Foot Nerve Block as a Single Technique for Both Anaesthesia and Analgesia in the Hallux Valgus Percutaneous Surgery

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Abstract

Objectives and Method: The objectives were to assess the efficacy and the quality of both the surgical anaesthesia and the postoperative analgesia achieved after a peripheral nerve block at the ankle level for percutaneous surgery of hallux valgus and/or metatarsalgia as ambulatory surgery. After the operation patients were given conventional intravenous analgesia and they left the hospital with a rescue analgesic regime. Postoperative analgesic control was assessed through phone calls after 24 and 48 hours.

Keywords: Postoperative pain control, Ambulatory surgery, Percutaneous surgery, Postoperative analgesia, Peripheral nerve block, Foot nerve block, Ankle block.

Material and Methods

We conducted a study of 49 patients planned for ambulatory surgery having percutaneous surgery of hallux valgus and/or metatarsalgia for the period September 2005–December 2005. These patients underwent an anesthesia technique consisting of a peripheral nerve block at the ankle level. Due to the difference in postoperative pain, patients were divided in two groups, those who underwent simple hallux valgus percutaneous surgery and those who underwent metatarsus correction associated or not to hallux valgus correction.

Results and Conclusions: The peripheral nerve block at the ankle level was an effective, easy and innocuous anesthesia technique. It provided good quality and prolonged postoperative analgesia, and an excellent degree of comfort and satisfaction for the patients, thus allowing surgery without hospitalization.

Introduction

Hallux valgus corrective orthopedic surgery was, a few years ago, surgery with potential risks and difficult postoperative pain control. With the introduction of percutaneous surgery (Photograph 1), it now can be performed on an ambulatory regime and with one anesthesia technique that provides an excellent postoperative analgesia. This technique does not require the performance of ischemia on the extremity, what has allowed us to perform a peripheral nerve block at the ankle level, thus avoiding the risks associated both with the making of ischemia and with the neuroaxial or troncular anesthesia techniques.

Photograph 1. Percutaneous surgery.

The objectives of this study were to assess the efficacy and the quality of both surgical anaesthesia and postoperative analgesia after peripheral nerve block at the ankle for percutaneous surgery of hallux valgus and/or metatarsalgia in patients planned for ambulatory surgery without hospitalization.
A qualified nurse assessed the postoperative analgesic control through phone calls at the patient’s home after 24 and 48 hours. They were asked in every case, how many hours they required to regain the normal sensibility of his foot; at what time he started the ingestion of analgesics; what amount of analgesia of the analgesia regime he had ingested and the VAS at the time of the phone call. Finally, they were asked about possible perioperative complications, like the presence of hematomas, paresthesia or other effects.

The data gathered in the study were the following: the demographic characteristics of the patients, the type of surgery performed and the block quality. The latter was assessed by the anesthesiologist present at the operating theatre as very good in case of lack of pain during the operation, good in the case that they required some type of sedation and medium if they required an analgesic reinforcement with local anesthetic due to pain in the surgical zone. The block was considered a failure if the patient required a change of the initial anesthesia technique. The quality of the postoperative analgesia was assessed, 24 hours and 48 hours after the operation using a visual analogical scale (VAS) from 0 to 10, where 0 means lack of pain and 10 means maximum possible pain. The duration of the sensitive block was defined as the time passed from the making of the nerve block to the time in which the patient had to ingest the first rescue drug. The amount of required analgesia was also collected after 24 and 48 hours. The motor block was assessed prior to the hospital discharge on the basis of whether the patient could or could not perform the plantar or dorsal flexion of the toes (lack of motor block), perform the flexion incompletely (partial block) or was able to perform toes movements (complete motor block). The hospital stay time was the period of time from the time of the patient’s arrival to the surgery unit until the hospital discharge. We gathered possible complications of the anesthesia technique, like hematomas, paresthesia or other complications, and the medical, surgical, administrative or anesthetic causes for unplanned admission. Before leaving the hospital, the patients were asked to rate the comfort level during the operation as bad, medium, good, very good or excellent. They were also asked to rate the satisfaction level regarding the used anesthesia technique as rather unsatisfied, satisfied or very satisfied.

