

THE ANATOMY AND TECHNIQUE OF PENILE BLOCK

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Anatomy

Penile block has been widely used for circumcision. Complications include inadequate block or, rarely, ischaemia. Techniques vary from injection below the symphysis pubis to ring block of the shaft.

The anatomy related to penile block is one of the least understood areas by anaesthetists. The key points are:

1. The triangular space lying deep to the fascia, bounded above by the symphysis pubis and below by the corpora cavernosa.
2. The fact that the fascia splits on its deep surface to form a vertical suspensory ligament of the penis which, in turn, divides to encircle the shaft of the penis.
3. The dorsal nerves and vessels lie deep to the suspensory ligament where it divides on the corpora cavernosa and are therefore in an enclosed space where they could be depressed if a large haematoma developed.
4. There are pear shaped, potential spaces on either side of the suspensory ligament which usually do not communicate directly (only 6% do).

Method

The safest technique is to inject an adequate volume of local anaesthetic bilaterally deep to the fascia into the pear shaped spaces on each side of the suspensory ligament. This avoids mid-line injection and therefore potential damage to the dorsal vessels and provides the maximum chance of diffusion into the nerves to block them. Injecting an adequate volume of local anaesthetic (estimated in children at 1ml + 0.1ml/kg on each side) should ensure that the ventral branch is also blocked so that a satisfactory block is achieved.

The technique involves inserting the needle until it touches the pubic symphysis. This gives a guide to depth. The needle is then withdrawn and redirected to pass below the symphysis and 3-5 millimetres deeper depending on the size of the patient. It is preferable to direct it slightly laterally into the pear shaped space and then to re-insert in on the other side depositing equal volumes on each side. Avoiding the midline injection reduces the chance of penetrating the dorsal vessels of the penis and causing haematoma. If a short beveled needle the fascia may be felt as a slight resistance when it is penetrated, but in small children this is not always felt as it is thin and may offer little resistance.

Figure 1. A lateral view of the penis in sagittal section showing the triangular space bounded by symphysis pubis, the membranous layer of superficial fascia and the corpus cavernosum. The needle should be inserted to hit the symphysis pubis (1) and then directed below it through the fascia into the space (2) where the local anaesthetic is deposited to block the dorsal nerves of the penis. X-X shows the section shown in Figure 2.

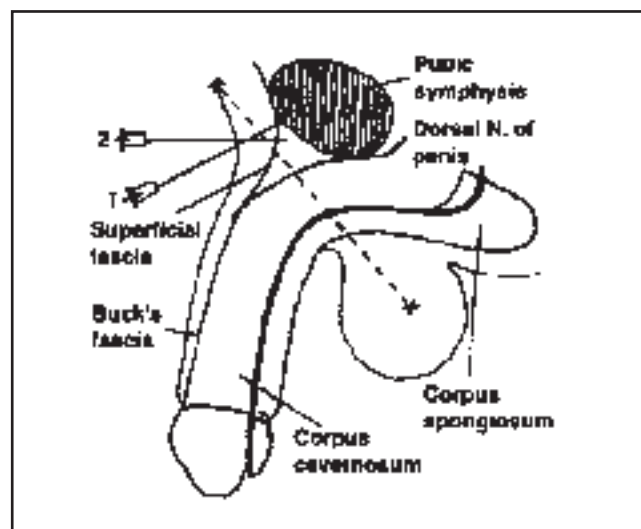
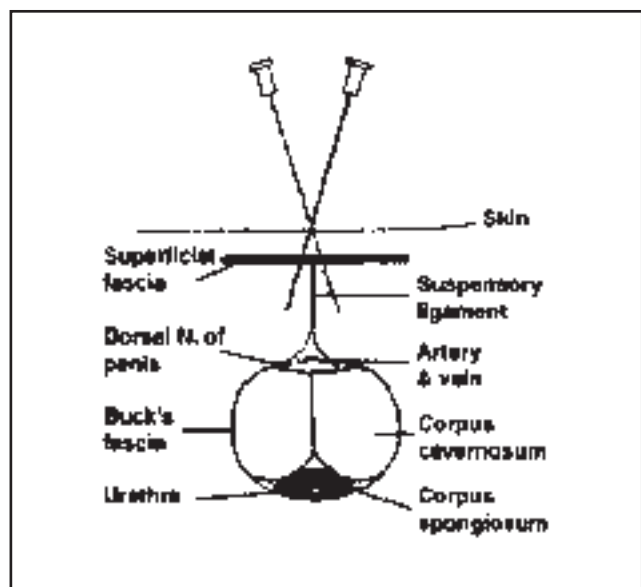


Figure 2. A transverse section through the triangular space shown in Figure 1 (X-X). This shows the membranous layer of superficial fascia and the suspensory ligament of the penis which divides to form another triangular space fusing with Buck's



fascia through which pass the dorsal nerves, arteries and veins. The site of insertion of the needle is shown passing through the membranous layer of superficial fascia. The bilateral injections into the potential spaces shown allow the local anaesthetic to diffuse into the space with the nerves with minimal chance of damage to the dorsal nerves, arteries and veins.

The site of insertion of the needle is shown passing through the membranous layer of the superficial fascia. The bilateral injections into potential spaces shown allow the local anaesthetic to diffuse into the space with minimal chance of damage to the dorsal arteries. If an adequate volume of local anaesthetic is used the ventral branch which supplies the frenulum should be blocked. If in doubt a subcutaneous ring of

local anaesthetic may be injected around the ventral side of the shaft of the penis.

This block is useful for circumcision and provides some post operative analgesia. It avoids potential problems of caudal anaesthesia for circumcision such as leg weakness or difficulty with micturition.

Bupivacaine or lignocaine are widely used for this block. It is vital that adrenaline containing solutions are never used, as severe arterial vasoconstriction can be produced causing ischaemia or necrosis of the penis. Bupivacaine may provide excellent post operative analgesia for up to 6 hours.

The diagrams accompanying this article were originally published in *Anaesthesia and Intensive Care*. We are grateful to the editor for allowing us to reproduce them.