

# Pudendal Nerve Block

Pudendal nerve block temporarily numbs the perineal region by injecting an anaesthetic agent close to the pudendal nerve.

### Indications

- To perform common benign anorectal surgeries under pudendal nerve block. The technique is an alternative to spinal or general anaesthesia.
- To reduce post-operative pain.

### Absolute Indication

- To perform anorectal surgeries in cardiac patients where ejection fraction is low.

### Principle

Pudendal nerve block temporarily interrupts nerve conduction in the pudendal nerve and relieves pain during various surgical procedures in the perineal area.

### Routes of Administration

- Transperineal: It involves blockage of the pudendal nerve through the perineum.
- Transgluteal: It involves blockage of the pudendal nerve through the gluteal muscle.
- Transvaginal: The blockage is achieved by injecting the anaesthetic agent through the vaginal wall into the pudendal canal. This route is commonly used for gynaecological and obstetric procedures.

### Palpation of the Ischial Tuberosity

- The surface marking of the ischial tuberosity is in the middle of the buttock at the level of the gluteal fold. The patient is asked to flex the hip as much as possible to displace the gluteus maximus superiorly away from the bony prominence (Fig. 1.1).
- In the lithotomy position, the ischial tuberosity can easily be palpated.

## AGENTS USED FOR PUDENDAL NERVE BLOCK

### Bupivacaine

Bupivacaine is a local anaesthetic agent. It blocks the generation of an action potential in the nerve cells by increasing the threshold for electrical excitation.

### *Mechanism of Action*

Sodium channels are membrane proteins in the neurons and are essential for electrical signalling in the nervous system. Sodium channels initiate and propagate action potentials, which are electrical signals that travel along a neuron's length and allow it to communicate with other neurons. In other words, the sodium channels help transmit electric signals from one neuron to another.

Bupivacaine prevents sodium ions from entering the nerve fibres, which causes a temporary lack of sensation in the affected area.

Bupivacaine can be administered in three concentrations: 0.25%, 0.5%, and 0.75%.



**Fig. 1.1:** Palpating ischial tuberosities

### Lidocaine

Lidocaine was the first sodium channel blocker to be identified. Lidocaine can block sodium and potassium ion channels and regulate intracellular and extracellular calcium. Its primary mechanism of action is to block the sodium channels.

Rarely lidocaine can cause severe allergic reactions. The antidote used is sodium bicarbonate. The serum concentration can be lowered by giving an intravenous infusion of lipid emulsion.

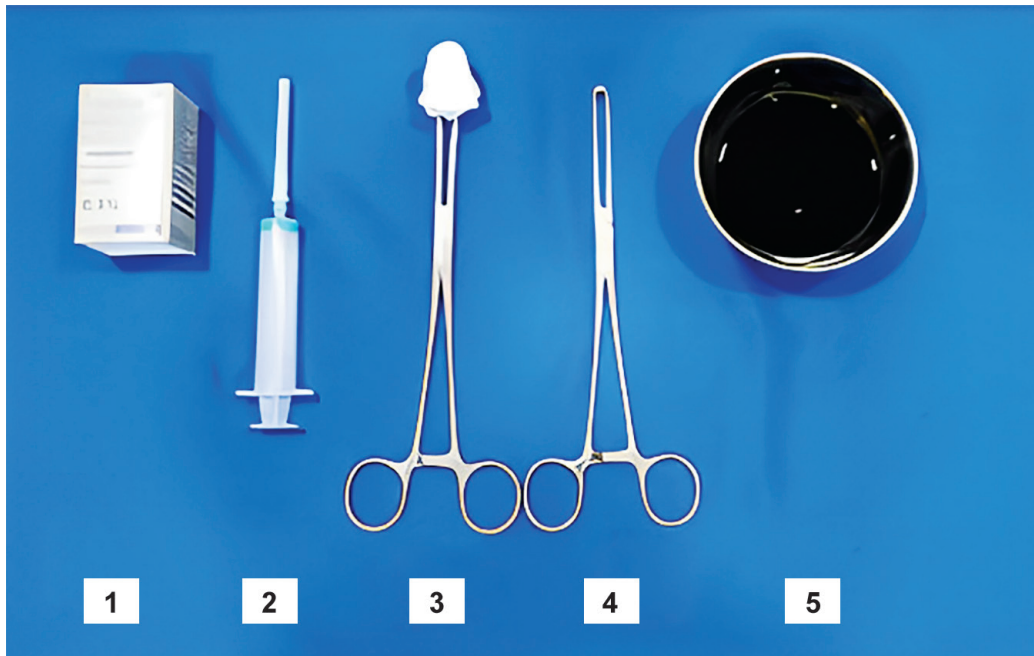
### INSTRUMENTATION (Fig. 1.2)

