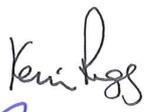
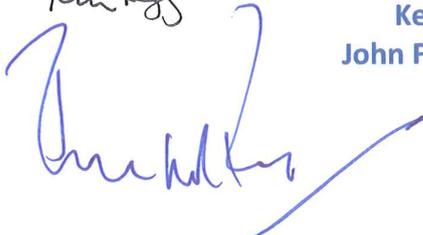




Further Supplementary Brief for Experts on Paediatric Surgery

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1. The Inquiry team would like you to examine Adam's schedule of surgical procedures, and the relevant notes and records if necessary, and comment on whether there was any previous occasion during which a suture was likely to have been placed in Adam's left internal jugular vein.

From our study of the notes and records 'a central line' of some description was inserted on four occasions. Although the route of insertion was different on each occasion the tip of the line would have been positioned to lie in the superior vena cava or just inside the right atrium of the heart. It was only central line insertion number (iii) (please see below) where an incision was made in the left side of the neck:

- i. Date 08-12-1991. Broviac line inserted into right external jugular vein (incision in right side of neck) [operation note 050-008-031]
- ii. Date 28-12-1991. Central line inserted via left antecubital fossa (incision in the left elbow crease) [operation note 050-015-047]
- iii. Date 29-05-1992. Broviac line inserted via left common facial vein (incision in left side of neck) [operation note 053-015-052]. This was subsequently removed on 09-02-1995 [medical notes 057-102-189] and this would not require a further incision on the left side of the neck, but rather on the anterior chest wall to release the cuff of the Broviac catheter and subsequent pressure over the track where the catheter has been to stop any bleeding. Although the site of incision is not stated in the operation note, the anaesthetic record states this operation took less than 30 minutes and therefore it is unlikely that an incision would have been made in the neck to have removed it.
- iv. Date 27-11-1995. Percutaneous insertion of right subclavian central line prior to start of kidney transplant operation [anaesthetic record 058-003-007]. From Dr Taylor's witness statement the tip of the central line had gone up into the neck rather than into the superior vena cava.

There are no other operations described in the schedule of Adam Strain's surgical procedures where a suture is likely to have been placed in Adam's left internal jugular vein. It can also be reasonably assumed that the right internal jugular vein was patent as this has never been used for insertion of a central vein.

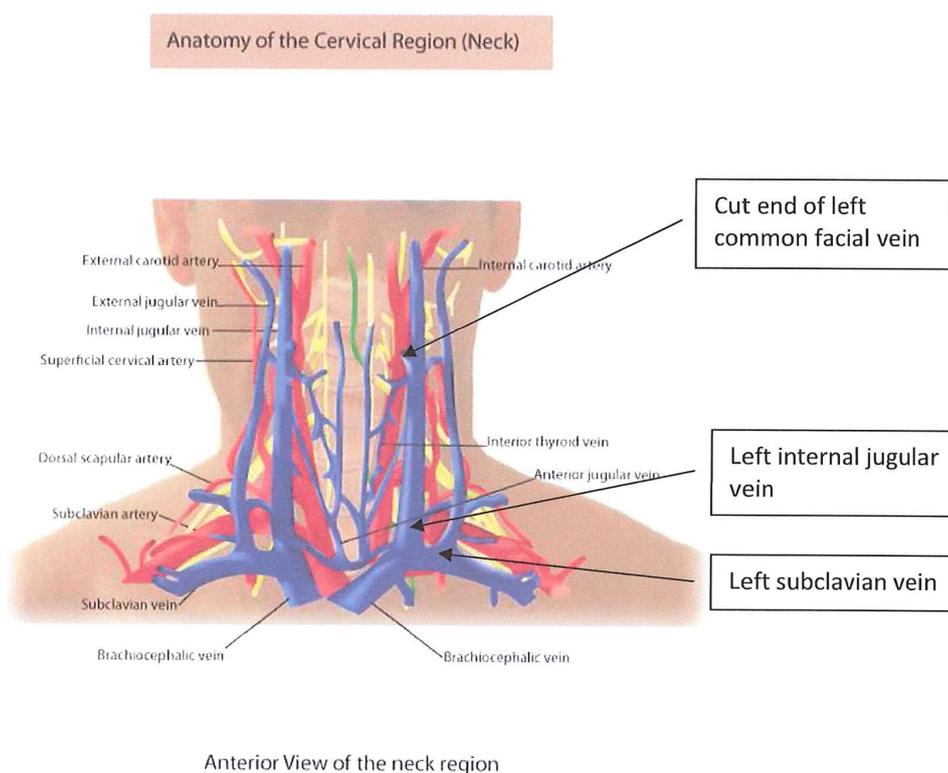
2. In particular, the Inquiry would like you to address the following queries, having regard to Adam's previous surgical procedures:
 - i. Why Dr. Armour might have seen "*a suture in situ on the left side of the neck at the junction of the internal jugular vein and the subclavian vein*" and when it was likely to have been placed.

