

Deep sedation and local anaesthesia: a safe and suitable association for outpatients undergoing vein stripping

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Abstract

Varicose veins of the lower extremity is a common disease surgically treated on ambulatory basis. We describe an easy and safe anaesthetic technique to perform vein stripping in a day surgery freestanding unit. 1259 patients were studied. A deep sedation was induced and maintained with propofol and alfentanil while the surgeons infiltrated the groin and anywhere they need to perform the phlebectomies with ropivacaine 0.5%.

Patients were manually ventilated only for two brief periods: before the injection of the local anaesthetic and during the stripping of the saphenous trunk. All patients had a prompt awakening and none of them required postanaesthesia care unit. The postoperative complications rate was generally low. All patients but two were discharged the same day of the surgery and none of them was readmitted. Light general anaesthesia coupled with local anaesthetic infiltration is a simple and reliable technique to perform vein stripping for day surgery patients.

Keywords: Ambulatory anaesthesia, anaesthetic techniques, vein stripping.

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Introduction

Nowadays, vein stripping surgery is performed mostly in a day surgery setting because it is a simple and relatively painless procedure [1]. Day-case surgery has several potential benefits over hospitalbased surgery, including cost containment and convenience for patients. Thousands of patients are treated every year for this pathology and it is important to examine the impact of anaesthetic techniques on the recovery process after ambulatory surgery because the choice of anaesthetic technique can affect postoperative morbidity at home. In addition, we must remember that customer satisfaction is the basic concept in any industry, including the healthcare industry and patient satisfaction is improved when the procedure is associated with a small incidence of side effects. The main aim of this study was to evaluate the reliability and safety of the combined use of propofol and alfentanil for light general anaesthesia in outpatients undergoing high ligation and stripping of the greater saphenous vein.

Methods

We reviewed the flow charts of one thousand two hundred forty-five ASA physical status I and II outpatients, aged 18-76 yrs, scheduled for high ligation, long saphenous vein stripping and Muller's hook phlebectomy operated between 2002 and 2005. Patients with clinically significant respiratory, cardiovascular, renal, hepatic diseases and active gastrointestinal reflux were excluded from participating. In addition, patients with a history of drug or alcohol abuse or morbid obesity (e.g. BMI > 35) were also excluded.

In the preoperative waiting area, an i.v. catheter was placed in the arm for the administration of fluids and i.v. medications. Baseline measurements included blood pressure and heart rate. Ketorolac 30 mg for preemptive analgesia and dexamethasone 4 mg for postoperative nausea and vomiting (PONV) prophylaxis were given

twenty to thirty minutes before the induction of anaesthesia. Patients were then transferred to the operating room where a pulse oximeter, automated blood pressure cuff, and lead II electrocardiogram were placed.

All patients were premedicated with 2 mg of i.v. midazolam, about ten minutes before the beginning of the operation. Anaesthesia induction was obtained with propofol, 1-2 mg kg⁻¹ i.v. and alfentanil, 1000 mcg i.v. For anaesthesia maintenance, i.v. propofol infusion was varied between 50 and 150 µg kg⁻¹ min⁻¹ to maintain a light level of anaesthesia. Soon after the induction of anaesthesia, the surgeon injected ropivacaine 0.5% in the groin and anywhere in the leg he needed to perform the Muller's hook phlebectomies.

A face mask was positioned to deliver 3-4 L min⁻¹ of oxygen, and patients were manually ventilated for a few minutes until spontaneous breathing resumed, while the surgeon performed the high ligation of the saphenous vein at the groin. Just before the stripping of the saphenous trunk, another small bolus of propofol (0.5⁻¹ mg kg⁻¹) was made. Most patients were actively ventilated again for a few minutes and then they were left to resume their spontaneous breathing till the end of the operation, while the surgeon completed the procedure performing the Muller's hook phlebectomies as needed. Propofol infusion was stopped just before the skin suture, that is about ten minutes before the end of the surgical procedure.

When the procedure was over, if an Aldrete score > 9 was observed in the operating room, the patients were transferred directly to the ward. If this score was not achieved in ten minutes, patients were transferred to PACU. In the postoperative period we gave all the patients two tablets of paracetamol 500 mg and, if they felt pain we administered them ketorolac 30 mg i.v. as rescue drug. The incidence of any episode of PONV, or any other postoperative side effect such as pain, restlessness, confusion or shivering was recorded. The patients were considered ready for discharge when they had stable vital signs, were oriented, were able to ambulate unassisted, had no intractable

nausea or vomiting and had well controlled pain. All patients received 6 tablets of paracetamol 500 mg for the same evening and the day after the operation.

In a standardized postoperative telephone interview on the evening of the same day of the operation and on the morning of the first postoperative day, all the patients were asked to evaluate their level of pain on a four-point descriptive scale (0 = none, 1 = mild, 2 = moderate, or 3 = severe). Moreover they were asked about nausea, vomiting, headache and other adverse events after their discharge from the day-surgery unit.

Data were presented as mean \pm SD or median (range).

Results

Demographic and operative data are presented in Table 1.

Table 1 Patient Demographics and Intraoperative Data.

Male:female	337/922
Mean age, yr (range)	50.5 (20-76)
Mean weight (range)	70.7 (40-125)
Mean surgery duration, min (range)	48 (15 – 146)
Mean propofol, mg (range)	464 (150 – 1400)
Median hospital stay, min (range)	195 (60 – 472)

Data are presented as mean or median (range).

