Case Report

Posterior anesthesia for lower limb varicose veins: a case report with video

Abstract

Background: Patient with a history of dissatisfaction during spinal anesthesia for orthopedic surgery, due to the unpleasant long duration of motor blockade of the lower limbs. During the pre-anesthetic consultation, she requested another type of anesthesia for the surgical treatment of varicose veins in the lower limbs.

Case report: A 58-year-old female patient presented with varicose veins, for surgical treatment without removing the saphenous vein, only the collaterals. Patient with a history of controlled hypertension, normal blood tests, normal ECG, and chest X-ray. Abbreviation for fasting with 200 ml CHO. Venous access with #20G extract and monitoring with continuous ECG, NIBP, SpO2, and EtCO2 through a nasal catheter. Cleaning the skin with chlorhexidine and local anesthesia with 3 ml of 1% lidocaine. The spinal puncture was performed with the patient in the ventral position, by the median line in the L3-L4 interspaces using a 27G Quincke needle, after the appearance of CSF 7.5 mg of 0.15% hypobaric bupivacaine was administered at a speed of 1 mL/15s. Immediate latency, superior level T10 analgesia, without any degree of motor block. The surgical procedure posterior lasted 1:40 hours, and anterior lasted 1:20 hours, both without any degree of motor blockade and without cardiocirculatory and respiratory changes. The patient mobilized alone on the surgical table, without assistance from the prone position to the supine position. At PACU she received 200 ml of CHO and was discharged to her room. At the end of the day, she was released to her residence.

Conclusion: The practice of prone positioning for performing posterior dorsal anesthesia remains relatively unfamiliar to many anesthetists. The use of a low dose of 0.15% hypobaric bupivacaine, the low cephalic dispersion of the analgesia, and the predominance of sensory roots allow the surgery to be performed without any degree of motor blockade, and proprioception remains. The use of posterior spinal anesthesia and the abbreviation of fasting before and immediately after surgery allowed excellent patient satisfaction.

Keywords: anesthetics, hypobaric local anesthetic, anesthetic techniques, posterior spinal anesthesia, surgery, varicose veins in the lower limbs

Key points

Question:

What is the reason for using Posterior Spinal Anesthesia very little in orthopedic, anorectal, lower limb veno-arterial surgery and plastic surgeries?

a) Lack of knowledge of the anterior and posterior roots.

b) Lack of teaching puncture in the prone position during anesthesiology teaching.

c) Difficulty performing subarachnoid puncture in a prone position.

d) Anesthesiologists' preference for the sitting position and hyperbaric solution.

e) Total ignorance of the benefits provided by this technique.

f) Ignorance of the application of hypobaric solutions in the hemi-spinal anesthesia (unilateral and posterior spinal anesthesia).

g) Patients' satisfaction with not having any degree of motor blockage of the lower limbs during this technique is unknown.

h) The low incidence of cardiac and respiratory changes in the prone position with hypobaric solutions.

Findings:

i. In a search of the literature, no case of lower limb varicose vein surgery using posterior spinal anesthesia was found.

ii. The patient had undergone orthopedic surgery and in the pre-anesthesia consultation she complained of intense motor blockade during the procedure.

iii. The patient requested another type of anesthesia due to dissatisfaction with the motor block from the previous surgery.

iv. Failure to remove the saphenous vein allowed subsequent posterior spinal anesthesia to be performed.

Meaning:

The use of posterior spinal anesthesia is uncommon worldwide and can be considered as ignorance of the benefits of this technique for patients operated in the prone position.

Volume 16 Issue 1 - 2024

Luiz Eduardo Imbelloni, MD, PhD,[1] Eneida Maria Vieira, MD, PhD,[2] Anna Lúcia Calaça Rivoli, MD,[3] Sylvio Valença de Lemos Neto, MD, PhD,[4] Patrícia L Procópio Lara, MD, [5] Ana Cristina Pinho, MD[6]

[1]Senior Researcher of Nacional Cancer Institute (INCA), Brazil
[2]Head of the Anesthesiology Discipline at FAMERP, Brazil
[3]Anesthesiologist at the National Cancer Institute (INCA), Responsible Coreme Residence INCA, Brazil
[4]Anesthesiologist at the National Cancer Institute (INCA), Responsible for the CET-SBA of the National Cancer Institute, Brazil
[5]Anesthesiologist at the National Cancer Institute (INCA), Brazil
[6]Anesthesiologist at the National Cancer Institute (INCA), Co-Responsible for the CET-SBA of the National Cancer Institute, Brazil