- Bupivacaine 0.5%
- 10 ml syringe
- Gauze piece
- Allis forceps
- Betadine

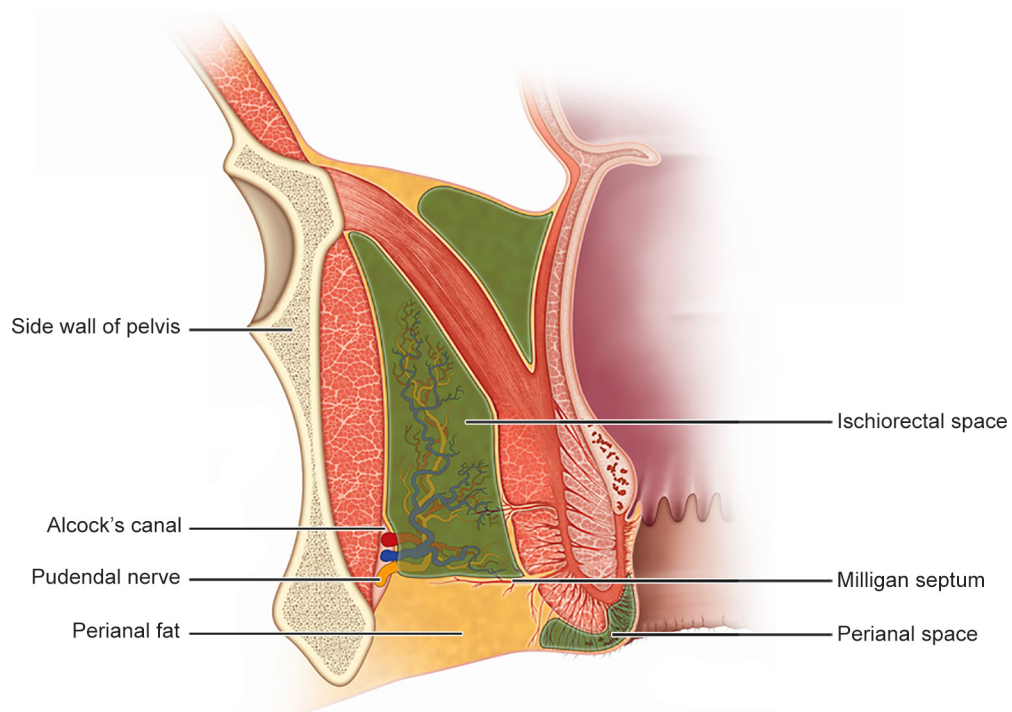
*Position of the patient:* Lithotomy

### Technique

One should remember that the pudendal nerve block will be effective only when the patient is operated on in the lithotomy position. The technique used in our practice is entirely based on the anatomy of the Milligan septum, which separates the ischiorectal space from the perianal space. Alcock's canal lies posterolaterally, through which the pudendal nerve passes (Fig. 1.3). Once the anesthetic agent is released after piercing the Milligan septum, and with dispersion and gravity, it blocks the pudendal nerve.



