

Saddle block

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Summary

Saddle block is a spinal anaesthetic restricted to the perineal area, or that part of the body in touch with a saddle. It is achieved by using a small dose of hyperbaric solution of local anaesthetic and maintaining the patient in a seated position after injection. One of the major advantages is avoiding hypotension. It also allows rapid mobilization of the patient for the surgical procedure. Certain surgical procedures have an increased risk of urinary retention when performed under saddle block.

INTRODUCTION

Spinal anaesthesia was first described more than a century ago and remains a popular technic. While it is difficult to produce a unilateral anaesthesia with successful results,^{1,2} saddle block is a spinal anaesthesia located mainly at perineal territory and was described after the Second World War. It was widely used in Anglo-Saxon countries until the 1960s, especially in obstetrics, before being replaced by more flexible epidural anesthesia.³ Saddle block provides anaesthesia of the perineum, tip of the coccyx, medial and bottom of the buttocks and posteromedial part of the thighs covering an area that for a rider would correspond to that in contact with a saddle. Such anaesthesia is obtained by injecting a small dose of hyperbaric local anaesthetic (LA) in a patient maintained in sitting position for a few minutes to facilitate preferential impregnation of sacral roots (S1 to S5) responsible for innervation of perineum, external genitalia and anus. The saddle block causes a parasympathetic blockade at the bladder level which may result in bladder and rectal atony which is advantageous because of sphincteric relaxation for the operator.

Proctologic surgery (eg hemorrhoid excision, fistulas, sphincterectomies, condyloma excision) is one of main indications of saddle block. The anaesthesia it provides is particularly suitable for this very painful surgery that additionally requires a fully relaxed sphincter. A slightly extended block decreases, as much as possible, the risk of acute retention of urine, a common complication after this surgery.

Opioids should be avoided in combination with LA as they increase the incidence of urinary retention. Indications for the saddle block are noted in Table 1 and it is especially useful in outpatient surgery.

Table 1:

Procedures for saddle block
Hemorrhoid excision, fistulas, sphincterectomies, condyloma excision
Soft tissue surgery at the perianal and gluteal level
Pilonidal cyst
Localized abscess
Coccyx surgery
Prostate biopsy
Surgery of the urethra
Interventional hysteroscopy
Obstetric delivery and associated procedures

Performance of the Saddle Block

Spinal puncture is performed in a monitored patient in the sitting position. The needle is inserted in the lower lumbar region, i.e. the interspinous space L4-15 or L5-S1. Using a Whitacre® type pencil needle of 25 or 27 Gauge reduces the incidence of headache after puncture of the dura mater. The distal eyelet of this needle needs to be directed downward or caudally. With clear CSF flow, the hyperbaric solution of LA is injected as slowly as possible, without air bubbles, to deliver as much local anaesthetic as possible to sacral territory. To “fix” the block without extension, the patient is kept in a sitting position for at least ten minutes. However, with lower the doses of LA, the patient should remain longer in the sitting position. The baricity of the LA solution and the position of the patient after the injection affect the caudal or cephalic diffusion of anaesthesia⁴ so hyperbaric anaesthesia is used to insure a caudad block. When sitting is difficult for a patient due to painful lesions, sedation with low doses of opioids may be useful.

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Solutions and doses of local anaesthetic

Central to the successful saddle block is the use of a hyperbaric solution of LA, i.e. a solution whose density at 37°C is greater than that of CSF. Commonly all solutions with a density greater than 1.013 are considered hyperbaric. In a seated patient, the LA naturally flows in the caudal direction in the CSF, bathing the sacral roots. With the limited cephalic extension, better hemodynamic tolerance of the block is obtained. Otherwise duration of the block is shorter than with an isobaric solution (Table 2).

