

Original Article

Wide-awake Local Anesthesia and no Tourniquet (WALANT) In Lower Limb Fractures.

Parik Dev , Sanju Goel , Nitish Bansal

Abstract

Background

WALANT or wide-awake local anesthesia no tourniquet is a form of an extravascular block, without the painful tourniquet. A combination of local anesthetics like lignocaine and epinephrine is used to achieve anesthesia and hemostasis. Wide-awake local anesthesia and no tourniquet (WALANT), first used for hand surgery, has been sparingly described for use in fracture fixation of the lower limb. We present our experience using this technique.

Objective

The objective of the study is to identify WALANT a simpler option , that can be safely used in place of general anesthesia or regional blocks for fixation of fractures of the distal part of lower limb, with added advantages of no need for a tourniquet and better intraoperative assessment of fracture fixation.

Method

10 patients with lower limb fractures (5 metatarsals, 3 lateral malleolus , 2 medial malleolus) were operated on using WALANT by orthopedic surgeon. We used 35-40ml of 2% Lignocaine with 1:80000 Adrenaline(7mg/kg) diluted with normal saline. Numeric Pain Rating (NPR) scoring was done during injection and per-operatively, and the Likert scale was used for the surgeon's satisfaction.

Result

The average NPR score was reported as 0.8 during injection and 0.4 (0-2) postoperatively. surgeon reported excellent satisfaction in all the cases operated on. No complication occurred due to anesthesia.

Conclusion

WALANT is a much simpler option and can be safely used in place of general anesthesia or regional blocks for fixation of fractures of the distal part of lower limb, with added advantages of no need for a tourniquet and better intraoperative assessment of fracture fixation

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Introduction

WALANT or wide-awake local anesthesia no tourniquet is a form of an extravascular block, without the painful tourniquet. A combination of local anesthetics like lignocaine and epinephrine is used to achieve anesthesia and hemostasis. Both of these drugs have been used by dentists quite effectively without preoperative testing and no monitoring for many decades[1,2].The technique is being used widely in hand

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Keywords

walant, lower limb, trauma, orthopaedic, surgery.

surgeries for both bony and soft tissue procedures, and its efficacy and safety are well-established in the literature[2-4]. However, its use in fractures in lower limb is not well recognized, and the literature is limited. So, we decided to evaluate the use of this technique in treating fractures in lower limb.

Material and Methods

The study was conducted from Nov 2023 to August 2024. 10 patients with lower limb fractures (5 metatarsals, 3 lateral malleolus , 2 medial malleolus) were included in the study. Healthy adult patients with closed, simple, single bone fractures, time since injury <1 week, and without any other concomitant injuries were included in the study. Patients, aged < 18 years, with complex fracture patterns, more than one fractured bone, chronic injuries, and patients with peripheral vascular disease (to avoid the risk of ischemia) were excluded from the study. The study was approved by the institutional review committee and informed written consent was taken from all patients. The patients were operated on using WALANT by orthopedic surgeons.

A preoperative shot of antibiotic (Cefuroxime 1.5gm) was given 1 hour before surgery. We used 2% Lignocaine with 1:80000 Adrenaline (7mg/kg) diluted with normal saline. 35-40ml of the solution was injected. Approximately 10 ml was injected subcutaneously along the planned incision line with a 25 gauge needle. 8-10 ml was injected at three sites; the fracture site, proximal 1/3rd part of the proximal incision, and distal 1/3rd part of the distal incision, subperiosteally using a 25 gauge needle. The drug was injected before sterile preparation and draping of the extremity, and this delay of 20 mins allowed the drugs to become effective. The subcutaneous lateral and medial approach was used for lateral malleolus fracture and medial malleolus fractures respectively and in between metatarsal incision used for metatarsal fractures. The pain was evaluated at the time of injection and intraoperatively using the Numerical Pain Rating Score NPRS (1-10). The surgeon’s satisfaction was evaluated using the Likert scale (Table I). The technique was also evaluated for complications.