Correspondence: Luiz Eduardo Imbelloni, MD, PhD, Senior Researcher of Nacional Cancer Institute (INCA), Av. Epitácio Pessoa, 2356/203 – Lagoa 22411-072- Rio de Janeiro, RJ, Brazil, Tel + 55.11.99429-3637, Email dr.luiz.imbellon@gmail.com

Received: January 01, 2024 | **Published:** January 17, 2024

Introduction

Varicose veins are tortuous and dilated veins that appear due to diseased vessels that mainly affect the lower limbs.[1] Around 62% of women and 37% of men over 30 years of age in Brazil are affected by this disease.[1] Contrary to what you might think, varicose veins in the legs are not just an aesthetic problem. The presence of a varicose vein indicates a diseased vein and is often the first sign of chronic venous insufficiency.

Evaluating the epidemiological profile of varicose vein treatment using the Brazilian System Unique Health (SUS), during the period

from 2010 to 2020, 755,752 surgeries were performed to treat varicose veins, of which 292,538 were unilateral (38.71%) and 463,214 (61.29%) were bilateral.[2] A recent systematic review showed that there is evidence of low to moderate quality to suggest that minimally invasive treatments, including foam sclerotherapy, laser, and radiofrequency are comparable to conventional surgery, regarding their effectiveness and safety in treating lower-limb varicose veins.[3]

In a recent article, we showed that spinal anesthesia is much more than the use of a single injection of hyperbaric bupivacaine.[4] There are several techniques for treating varicose veins.[1–3] Being the most serious and operated on in the SUS system, they normally require anesthesia, with spinal anesthesia being the most used. When the patient does not have the saphenous vein removed, the patient can be operated initially in the prone position and later completed in the supine position.[5] We will show a case of a patient, operated under posterior spinal anesthesia with 0.15% hypobaric bupivacaine, without any degree of motor block and with change from prone to dorsal decubitus without the assistance of any health professional.

Case report

A 58-year-old female patient presented with varicose veins, for surgical treatment without removing the saphenous vein, only the collaterals. The patient reported that during orthopedic surgery a few years ago, she spent a long time without feeling her legs and would like another type of anesthesia to be performed. After discussion with the surgical team, we proposed performing spinal anesthesia without motor blockade and convinced the patient that she would not feel the unpleasant sensation of not feeling her legs for a long time, and we obtained informed consent.

The patient with history of hypertension controlled by hydrochlorothiazide (25 mg/day) and losartan (50 mg/day), and she had no history of hyperlipidemia, diabetes, and cardiac arrhythmia. Her hemoglobin was 12.4 g/dL, 39% hematocrit, 3,990,000/mm3 red cells. Tests revealed all electrolytes were normal. Bilirubin, urea, and creatinine unchanged. Chest X-ray and ECG were normal. Heart rate of 73 bpm and blood pressure of 148/64 mmHg.

The protocol was registered in the Brazil platform (CAAE: 09061312.1.0000.5179). The Ethics Research Committee approved the study protocol (n=171.924), and all patients were informed and agreed to participate in the study. As part of the program acceleration of postoperative recovery, two hours, and thirty minutes before the surgery the patient took a 200 mL carbohydrate drink (CHO). In the wards the patient was placed in dorsal before induction of spinal anesthesia, routine monitoring (electrocardiogram, pulse oximetry, non-invasive blood pressure measurement, and capnography through a nasal catheter) was started and an intravenous line was placed with a 20G catheter.

After sedation with midazolam (0.5 mg) and fentanyl (50 µg) intravenously and placed the patient in the jack-knife position with a pillow for subarachnoid puncture. Cleaning the skin with chlorhexidine and local anesthesia with 3 ml of 1% lidocaine with an insulin needle in the spinal needle path. The spinal puncture was performed with the patient in the ventral position, by the median line in the L3-L4 interspaces using a 27G Quincke needle. After the appearance of cerebrospinal fluid (CSF) 7.5 mg of 0.15% hypobaric bupivacaine was administered at a speed of 1 mL/15s. Patients remained in this position and the anesthesia latency (3 minutes), and the upper level of anesthesia (T10) were evaluated. Fifteen minutes after the injection, there was no motor block of the lower limbs (Video).