From the evidence we have seen we are unable to say why Dr Armour may have seen a suture in situ or when it may have been placed. The only operation that appears to have taken place on the left hand side of the neck was the insertion of the Broviac catheter on 29-05-1992, but the incision for this would have been higher in the neck. The junction of the internal jugular vein and the subclavian vein lies behind the clavicle bone, low in the neck. An annotated diagram of the veins in the neck is shown in figure 1 (the internal jugular vein

joins with the left subclavian vein to form the left brachiocephalic vein). [Image taken from Google image search, may be subject to copyright]

It is not clear from Dr Armour's witness statement if the suture was lying in the tissues in the region of the junction of the internal jugular vein and subclavian vein; or whether it was round one of the veins as a ligature. The comment from the same witness statement stating that that was no evidence of congestion or obstruction of the major blood vessels or the carotid arteries or jugular veins would suggest it was not around the vein as a ligature; and that all jugular veins were patent.

Figure 1



- ii. In the light of the note of the procedure on 29th May 1992 and the witness statements of those involved in it (McCallion (WS-232/1), Brown (WS-007/4) and Stewart (WS-228/1), how likely it was that a mistake could have been made between the left common facial vein and the left internal jugular vein.

It is highly unlikely that a mistake could have been made as the common facial vein is of a smaller calibre to an internal jugular vein; and it is likely that the confluence of the two veins would have been seen to allow the insertion of the

Broviac catheter into the common facial vein and allowing it to feed into the internal jugular vein.

- iii. How likely it would be that the suture referred to in the note of the procedure on 1992, the left common facial vein is noted as being ligated with "5 x 0 PDS", would still be in existence in November 1995?

It is not likely at all as the PDS suture will have dissolved well within that time. The absorption profile of PDS (polydioxanone) is 182-238 days (Manufacturer's product information accessed 18 February 2012 at <http://www.ethicon360.com/products/pds-ii-polydioxanone-suture>)

- iv. Dr Mary O'Connor in her witness statement to the Inquiry (WS-014-1 Answer to Q2) states:

"I assumed that [Adam] may have had one of his external jugular veins tied off as this was common practice at the time of insertion of central lines in RBHSC in 1995."

Was it common practice in 1995 when central lines were being inserted for one of the external jugular veins to be tied off?

We do not know if it was common practice to ligate the external jugular vein at the time of insertion of a central line in 1995. One of us did ligate the external jugular vein at a level just above where the catheter was going to be inserted. The other one of us did not practice this manoeuvre. It is to be stressed that here we are talking about the external jugular vein which is the smaller vein further out in the neck demonstrated in fig.1. Neither of us would have ligated the internal jugular vein if we were putting a line into this vein. From the evidence seen, the right external jugular vein was used to insert a Broviac catheter on 08-12-1991; but there was no mention of ligation of the left external jugular vein at the time the left sided Broviac catheter was inserted. In fact the external jugular vein lies on the other side of the internal jugular vein to the common facial vein so there would be no reason to ligate it.

3. The Inquiry team would like you to examine Adam's medical notes and records and consider:

- i. What, if anything, would have been of:
(i) relevance and/or
(ii) necessity
for Mr Keane to have seen before commencing his surgery

It is of relevance and necessity for the operating transplant surgeon to have seen the following items in Adam's notes and records:

- Operation Consent form [058-039]
- Kidney donor information form UKTSSA [058-009], although this may have accompanied the kidney and not been in the clinical records.