**Fig. 1.2:** 1) Bupivacaine 0.5%. 2) 10 ml syringe. 3) Gauze piece. 4) Allis forceps. 5) Betadine.



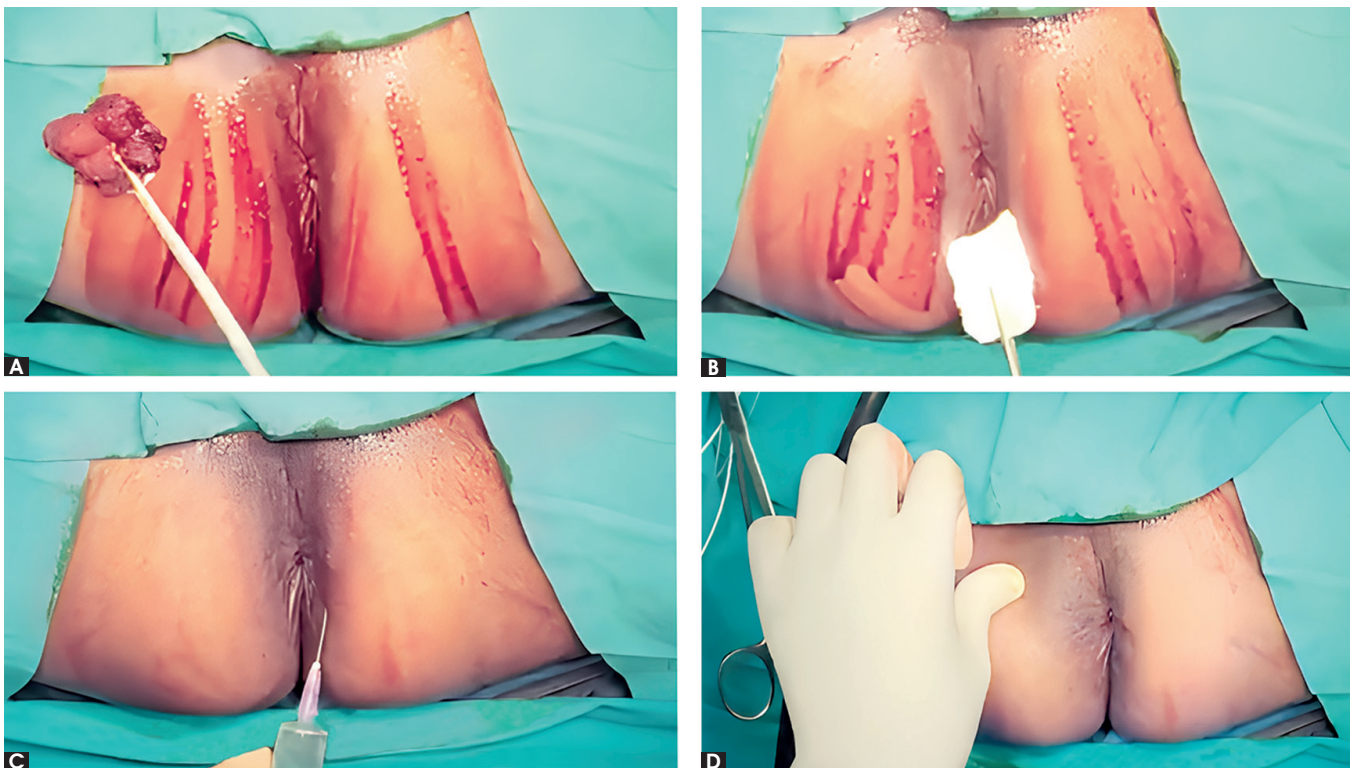
**Fig. 1.3:** Separation of ischiorectal fossa from perianal space by Milligan septum. Note the position of the Alcock's canal and the pudendal nerve.

### Steps of the Procedure

**Step 1:** The ischiorectal area is cleaned using the povidone-iodine or chlorhexidine solution (Fig. 1.4A, B).

**Step 2:** To block the perineal branches of the pudendal nerve, 0.5% bupivacaine is injected all around the anal orifice (Fig. 1.4C).

