Neuraxial Anesthesia for Outpatients

Elizabeth A. Alley, MD*, Michael F. Mulory, MD

KEYWORDS

• Local anesthetics • Neuraxial anesthesia • Spinal anesthesia • Epidural anesthesia • Ambulatory anesthesia

KEY POINTS

- Spinal anesthesia with preservative-free 2-chloroprocaine offers a favorable side-effect profile and discharge times for certain ambulatory surgery procedures lasting less than 60 minutes.
- For procedures of longer duration, epidural or combined spinal epidural anesthesia may provide longer anesthesia without prolonged recovery.
- Choosing shorter-acting agents with favorable side-effect profiles will allow for a successful anesthetic plan and timely discharge in the ambulatory setting.

INTRODUCTION

Neuraxial anesthesia can be an outstanding choice for appropriate ambulatory surgery patients undergoing procedures of 60- to 90-minute duration, such as knee arthroscopy, hernia repair, and extracorporeal shock wave lithotripsy (ESWL).[1] Spinal anesthesia with short-acting agents has been shown to have a favorable side-effect profile and discharge times[2] compared with general anesthesia in the outpatient setting (**Table 1**).[3,4] Neuraxial anesthetics are associated with reduced pain scores and a decreased need for postanesthesia care unit (PACU) analgesics (**Table 2**).[5]

SELECTION OF AGENTS

Lidocaine has been used for short spinal anesthetics for decades.[6] Although lidocaine provides reliable results for outpatient anesthesia (**Table 3**),[7,8] its use has decreased in the outpatient setting because of transient neurologic symptoms (TNS).[9] Alternative agents have been studied.[10]

Bupivacaine has been used as one alternative to lidocaine for some outpatient procedures. Bupivacaine in as low of a dose as 4 mg intrathecally provides an average

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Department of Anesthesia, Virginia Mason Medical Center, B2-AN, 1100 Ninth Avenue, Post Box 900, Seattle, WA 98101, USA
* Corresponding author.
E-mail address: Elizabeth.Alley@vmmc.org

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Table 1
Anesthetic-related side effects and patient satisfaction in the ilioinguinal hypogastric nerve block–monitored anesthesia care, general anesthesia, or spinal anesthesia for inguinal herniorrhaphy procedures

	IHNB-MAC (Group 1)	General Anesthesia (Group 2)	Spinal Anesthesia (Group 3)
Postoperative side effects (*n* [%])			
Backache	0	0	6 (24)[ab]
Drowsiness	4 (14)	15 (54)[a]	3 (12)[b]
Headache	2 (7)	4 (14)	3 (12)
Knee weakness	3 (11)	1 (4)	3 (12)
Muscle aches	0	2 (7)	0
Nausea and/or vomiting	2 (7)	17 (61)[a]	3 (12)[b]
Pruritus	0	0	6 (24)[ab]
Sore throat	0	6 (22)[a]	2 (8)[b]
Urine retention	0	0	5 (20)[ab]
Maximum nausea VAS (mm)	1 ± 5	27 ± 27[a]	4 ± 1[b]
Maximum pain VAS (mm)	15 ± 14	39 ± 28[a]	34 ± 32[b]
Oral analgesia after discharge (*n* [%])	16 (57)	18 (64)	17 (68)
Satisfaction with anesthetic technique			
Poor	0	0	0
Good	7 (25)	18 (64)[a]	9 (36)
Excellent	21 (75)	10 (36)[a]	16 (64)

Abbreviations: IHNB-MAC, ilioinguinal hypogastric nerve block–monitored anesthesia care; *n*, numbers; VAS, visual analog scale.
[a] $P<.05$ versus IHNB-MAC group.
[b] $P<.05$ versus general anesthesia group.
From Song D, Greilich N, White P, et al. Recovery profiles and costs of anesthesia for outpatient unilateral inguinal herniorrhaphy. Anesth Analg 2000;91(4):879; with permission.

PACU discharge time of 65 to 98 minutes (Fig. 1), which is reasonable for an outpatient setting but is associated with 4% failure rates.[11] Other researchers have studied patients receiving 5.0 mg and 7.5 mg bupivacaine in the lateral position as to provide a unilateral block.[12] Researchers have reported a wide variation of recovery profiles for bupivacaine spinals (greater than 300 minutes), which makes bupivacaine not suitable for outpatient anesthesia (Fig. 2).[13] The failure rate of a low dose combined with the erratic discharge of higher doses makes bupivacaine a less desirable choice for outpatients.

Preservative-free 2-chloroprocaine (2-CPC) spinal anesthesia has been increasing in use over the past decade despite concern about possible neurotoxicity based on case reports with previous preservative-containing preparations. Preservative-free 2-CPC has now been approved for use as an intrathecal anesthetic in Europe. Forty milligrams of 2-CPC has shown a reliable anesthetic time of 60 minutes, with 120 minutes to discharge ready with a very narrow range of variability.[14] A review of more than 4000 patients at one institution revealed no signs of nerve damage and a rare incidence of TNS (Fig. 3). In this review, patients receiving 2-CPC were ready for discharge close to an hour before patients receiving lidocaine 60 mg (171 vs 224).[15]

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