The use of NRFit™ needles for caudal anaesthesia

Caudal anaesthesia is the injection of local anaesthetic drugs into the epidural space via the caudal canal to provide pain relief after a range of common surgical procedures in younger children. Approximately 20,000 children per year undergo caudal anaesthesia for pain relief in the United Kingdom[1].

NHS England (NHSE) has mandated that all relevant NHS-funded organisations must complete the transition to using NRFit™ connectors by 31 January 2025, for all intrathecal and epidural procedures and for delivery of regional blocks[2]; this includes caudal procedures. NRFit™ connectors have been designed to prevent the accidental injection of local anaesthetic agents into intravascular devices, which is a potentially fatal event and considered a "never event" by NHSE.

Similarly, the Guidelines for the Provision of Anaesthetic Services (GPAS) published by the Royal College of Anaesthetists (RCoA) earlier this year, state that regional anaesthesia needles (spinal, epidural and peripheral nerve block) must have yellow colour-coded NRFit™ connections. This is required as a **minimum standard** for the safe delivery of regional anaesthesia[3].

In the United Kingdom, the most practised technique for caudal anaesthesia is to inject local anaesthetic into the caudal canal with a soft cannula-over-needle device, reducing the potential risk of dural puncture with a rigid needle. In a survey of UK paediatric anaesthetists in 2021, 88% of practitioners used such a cannula technique to perform a caudal block[4].

Currently, there are no soft-cannula NRFit™ options available - which therefore precludes the most practised technique in the UK. The only NRFit™ 'caudal' needles that exist on the market are non-cannulated with a blunt 'Crawford bevel' (see appendix 1).

There is significant concern amongst paediatric anaesthetists in the UK that the available NRFit™ equipment does not meet current requirements, and it is evident that this will not become available by the mandated time to use NRFit™ compatible equipment in January 2025.

As a result, we are writing to industry to consider the production of suitable equipment to support current practice. NHSE should investigate an NRFit™ cannula solution for caudals to be developed, in accordance with existing evaluation and approval by medical technology regulatory bodies and this should be made readily available to ensure equitable access of children to the safety benefits offered by the NRFit™ system.

We appreciate that, for many anaesthetists, the use of a blunt tipped non-cannulated needle to perform a caudal would be a significant change in practice. Expecting clinicians to significantly alter a reliable and safe technique by reverting to the use of a needle technique with an unclear profile of complications, may result in the introduction of increased risk to the child which may outweigh the benefits of using an NRFit™ system.

Some anaesthetists may have already adopted an alternative technique using the currently available NRFit™ equipment and we encourage them to continue to share their experience. In particular, the use of real-time ultrasound may help mitigate against some potential complications such as accidental dural puncture when using a needle-based technique.

We recommend the following statements to anaesthetists:

1) Clinicians should be supported in continuing to administer local anaesthetic into the caudal canal using the current well established non-NRFit™ soft cannula-over-needle technique.
2) Individual trusts should risk assess the practice of caudal anaesthesia at a local governance level to ensure all possible mitigations are in place to minimise wrong route injection of local anaesthetic. This should be added to the local risk register. Departments should remain aware of developments in NRFit™ equipment and review their position regularly.
3) This may include the following safe practice points:
    a. promoting the safe practice of a ‘stop’ moment before regional anaesthesia is commenced
    b. drawing up of the local anaesthetic drug immediately before injection into the caudal space.
    c. Once completed, any remaining local anaesthetic drugs should be discarded immediately.

The priority remains the safety of our paediatric patients and therefore we feel this offers the best mitigation whilst appropriate equipment is developed. We would welcome comment from our members on this statement.

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References

1) Cook TM, Mihai R, Wildsmith JA, A national census of central neuraxial block in the UK: results of the snapshot phase of the Third National Audit Project of the Royal College of Anaesthetists. Anaesthesia 2008;63:143–146.

2) England.nhs.uk/2024/01/transition-to-nrfit-connectors-for-intrathecal-and-epidural-procedures-and-delivery-of-regional-blocks/#:~:text=This%20National%20Patient%20Safety%20Alert,and%20delivery%20of%20regional%20blocks. Accessed November 2024

3) rcoa.ac.uk/sites/default/files/documents/2024-05/GPAS%20CH8%20RA%202024.pdf#:~:text=This%20guidance%20makes%20recommendations%20on,journey%20of%20patients%20is%20covered

4) https://www.apagbi.org.uk/sites/default/files/inline-files/P13_0.pdf. Accessed November 2024

Appendix 1 Caudal NRFit™ equipment currently available on UK market

1. Epican Paediatric Caudal needle – BBraun https://catalogs.bbraun.com/en-01/p/PRID00000460/epican-paed (accessed November 2024)
2. Crawford tip caudal needle – Pajunk https://pajunk.com/products/regional-anesthesia/epidural-anesthesia/tuohy-needles/caudal/ (access November 2024)