- The admission notes from that admission, including results of investigations performed [058-035].
 - Investigation summary sheet [058-011]
 - Recent clinic letters
 - A knowledge of previous abdominal surgical procedures (this could be gleaned from the notes or from examining the patient and talking to his mother)
- ii. Please provide a full explanation to your answer at (1) above
- Operation Consent form [058-039] – to ensure that signed consent had been obtained for the operation to go ahead
 - Kidney donor information form UKTSSA [058-009], although this may have accompanied the kidney and not been in the clinical records – to be aware of the anatomy of the kidney, of any damage to the kidney, and of the likely ischaemic time. If this information had already been transmitted verbally to Mr Keane from Dr Savage or the Transplant Coordinator then reviewing the form may not have been required.
 - The admission notes from that admission, including results of investigations performed [058-035] – to be assured that Adam was fit for surgery and to be aware of any active problems and of relevant past medical and surgical history. The investigations would have included a full blood count, urea and electrolytes, and the cross match test to know the kidney was compatible.
 - Investigation summary sheet [058-011] – to know what the trend for results of investigations had been in the period prior to admission for transplantation.
 - Recent clinic letters – to be aware of any recent or ongoing problems that may impact upon the process of transplantation.
 - A knowledge of previous abdominal surgical procedures (this could be gleaned from the notes or from examining the patient and talking to his mother) – to be aware of previous abdominal surgery and position of scars to help plan the surgical approach and to help mitigate potential problems

It is noted from Mr Keane's witness statement that he did examine Adam's case notes immediately prior to surgery.

4. The Inquiry team have also asked that as part of your report can you please provide a diagram and explanation of the urinary catheters (e.g. urethral, ureteric, suprapubic) it was possible to use on a paediatric renal transplant patient such as Adam.

A urethral catheter is inserted through the urethra which lies inside the penis and goes into the bladder (see figure 2a). [Image taken from Google image search, may be subject to copyright]

A suprapubic catheter goes through the skin in the lower part of the anterior abdominal wall and directly into the bladder (see figure 2b). [Image taken from Google image search, may be subject to copyright]

In Adam's case he had a ureteric catheter inserted which is placed within the transplant ureter and goes across the join of the ureter and bladder, into the bladder and then out through the anterior wall of the bladder onto the anterior abdominal wall. In some patients a ureteric stent is placed where one end lies at the top end of the transplant ureter in the pelvis of the kidney, and the other end lies in the bladder (rather than coming out through the anterior abdominal wall to the outside). A ureteric stent is illustrated in figure 2c. [Image taken from Google image search, may be subject to copyright]

Figure 2a

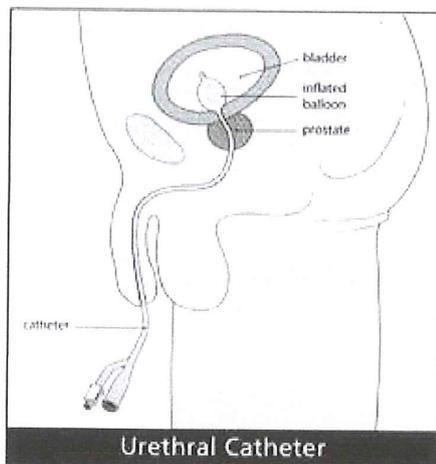
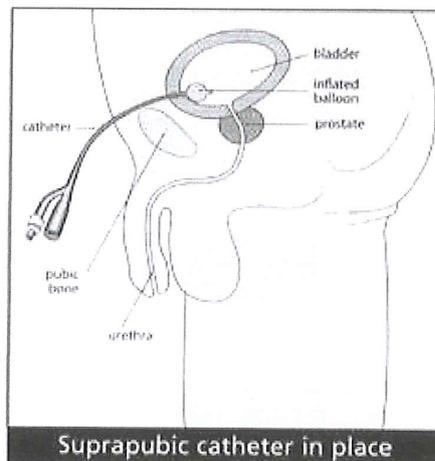
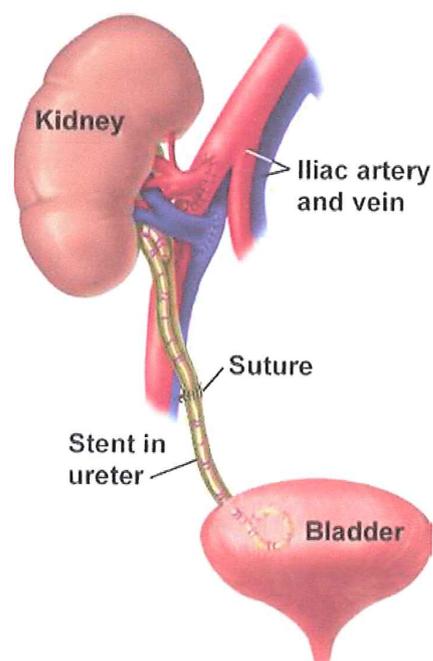


Figure 2b



Figure



2c