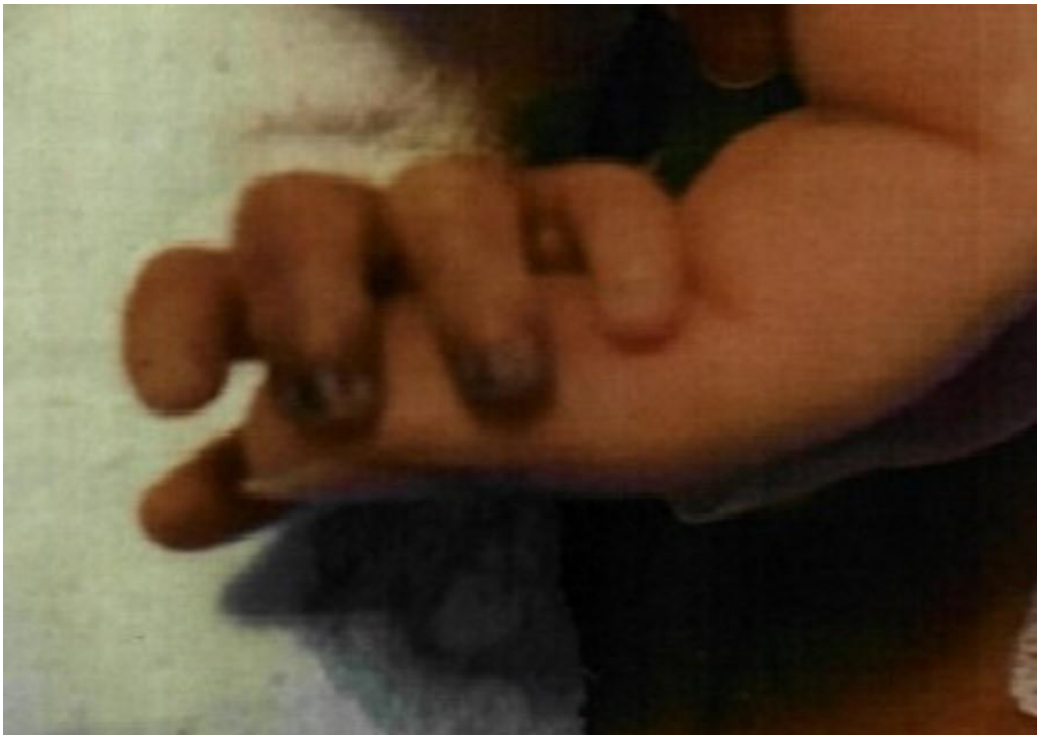

Fig 4 Dusky distal phalanges (middle and ring fingers).