Video Posterior Spinal Anesthesia for Lower Limb Varicose Veins.

After removing the pillow and asepsis and antisepsis of the lower limbs, surgery began on the posterior side. The surgical procedure posterior lasted 1:20 hours without hypotension, bradycardia, or decreased oxygen saturation, and the patient changed from the prone position to the supine position without help from the nurses, without any degree of motor blockade of the lower limbs, and with the presence of proprioception in the 1st toe. The surgical procedure anterior lasted 1:30 hours without cardio circulatory alteration. The duration of the surgical procedure was 2:50 h without any degree of motor blockade of the lower limbs.

During the surgical procedure, the patient received 1 mg midazolam, 5 mg dextro ketamine for sedation, and 10 mg dexamethasone for the prevention of nausea and vomiting. The first analgesic dose was performed at the end of surgery in the operating room dipyrone (3g) was administered intravenously.

In the end, the patient was transferred to the PACU, with BP=130x70 mmHg, HR=70 bpm, and SpO2 environment=97%. Thirty minutes after entering the PACU, the patient received 200 mL of the CHO, and without experiencing nausea or vomiting, she was sent to her room. At the end of the day, the patient was discharged home without any painful complaints and was extremely satisfied because she did not present any degree of motor block, so feared by the patient due to previous experience with the spinal technique.

The patients, and the surgical anesthetic team, signed the Authorization Term to demonstrate the videos during classes for health professionals and publications in anesthesiology and surgery journals.

Discussion

Performing posterior spinal anesthesia, due to the surgical technique only removing the collaterals, allowed the surgery to begin in the prone position, and later in the supine position, showing that this technique was perfect for the surgeons and the patient's complete satisfaction, without any degree motor blockade of the lower limbs.

The anesthesia indicated for the surgical cure of varicose veins in the lower limbs are general anesthesia, local anesthesia with sedation, and neuraxial anesthesia (spinal and epidural anesthesia), depending on the type of procedure and the decision of the anesthesiologist and patient, and the spinal anesthesia being the most used. In some types of surgeries that will be performed in the prone position, it is more time-efficient to place the patient in the jackknife position before the spinal puncture. A pillow should be placed over the abdomen to facilitate the opening of the intervertebral spaces. Unlike the sitting position, this technique does not require an assistant to perform the puncture. The prone position is used for a variety of procedures, from short-term procedures to major surgeries such as orthopedic, anorectal, vascular, and plastic surgery.[5]

There are two possibilities for performing hemi-spinal anesthesia: unilateral, only on one side of the body, mainly in orthopedic and posterior, which involves blocking mainly the posterior, sensitive roots.[6] The 0.15% hypobaric bupivacaine was introduced in Brazil in 1985.[7] The onset of action and the duration of posterior spinal anesthesia will depend on the dose and the type of local anesthetic used, tetracaine, lidocaine, bupivacaine, ropivacaine, and levobupivacaine in enantiomeric excess (S75:R25) were used.

A study using three different doses of 0.15% hypobaric bupivacaine, administered at a rate of 1 ml/15 s, for unilateral orthopedic surgery showed that recovery from blockade is dose-dependent, being 1:55 hours with 4.5 mg, 2:15 hours with 6 mg, and 3:15 hours with 7.5 mg.[8]

Citation: Imbelloni LE, Vieira EM, Rivoli ALC, et al. Posterior anesthesia for lower limb varicose veins: a case report with video. *J Anesth Crit Care Open Access.* 2024;16(1):6–8. DOI: 10.15406/jaccoa.2024.16.00580

Because the patient had numerous varicose veins, the dose of 7.5 mg of 0.15% bupivacaine provided enough time to perform the surgery, which lasted 2:50 hours, without any degree of motor block and with the presence of proprioception in the fingers.

In a recent study for the surgical treatment of varicose veins of the lower limbs, it was shown that epidural anesthesia with 2% prilocaine and 0.5% bupivacaine, provided adequate anesthesia with more effective postoperative analgesia compared to patients operated on under general anesthesia and with multimodal analgesia for postoperative analgesia.[9] However, the authors did not evaluate the degrees of lower limb blockage, which probably happened with all patients.