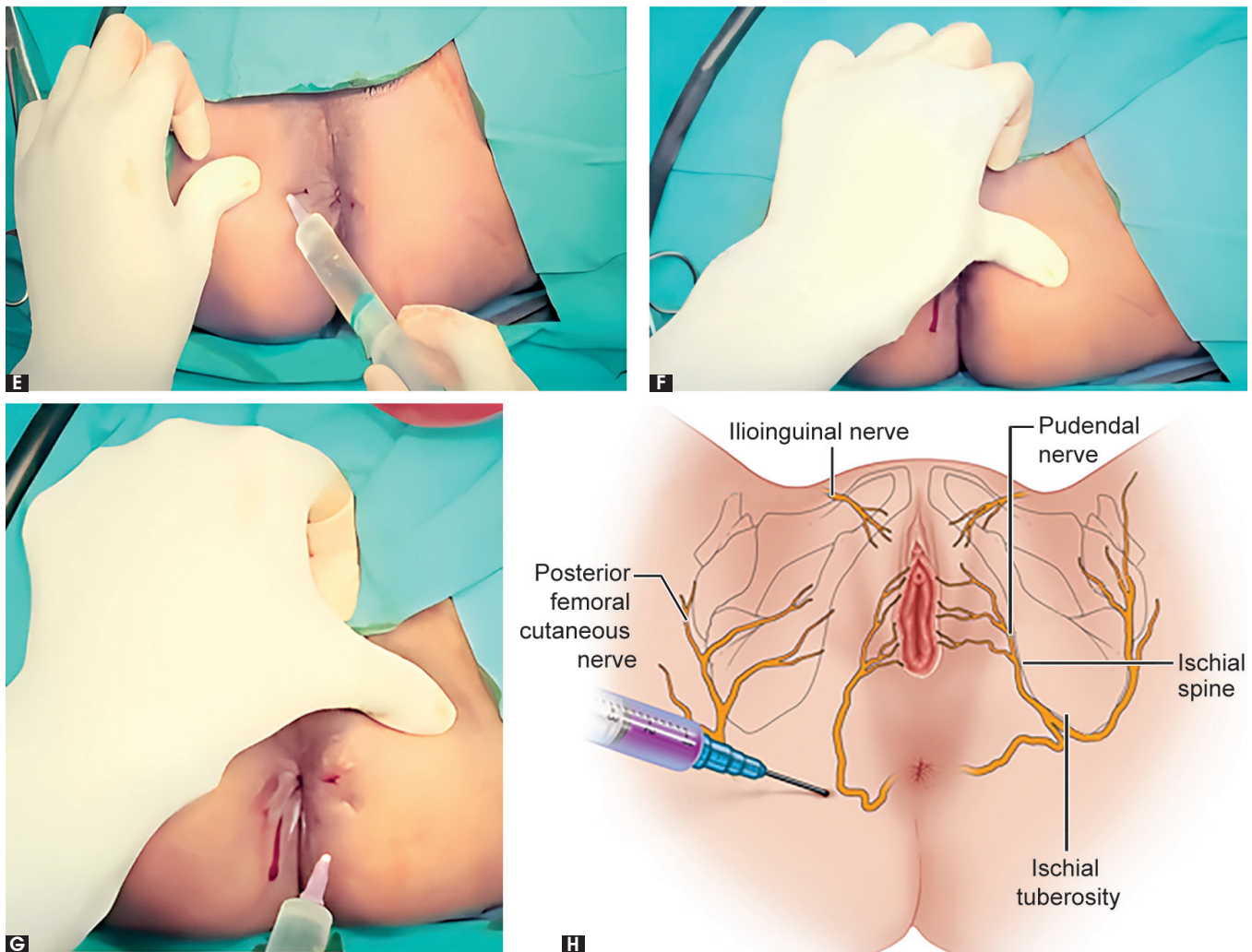
**Step 3:** The ischial tuberosity is palpated, and the distance is marked from the outer boundary of the external anal sphincter (Fig. 1.4D). No attempt is made to palpate the ischial spine.



**Fig. 1.4(A-D):** Pudendal nerve block. A, B) Cleaning of the area with betadine. C) Injection of bupivacaine around the anal orifice. D) Palpation of the ischial tuberosity and injection of bupivacaine at 9 o'clock.

**Step 4:** 10 ml of 0.5% bupivacaine solution is injected between EAS's outer border and the ischial tuberosity at 9 o'clock using a 24G needle. The needle is pointed towards the right shoulder (Fig. 1.4E). The solution is released after piercing the Milligan septum, which lies just above the perianal space. With gravity and dispersion, the anaesthetic agent blocks the pudendal nerve in the Alcock's canal.

**Step 5:** The same procedure is repeated at 3 o'clock with the needle pointing towards the left shoulder (Fig. 1.4F, G). Figure 1.4H shows a diagrammatic representation of the pudendal nerve block.



**Fig. 1.4(E-H):** Pudendal nerve block. E) Palpation of the ischial tuberosity and infiltration of bupivacaine at 9 o'clock. F, G) Palpation of the ischial tuberosity and infiltration of bupivacaine at 3 o'clock. H) Diagrammatic representation of pudendal nerve block.



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VIDEO 1 ((🎥))

### Tips and Tricks

- Many surgeons use a lumbar puncture needle for injecting a local anaesthetic agent to give the pudendal nerve block. Based on anatomy, one only requires a long needle to pierce the Miligam septum. A simple 24G needle is sufficient.
- Some surgeons recommend placing the finger in the anal canal to palpate the ischial spine. In this procedure, no finger is inserted in the anal canal, as no attempt is made to palpate the ischial spine.

### Conclusion

The pudendal nerve block can effectively alleviate pain in the pelvic area. The anaesthetic agent is administered directly to the nerve site. The effect of bupivacaine lasts 6 to 8 hours and effectively decreases the VAS score.

### FURTHER READING

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