All patients reached an Aldrete score \geq 9 in the operating room [2] and were transferred directly to the ward. Twenty-six patients were withdrawn from the study because we did not find them when we phoned them after discharge. The incidence of postoperative complications was generally low. In particular PONV occurred in few patients (Tables 2, 3)

Table 2 Complications before discharge.

	Patients n = 1259
Nausea	11 (0.87 %)
Vomiting	12 (0.95 %)
Headache	5 (0.4 %)
Pain (rescue ketorolac)	24 (1.9 %)
Gastric pain	10 (0.8 %)

Data are presented as number (%).

Table 3 Complications after discharge.

	same day of operation patients n=1259	next morning patients n=1259
Nausea	10 (0.8 %)	3 (0.24 %)
Vomiting	7 (0.55 %)	3 (0.24 %)
Headache	18 (1.43 %)	8 (0.63 %)
Pain (mild)	22 (1.7 %)	48 (3.8 %)
Pain (moderate)	8 (0.6 %)	13 (1.1 %)
Pain (severe)	0	2 (0.16 %)

Data are presented as number (%).

The need for rescue analgesia [with ketorolac] before discharge was very low (1.9 %, Table 2). All patients were sent home with well-controlled pain and without intractable nausea or vomiting. Only two patients was admitted overnight and were withdrawn from the study. The first felt a heavy pain in the epigastrium associated with hypertension and sweating while she was in the step-down unit. An electrocardiogram and some laboratory exams were performed to exclude a cardiac ischemic attack. They were all normal and the following morning she was discharged. The other patient complained an atrial fibrillation during the operation.

Discussion

In Italy, day surgery practice may be considered a novelty. Hospitals have been developing programmes to carry out surgical procedures in ambulatory settings only recently. Vein stripping surgery is a common procedure that is well suited for outpatient surgery because it is a relatively painless operation, it lasts just an hour more or less, it causes only minimal blood loss and it does not need any neuromuscular blockade.

Many anaesthetic techniques have been described for this surgical procedure. Among them, spinal anaesthesia is a very good alternative to the general anaesthesia but many patients are concerned about the complications that spinal anaesthesia may give. Even though they are told that the most severe complications related to this regional block are very rare, most patients usually prefer to choose another anaesthetic technique. Femoral and genitofemoral nerve block represents another option for this operation but it is somewhat more variable in response and sedation is often required to complete the procedure; moreover, the distribution of the anaesthesia in the groin is incomplete [3]. Tumescence anaesthetic technique may be another choice for stripping of the long saphenous vein in the office setting. It is safe and reliable [4] but it is time-consuming and less comfortable because it requires multiple injections of local anaesthetics, the anaesthesia may be incomplete and a supplementary sedation is frequently required [5]. The combination of propofol and alfentanil is widely used in outpatients [6] because these drugs have favourable pharmacokinetic characteristics and a synergistic interaction with regard to sedation and analgesia [7]. Moreover, the administration of a small dose of midazolam at the onset of the propofol infusion results in increased sedation, anxietyolysis and amnesia [8].

Our vascular surgeons are very skilled and the surgical technique they use works well with the anaesthesiologic technique we have described. In our study the mean operating time was 48 minutes and the use of postoperative sclerotherapy avoided extensive phlebectomies. Consequently the 8 whole procedure was relatively short and painless. No patient underwent a bilateral vein stripping procedure but only one leg at a time was treated. As a result the postoperative pain was mild and well-controlled.

The short duration of surgery meant that forms of airway support more invasive than a face mask were not required. Usually patients were actively ventilated only for two brief periods: soon after the induction of anaesthesia and during the stripping of the greater saphenous vein when the plasma levels of propofol were higher. These episodes may represent brief periods of general anaesthesia. During the other phases of the operation the patients could breathe spontaneously with oxygen supplementation.

As shown in Tables 2 and 3 the PONV rate was very low as well as the incidence of other common complications such as pain and headache. PONV incidence was probably so low for four reasons. First of all because vein stripping procedure does not belong to those surgical procedures like middle-ear, nose, throat or major breast procedures,

strabismus surgery, laparoscopies and laparotomies that may trigger this complication [9]. Secondly because when using alfentanil the incidence of PONV in the postoperative period may be less frequent with respect to fentanyl and sufentanil [10]. A third explanation may be represented by the prophylactic administration of dexamethasone [11] and last but not least because the pain was well controlled in nearly all the patients. It is well known that a strong pain is an important cause of PONV [12,13]. The patients' satisfaction with this anaesthetic technique is demonstrated by the fact that all of those (98 patients) who needed to undergo the same procedure in the other leg asked us to have the same anaesthesia again.

This study could be criticized because it is retrospective and because we did not include a control group but the major scope of this trial was to describe the safety and reliability of the anaesthesia technique we used in a huge number of patients. Another important limitation regards the time to discharge. Usually in our centre, patients are sent home when the surgeon, after ending the daily session, visits and checks them. The patients who are operated on early in the morning stay in hospital for a longer time than the patients who are operated on later. Unfortunately, we missed to record when the patients were "ready to discharge". Nevertheless the median duration of the postoperative period before discharging was 195 min (Table 1). Probably many patients operated early in the morning would have been discharged sooner.

In conclusion, we can affirm that light general anesthesia with propofol-alfentanil coupled with local anaesthetic infiltration is a simple and reliable technique for greater saphenous vein stripping procedure for outpatients.

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