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Minerva Anestesiologica 2023 December;89(12):1147-8
DOI: 10.23736/S0375-9393.23.17507-9

Spinal anesthesia with chlorprocaine as an effective and safe option for ambulatory gynecological surgery in patients with predicted difficult airway

Ambulatory surgery is frequently practiced in a gynecological setting, as it does not require patient hospitalization and allows a rapid discharge at home.[1] In this context, operations are usually performed under deep sedation, as local anesthesia is often not sufficiently able to cover the intraoperative analgesia, while a general or subarachnoid anesthesia (SA) would require longer discharge times.[2] However, in patients with anticipated difficulties in airway management, deep sedation can be insidious. At this regard, we briefly describe the case of 60-year-old patient undergoing operative hysteroscopy with polypectomy. Preoperative evaluation showed multiple predictors of difficult intubation, including morbid obesity (BMI=44 kg/m^2), Mallampati Score III, reduced thyromental distance and neck extension, with an El-Ganzouri score of six. Moreover, the patient has a positive anamnesis for obstructive sleep apnea syndrome. For all these reasons, the use of deep sedation or general anesthesia would have increased perioperative risk related to airway management and prolonged hospitalization,[3] that is why we opted for a short-acting spinal anesthesia using chlorprocaine, an ester local anesthetic which has already proved its efficacy in different ambulatory settings. The patient was first premedicated with atropine 0.5 mg i.v. and 250 mL of sterofundin was given as fluid preloading to prevent SA-related hypotension. Subsequently, with the patient placed in sitting position, an ultrasound evaluation of the spine was performed in order to choose the best lumbar intervertebral space to practice SA, identified by the absence of any predictors of difficult neuraxial block.[4] Therefore, SA was performed at L2-L3 intervertebral level using a 25-Gauge pencil point spinal needle (Pencan® 103 mm; BBraun, Melsungen, Germany) injecting 4 mL of 1% chlorprocaine hydrochloride (Figure 1). The onset of the sensitive block, assessed by ice test, was approximately 3 minutes, extending from T4 to S3 dermatomes. Heart rate, blood pressure, ECG and peripheral oxygen saturation were monitored throughout the intervention and the patient remained awake. Specific equipment, including supraglottic airway devices, videolaryngoscope and fiberscope, was available to eventually manage the airway in emergency. Multimodal analgesia was given through intravenous administration of paracetamol 1 g and ketorolac 30 mg. The surgery lasted 30 minutes and no intraoperative pain or adverse events occurred. The patient was then transported to the recovery room

Figure 1.—Spinal anesthesia with chlorprocaine in a patient with predicted difficult airway.

and evaluated every ten minutes with ice test and Bromage Scale to establish regression of sensory and motor block, respectively. A complete regression of the motor block was observed 50 minutes after SA while 80 minutes were necessary for compete resolution of sensitivity: this allowed the patient to be discharged at home after two hours from the end of surgery. Other short-onset local anesthetics, such as prilocaine, have also been used for ambulatory surgery, although sometimes they can take more than two hours for a complete block regression.[5] Chlorprocaine is a new ultra-short-acting drug that has proven largely effective for management of short-term procedures with reliable resolution of motor block in less than two hours and for this reason we believe it could be an effective and safe solution to ensure awake surgery in patients with anticipated difficult airway management undergoing outpatient gynecological interventions. However, the choice of regional anesthesia in those kinds of patients should be guided not only by surgical setting, but also by clinician experience and ultrasound evaluation of the anatomical target.[6]

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Conflicts of interest
The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

Authors' contributions
All authors read and approved the final version of the manuscript.

History
Article first published online: August 1, 2023. - Manuscript accepted: May 30, 2023. - Manuscript received: May 16, 2023.

(*Cite this article as:* Pascarella G, Poloni J, Coculo G, Costa F, Strumia A, Schiavoni L, *et al.* Spinal anesthesia with chlorprocaine as an effective and safe option for ambulatory gynecological surgery in patients with predicted difficult airway. Minerva Anestesiol 2023;89:1147-8. DOI: 10.23736/S0375-9393.23.17507-9)

Online version at https://www.minervamedica.it
Minerva Anestesiologica 2023 December;89(12):1148-9
DOI: 10.23736/S0375-9393.23.17578-X

Dynamic magnetic resonance imaging-guided tracheal intubation in Hirayama myelopathy

A 17-year-old male presented with a 4-year history of gradually progressive weakness in his left hand. The physical examination revealed wasting of the intrinsic muscles of the left hand, as well as a weak hand grip. The patient had 3/5 motor power in the intrinsic muscles of the left hand and full power in the other limbs. The patient felt an electrical shock sensation with neck flexion, as well as an exacerbation of weakness and involuntary finger movements of the left hand. In full neck flexion, dynamic magnetic resonance imaging (MRI) revealed cervical cord compression (arrow) due to stagnation of the posterior epidural venous plexus (arrowhead) (Figure 1A). The posterior epidural venous plexus vanished completely with cervical cord decompression, as evidenced by the restoration of cerebrospinal fluid flow (CSF) in complete neck extension (Figure 1B). The classic imaging findings were used to diagnose Hirayama disease. In the prone position, the patient was scheduled for a laminectomy and posterior cervical fixation. An assistant maintained the head in complete extension after intravenous induction (100 mg propofol and 6 mg cisatracurium), and fiberoptic tracheal intubation was performed with a 7.0 ID reinforced endotracheal tube. During airway management, occiput elevation with a pillow was avoided to prevent neck flexion. With the Sugita pin holder in the prone position, the head was held in mild extension as suggested by the surgeon. The trachea was extubated at the end of surgery following posterior cervical fusion with cervical lateral mass screws and the patient had baseline power in the left hand with no deficits in the other limbs. Hirayama disease is a juvenile asymmetric muscular atrophy that is common in young Asians.1 There is increased laxity of the cervical dura mater, which can be attributed to a growth mismatch between the dural canal and the vertebral column. The disease is typically characterized by dynamic cervical cord compression and detachment of the posterior dura mater from the lamina, resulting in anterior displacement of the cervical cord during neck flexion. The forward dural shift in neck flexion causes a negative pressure in the posterior epidural space that

Figure 1.—A) Dynamic MRI (T2-sagittal) in complete neck flexion showing cervical cord compression (arrow) due to the engorgement of the posterior epidural venous plexus (arrowhead). B) Dynamic MRI (T2-sagittal) in complete neck extension showing cervical cord decompression as evidenced by restoration of CSF flow with complete disappearance of the posterior epidural venous plexus.
CSF: cerebrospinal fluid flow; MRI: magnetic resonance imaging.