In a recent prospective randomized clinical trial with femoral fracture patients, comparing a control group receiving nothing by mouth (NPO) before 9 pm with receiving 200 mL of a carbohydrate drink (CHO) 2-4 hours before the operation, showed that CHO significantly reduces preoperative discomfort and increases satisfaction with anesthesia care.[10] The study concluded that the satisfaction questionnaire for surgical patients could become a useful tool in assessing the quality of care. The patient reported satisfaction for two reasons, the first being having taken 200 ml of CHB 2:30 h before and still in the PACU, and not having felt the unpleasant motor blockage of the lower limbs.

In a recent editorial, we showed that there are four puncture positions of the subarachnoid space: sitting, lateral decubitus, Jack-Knife position, and in some patients operated on old orthopedic tables, in the supine position.[11,12]

Conclusion

The prone position is used for a variety of procedures as orthopedic surgery, anorectal surgery, lower limb veno-arterial surgery, and plastic surgery when performed in the dorsal position may be anesthetized and remain in this position during the surgical procedure. The practice of prone positioning for performing posterior dorsal anesthesia remains relatively unfamiliar to many anesthetists. A slight cephalodeclive during puncture allows hypobaric anesthetic block predominantly posterior roots. Thus, the block had been restricted to lower roots preventing its dispersion to the higher roots. The fact that there is a predominance of sensory roots at the expense of the motor roots, these patients have excellent analgesia and motor blockade absent, allowing patients to move from the ventral position to the dorsal position without assistance, and the surgery table to the stretcher. This technique greatly improves patient satisfaction.

Finishing, I would like to suggest the Socratic lesson, to understand spinal anesthesia that wisdom begins precisely when one recognizes that one does not know what one is supposed to know.

Acknowledgments

None.

Conflicts of interest

The authors declare that there are no conflicts of interest.

Financial support

None.

Contribution

None.

IRB

None.

References

1. Lins EM, Barros JW, Appolônio F, et al. Epidemiologic profile of the patients underwent varicose vein surgery of the lower limbs. *J Vasc Bras*. 2012;11(4):301–314.
2. Bentes LGB, Lemos RS, Santos DR, et al. Epidemiological profile of surgical treatment of varicose veins in Brazil from 2010 to 2020. *J Vasc Bras*. 2022;21:e20210202.
3. Oliveira RA, Mazzucca ACP, Pachito DV, et al. Evidence for varicose vein treatment: an overview of systematic reviews. *São Paulo Med J*. 2018;136(4):324–332.
4. Imbelloni LE, Gouveia MA, Ghorayeb NM, et al. Spinal anesthesia: Much more than single shot of hyperbaric bupivacaine. *Int J Anesthetic Anesthesiol*. 2021;8(1):122–131.
5. Imbelloni LE, Pistarino MA, Miranda Junior MG, et al. Posterior spinal anesthesia for orthopedic, anorectic, and plastic surgeries in prone position: it should be used more. *Int J Anaesth Res*. 2020;3(3):125–134.
6. Imbelloni LE. Spinal hemianesthesia: unilateral and posterior. *Anesth Essays Res*. 2014;8(3):270–276.
7. Gouveia MA, Labrunie GM. Raquianestesia hipobárica com bupivacaína 0.15%. *Rev Bras Anestesiol*. 1985;35:51–9521.
8. Imbelloni LE, Gouveia MA, Vieira EM, et al. A randomized, double-blind comparison of three different volumes of hypobaric intrathecal bupivacaine for orthopaedic surgery. *Anaesth Intens Care*. 2009;37(2):242–247.
9. Mutlu M, Turkmen S. The effect of different anaesthesia techniques on postoperative pain and hospital discharge in varicose vein surgery. *Cardiovasc J Afr*. 2022;33(2):84–87.
10. Imbelloni LE, Pombo IAN, Morais Filho GB. Reduced fasting time improves comfort and satisfaction of elderly patients undergoing anesthesia for hip fracture. *Rev Bras Anestesiol*. 2015;65(2):117–123.
11. Imbelloni LE. Spinal anesthesia: position of puncture, ultrasound, and local anesthetics solution. *Int J Anesthetic Anesthesiol*. 2022;9(2):149(1–4).
12. Imbelloni LE. Posterior lumbar puncture in old orthopedic table: a two case report and two videos. *J Clin Med Img Case Rep*. 2022;2(6):1311.