Results

Of the 10, 7 were males, and 3 were female. The average age of the patients was 30.6 years (Range 20 years-45 years, The mean surgical time was 29.1 mins (Range 22 mins to 40 mins)

At the time of injection, the average NPRS reported was 0.8. The two patients who experienced NPRS of 2 and 3 at the time of injection also reported NPRS of 2 intraoperatively. Both were supplemented with 2-4 ml of the anaesthetic solution at the pain site. All other patients reported an NPRS of 0 intraoperatively (Table II). Most of the patients started to experience pain 3-4 hours postoperatively and were given nonsteroidal anti inflammatory drugs (Ketorolac 30mg, IV, 8 hourly). All patients were discharged the next day. Surgeon reported excellent satisfaction in terms quality of anaesthesia achieved with the technique and the blood-less

I. How did you find the quality of anesthesia achieved?				
Very Bad	Bad	Average	Good	Excellent
1	2	3	4	5
II. How did you find the quality of blood less surgical field?				
Very Bad	Bad	Average	Good	Excellent
1	2	3	4	5

Table 1: Surgeon satisfaction Likert scale

operative field in all the cases. We experienced no

Serial number	Age(years)	sex	Site of fracture	Operative time (Mins)	NPRS at the time of injection	NPRS Intraoperatively
1	23	M	Metatarsal	25	1	0
2	26	M	Lateral malleolus	35	2	0
3	20	M	Metatarsal	28	1	0
4	31	F	Metatarsal	22	0	0
5	34	M	Metatarsal	30	0	0
6	35	F	Metatarsal	29	3	2
7	45	M	Lateral malleolus	40	0	0
8	28	M	Medial malleolus	32	1	0
9	27	F	Metatarsal	25	0	0
10	29	M	Lateral malleolus	30	0	0

Table 2: Demographics and Results

intraoperative or postoperative complications due to the anaesthetic solution.

Discussion

WALANT is being used quite commonly for fractures of the hand[5-7].Fracture fixation under wide awake surgery has proven to be safe for distal radius fracture[8-11]. It has been sparingly used for other fractures of the upper limb as well as lower limb. In our series of patients, we also found the technique to be simple and effective in terms of anesthesia and bloodless operative field, as was evident from the surgeons’ reported excellent satisfaction . The pain experienced at the injection time was more during the initial few cases operated by each surgeon. It could also be due to the non- use of sodium bicarbonate which helps in neutralizing the acidic pH of lignocaine solution[1,12]. Thus, we now advocate adding it. The recommended

volume ratio of 8.4% sodium bicarbonate with 1:100,000 epinephrine to 1% lidocaine is approximately 1mL:10mL. We found that distracting the patient at the time of injection by pressing firmly on the skin proximal to the injection site and conversing with the patient to create sensory noise resulted in a low NPRS. Similarly, other techniques have been recommended to reduce pain at the time of injection [1,13,]. Two patients who had the most pain during injection also experienced pain intraoperatively and were supplemented with 2-4 ml of the anesthetic solution. Both these patients were slightly anxious before and during the surgery. Pharmacological (Pre-surgery medication) and non-pharmacological interventions (such as enhanced preoperative information, music, and virtual reality) may be used to reduce anxiety for such patients [15]. It has even been recommended that WALANT should form a part of the surgical training curriculum [16]. In the author's experience, simple single bone fractures are most amenable to starting using this technique. The technique offers many advantages. The patient is wide awake and can perform active movements, thus helping in assessing the fixation and joint reduction intraoperatively. It can be performed as a day-care procedure and has a short postoperative recovery time, WALANT is an economical alternative to general anesthesia and regional blocks, which require a lot of specialized equipment, trained anesthetists, and multiple drugs, which adds to the cost. This technique obviates the need for a tourniquet and thus avoids the complications associated with its use. The comfort and painless experience while maintaining the patient's consciousness and minimizing hemodynamic disturbance is a considerable benefit of this method of anesthesia. Our study is not without shortcomings. Lack of use of objective parameters for the calculation of blood loss, lack of postoperative assessment of pain, not having a comparison group, and small sample size were the main shortcomings of our study. As the patient is wide awake, an anxious patient may move intraoperatively. However, we did not face this issue in our study. The most common side effect associated with WALANT itself is syncope due to a vasovagal response. Another common reaction is increased anxiety in patients who fear being awake for the procedure. Epinephrine induced cardiac ischemia may occur as a rare complication. Lignocaine may lead to systemic toxicity if inadvertently injected intravenously and may cause seizures and arrhythmias [17].

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