For 20 years, many studies have implicated lidocaine in the occurrence of root irritation syndrome: transient pain and paresthesia essentially at lumbar level and in lower limbs that is regressive in a few hours or days.⁹ The frequency of root irritative syndromes is 8% with 4% mepivacaine compared to 22% with 5% lidocaine. Even with a decreased frequency, mepivacaine, like lidocaine is not recommended for this block. Bupivacaine 0.5% is therefore the anesthetic agent of choice. Ropivacaine is not currently commercially available in hyperbaric solution. It is possible to increase the baricity of the solution by the addition of 10% glucose.

The most commonly used dose in proctology is 4 to 6mg of bupivacaine; this provides a block of one-hour duration.⁴ The lower the dose of LA, the shorter the duration of the block. Increasing the dose shortens the onset of the block but lengthens the duration and increases its cephalad extension. Some anaesthetic teams used very low doses of bupivacaine to obtain a very short block limited to perianal area. Wassef et al. compared two groups of 40 patients receiving either 1.5mg or 6mg of bupivacaine. With the dose of 1.5mg, they obtained a quality sensory block without motor block, with a shorter duration (98min vs. 147min), a decreased time to voiding (121min vs. 236min) and a faster discharge (126min vs. 249min).⁵

The potency of ropivacaine is approximately 60% of bupivacaine with a very low incidence (0.1%) of nerve root irritation around. The pharmacological profile of ropivacaine fulfills all the prerequisites for ambulatory surgery. Ropivacaine was compared with lidocaine in outpatient ano-rectal surgery with an interesting clinical profile.⁶ Two other short action LA, articaine and 2-chloroprocaine, are currently used in Anglo-Saxon countries without reports of transient irritation syndrome or neurological lesions. Articaine at a dose of 50-80mg provides 60 minutes anaesthesia with complete resolution at 150 minutes. Two-chloroprocaine at the dose of 40-50mg provides 45 minutes anaesthesia with complete resolution at 103 minutes.^{7,8}

Table 2:

Density and baricity of solutions	Density	Baricity
Water	0,9937	0,9931
CSF*	1,0003	1,0000
Isobaric bupivacaine	0,9993	0,9990
Hyperbaric bupivacaine	1,0210	1,0207

*CSF cerebrospinal fluid

Interest of saddle block

The saddle block is technically simple to perform. The limited duration of the block is adapted to short procedures usually less than an hour and often performed on an outpatient basis. Furthermore, functional recovery from the block is fast. Schmittner et al. compared 201 patients with perianal surgery, in two groups: SB (with 5mg of bupivacaine) to an intravenous general anaesthetic (GA) (Propofol / fentanyl).¹⁰ Time in PACU averaged five minutes (1-45) in the SB group and 44 minutes (4-148) in the GA group. The patients were able to eat more quickly in the SB group, and required less analgesics; 30% vs 58% in GA group. Time to void and mobilization were identical in both groups. In most cases, the patients in the SB group did not have lower limb motor block. Propofol sedation on demand has been proposed to improve the comfort of patients during surgery with SB however, an increase in the incidence of nausea and a longer delay for mobilization and spontaneous urination were noted.¹¹

Saddle block induces few hemodynamic changes requiring fluid resuscitation, and in such case, use of a vasoconstrictor is preferred. The risk of urinary retention is related to surgery (proctology), age (> 70 years), urological history, sex (male) and the use of intrathecal morphine.¹²

Ambulatory surgery

Saddle block is particularly suitable for surgery ambulatory. The duration of PACU stay is very short. The immediate postoperative analgesia it provides can be supplemented by infiltration techniques and the use of parenteral or intravenous analgesics which themselves cause of side effects and may delay home discharge. In proctologic surgery where there is risk of urinary retention regardless of the mode of anaesthetic technique, the patient should be discharged only in case of confirmed voiding.¹³

Conclusion

Saddle block is appropriate for perineal surgery, procedures on the tip of the coccyx, the medial and inferior portions of the buttocks and the posteromedial aspect of the root of the thighs. It provides excellent relaxation of the anal sphincter and is preferred in proctologic surgery. Due to its simplicity, efficiency and postoperative analgesia, this technique is particularly suited to ambulatory care. There is a risk of urinary retention that can be assessed by use of bladder scan.

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