Spinal anesthesia for abdominoplasty with liposuction: A case report

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Subarachnoid block is an appropriate anesthetic technique used for abdominoplasty with liposuction in the office-based setting. Strict compliance with standards of care for office-based anesthesia is essential for a successful perioperative anesthetic course without complications. Current research is limited on the safety and efficacy of spinal anesthesia for abdominoplasty in outpatient settings. While general anesthesia is routinely used for abdominoplasty, this surgical procedure can be performed using spinal anesthesia. Further research is necessary to fill the current void regarding spinal anesthesia and office-based surgical procedures.

Key words: **Abdominoplasty, ambulatory surgery, office-based surgery, spinal anesthesia.**

Abdominoplasty with liposuction is being performed in outpatient settings including accredited office-based plastic surgery practices. Although general anesthesia is routinely used for abdominoplasty, this surgical procedure also may be performed using regional anesthesia. Currently, little information describing the use of spinal anesthesia for abdominoplasty in the office-based setting is available. The following case report will describe the use of spinal anesthesia for abdominoplasty with suction-assisted liposuction.

Case summary

The patient was a 50-year-old female. She was 177.8 cm tall and weighed 80 kg. Her medical history was negative, and she had no known allergies. The patient's medication regimen included hormonal replacement therapy. Her surgical history was significant for hysterectomy and a lumpectomy, and there was no history of anesthesia complications. Additionally, a labor epidural was used for childbirth without complications.

A 12-lead electrocardiograph was obtained preoperatively and showed sinus bradycardia. Physical examination revealed an otherwise healthy female who was anxious preoperatively. The lungs were clear to auscultation, and the heart rate was regular and without murmurs. The patient's airway evaluation was defined as a Mallampati I, and her physical status classification was ASA Class II.

A complete preoperative anesthesia assessment was obtained and documented. The risks of spinal anesthesia as well as options for other anesthetic techniques were discussed and anesthesia consent was obtained. Hormone replacement therapy was discontinued 4 weeks before surgery because of the increased risk of deep vein thrombosis.

On the day of surgery, preoperative vital signs were blood pressure, 122/74 mm Hg; heart rate, 52 beats per minute and regular; hemoglobin saturation, 100% on room air; respirations, regular and nonlabored at 16 breaths per minute. Upon entry to the operating room, an 18-gauge intravenous (IV) catheter was started for fluid preloading in preparation for the spinal anesthetic and monitors were placed.

Following a 500-mL fluid bolus, the patient was placed in the sitting position for placement of the spinal anesthetic. Midazolam, 1 mg IV, was given for anxiolysis. The placement of the midline spinal was performed smoothly under aseptic conditions. One percent lidocaine was injected at the third and fourth lumbar interspace. A 25-gauge Pencan spinal needle (B. Braun Medical Inc, Bethlehem, Pa) was inserted at the same interspace via an introducer. Spinal bupivacaine, 13 mg, was slowly injected following visualization of the cerebral spinal fluid swirl in the syringe. The needle and introducer were removed intact. The patient was immediately placed in the supine position. Onset of the subarachnoid block was apparent at 30 to 60 seconds. The patient described tingling in her toes and warm legs. Following assessment of a T6 sensory level at approximately 4 minutes, the patient was prepped and draped for surgery. An indwelling urinary catheter was inserted. Pneumatic compression device stockings were placed on the legs. Intravenous sedation was begun using midazolam, 1 mg, and a propofol infusion at 75 µg/kg per minute. Surgery commenced 15 minutes following administration of the spinal anesthetic. The patient remained sedated for the duration of the procedure.

The patient remained hemodynamically stable throughout the 2.5-hour operation. A subfascial block by the surgeon using 0.5% bupivacaine before the end of surgery was performed, and fentanyl, 50 µg IV, was administered. The propofol infusion was discontinued following closure of the abdominal wound. The patient emerged pain free just minutes after discontinuing the propofol infusion, and she could move her toes and legs on command.

Following placement of dressings and an abdominal binder, the patient moved to the gurney with little assistance by the operating room staff. She was smoothly transferred to the postanesthesia recovery unit. Vital signs remained stable. She received a total of 2,100 mL of lactated Ringer's solution throughout the procedure. Urine output was brisk at 1,300 mL. Suction-assisted liposuction measured 4,200 mL, and there was minimal blood loss. The patient was fully awake, oriented, and comfortable for the duration of the recovery phase. There was no nausea or vomiting. Full sensation and strong motor movement were apparent upon admission to the recovery area. She demonstrated independent ambulation before being discharged to home in the care of family following the uneventful perioperative course. The indwelling urinary catheter was left in place per facility protocol.

Discussion

Abdominoplasty is being performed in outpatient settings including office-based practices. Although the literature reflects little information regarding the use of spinal anesthesia for this outpatient procedure, this case report demonstrates its efficacy.

Several authors have addressed the safety and efficacy for outpatient as well as office-based surgery using monitored anesthesia care or conscious sedation.[1-7] Ersek's 35-year personal experience with more than 30,000 procedures performed using dissociative anesthesia revealed only 2 unexpected hospital admissions secondary to patient comorbidities. The author supported the use of conscious sedation because of the increased morbidity and mortality associated with general anesthesia.[2] Mast[3] noted in his study comparing inpatient and outpatient abdominoplasty that no differences in outcome were noted between the 2 groups. Intravenous sedation was used for the outpatient procedures, and no adverse anesthesia events were reported.[3] Kryger et al[1] concluded in their study of 153 cases that abdominoplasties performed under conscious sedation were safe and cost effective. No intraoperative surgical complications were noted, and no adverse anesthesia outcomes were reported.[1] In a retrospective chart review of 3,615 plastic surgery procedures performed under monitored anesthesia care Bitar et al[4] cited few complications. Two patients had dyspnea that resolved, 6 patients had nausea and vomiting, and 2 patients had unplanned hospital admissions. One patient was emergently intubated, but there were no prolonged adverse effects in these patients.[4] Finally, Byrd et al[5] studied surgical procedures performed in an outpatient surgery facility including 5,316 cases that were mainly cosmetic. Few complications were reported for the 6-year period. The authors supported the use of accredited outpatient surgery facilities with primary interest in patient safety.[5]

The safety of spinal anesthesia has been described for other outpatient surgical procedures including laparoscopy.[6] Increased cost due to delayed recovery from spinal anesthesia, primarily due to motor block, has been considered a deterrent to the use of this type of anesthetic in outpatient procedures. However, the authors found in their prospective randomized controlled trial that recovery profiles in patients undergoing general anesthesia with desflurane were similar to those receiving spinal anesthesia.[6] Recovery costs, time to administer anesthesia, and postanesthetic care unit times were similar. Of note, postoperative analgesia was required by 50% of the general anesthesia group, but in no patients in the spinal anesthesia group. Chilvers et al compared the cost of small-dose spinal anesthesia with general anesthesia for outpatient laparoscopy.[7] Postoperative analgesic requirements were reduced using spinal anesthesia; however, total cost of anesthesia and recovery were similar between groups. A review of the literature has found a void regarding the use of spinal anesthesia in outpatient abdominoplasty procedures, specifically in the office-based setting.

Whether performed in an inpatient surgical setting, outpatient surgery center, or office-based practice, spinal anesthesia can be used for abdominoplasty. Strict adherence to the standards for office-based anesthesia practice set forth by the American Association of Nurse Anesthetists and American Society of Anesthesiologist is imperative.[8,9]

In the current case, the surgical abdominoplasty, managed with spinal anesthesia administered by a Certified Registered Nurse Anesthetist, was performed by a board certified plastic surgeon in a fully accredited office-based practice. The office practice complies with the same standards of care established for patients in hospitals or freestanding surgery centers.

While spinal anesthesia has become the preferred method for abdominoplasty in our facility, quality assurance monitoring is essential. Each patient is

given a questionnaire that includes several variables including postoperative nausea and/or vomiting, pain, and recall. The questionnaire is either returned by mail or given to the nurse during the first postoperative visit. In addition, every patient is called the morning after surgery to discuss any concerns.

This case report demonstrates the feasibility of spinal anesthesia for office-based plastic surgical procedures including abdominoplasty with liposuction in carefully selected patients. Further studies are recommended to evaluate the safe use of spinal anesthesia in office-based anesthesia settings.

REFERENCES

1. Kryger ZB, Fine NA, Mustoe TA. The outcome of abdominoplasty performed under conscious sedation: six-year experience in 153 consecutive cases. *Plast Reconstr Surg.* 2004;113:1807-1819.
2. Ersek RA. Dissociative anesthesia for safety's sake: ketamine and diazepam—a 35-year personal experience. *Plast Reconstr Surg.* 2004;113:1955-1959.
3. Mast BA. Safety and efficacy of outpatient full abdominoplasty. *Ann Plast Surg.* 2005;54:256-259.
4. Bitar G, Mullis W, Jacobs W, et al. Safety and efficacy of office-based surgery with monitored anesthesia care/sedation in 4778 consecutive plastic surgery procedures. *Plast Reconstr Surg.* 2003; 111:150-156.
5. Byrd HS, Barton FE, Orenstein HH, et al. Safety and efficacy in an accredited outpatient plastic surgery facility: a review of 5316 consecutive cases. *Plast Reconstr Surg.* 2003;112:636-641.
6. Lennox PH, Chilvers C, Vaghadia H. Selective spinal anesthesia versus desflurane anesthesia in short duration outpatient gynecological laparoscopy: a pharmacoeconomic comparison. *Anesth Analg.* 2002;94:565-568.
7. Chilvers CR, Goodwin A, Vaghadia H, Mitchell GW. Selective spinal anesthesia for outpatient laparoscopy. V: pharmacoeconomic comparison vs general anesthesia. *Can J Anaesth.* 2001;48: 279-283.
8. American Association of Nurse Anesthetists. Standards for Office Based Anesthesia Practice. In: Professional Practice Manual for the Certified Registered Nurse Anesthetist. Park Ridge, Ill: American Association of Nurse Anesthetists; 2005.
9. American Society of Anesthesiologists. *Guidelines for ambulatory anesthesia and surgery.* Park Ridge, Ill: American Society of Anesthesiologists; 2003.

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