We carried out the statistical analysis through the description of the collected variables (univariate analysis), and we used the chi-square technique for the comparison among groups. All this was made with the SPSS statistical package version 9.0. The significance level used was 95%. The qualitative variables are expressed as number of cases and percentage.

## Results

The study included 49 patients, 44 women and 5 men. 37 were operated on for hallux valgus + matatarsalgia (75.5%) and 12 for simple hallux valgus (24.5%). Table 1 shows the demographic characteristics of the patients included in the study.

As regards the efficacy of the nerve block, the anesthesia technique did not have to be changed because of its failure in any case. For every type of surgery, the results were as follows (Graph 1): the block was considered very good in 17 cases (45.9%) (IC 95% = 29.9–62) of hallux valgus + metatarsalgia and in 9 cases (75%) (IC 95% = 50.5–99.5) of simple hallux valgus; the block was good in 10 cases (27%) of hallux valgus + metatarsalgia; the block was considered medium in 10 cases (27%) (IC 95% = 12.7–41.3) of hallux valgus + metatarsalgia and in 3 cases (25%) (IC 95% = 0.5–49.5) of simple hallux, being necessary to reinforce the technique with local anesthetic during the operation.

Regarding the quality of the postoperative analgesia at the time of the hospital discharge, the VAS was 0 in 35 (94.6%) hallux valgus
In the case of simple hallux valgus, the VAS at the time of discharge was 0 in 11 cases (91.7%), and 1 in one patient (8.3%). There were no significant differences as regards the postoperative analgesia between both groups at the time of hospital discharge. After 24 hours, in the case of hallux valgus + metatarsalgia, the VAS were 0 in 26 cases (70.3%), 2 in 6 cases (16.2%), 4 in 4 cases (10.8%) and 9 in one case (2.7%). In the simple hallux valgus group, the VAS 24 hours after the surgery were 0 in 10 cases (83.3%), and 2 in 2 cases (16.7%). There were not, after 24 hours, significant differences as regards the analgesia between both groups.

Finally, after 48 hours, the VAS results for the hallux valgus + metatarsalgia group were the following: VAS 0 in 17 cases (45.9%), VAS 2 in 7 cases (18.9%), VAS 3 in 3 cases (8.1%), VAS 4 in 4 cases (10.8%), VAS 5 in 5 cases (13.5%) and VAS 6 in one case (2.7%).

As regards the simple hallux valgus group, the VAS after 48 hours were 0 in 7 cases (58.3%), 2 in 4 cases (33.3%), and 3 in one case (8.3%). The VAS in the hallux valgus + metatarsalgia group after 48 hours were significantly higher for the simple hallux valgus group (p=0.047).

The amount of postoperative analgesic required 24 hours after the making of the block was assessed. 11 patients (22.4%) required the ingestion of dexketoprofen trometamol 25mg/8h by oral route and paracetamol 500mg/8h; 21 patients (42.9%) required dexketoprofen trometamol 25mg/8h by oral route only; 2 patients (4.1%) paracetamol 500mg/8h as the only analgesia and 15 patients (30.6%) did not ingest any analgesic drug. 48 hours after the operation, only 5 patients (10.2%) required analgesia with dexketoprofen trometamol 25mg/8h and paracetamol 500mg/8h; 16 patients (32.7%) ingested dexketoprofen 25mg/8h; 3 patients (6.1%) required paracetamol 500mg/8h, and 25 patients (51%) did not require any type of analgesia.

The average duration of the sensory block was 14 hours and 36 minutes. The motor block in the hallux valgus + metatarsalgia group at time of discharge was complete in 3 patients (8.1%), partial in 2 patients (5.4%) and there was no block in 28 cases (76.5%). In the case of simple hallux valgus there was not motor block in any case (100%). The average stay time in the hospital was 4.38 hours.

The only registered complication of the anesthesia technique was the deformity of the foot in the case of hallux valgus + metatarsalgia. There were no cases of unexpected hospitalization.

As regards the comfort level of the patient during surgery (Graph 2), it was medium in 3 cases of hallux valgus + metatarsalgia (8.1%) and 1 case of simple hallux (8.3%), good in 13 cases of hallux valgus + metatarsalgia (35.1%) and in 3 cases of simple hallux valgus (25%); the comfort level was very good in 16 cases of hallux valgus + metatarsalgia (43.2%) and in 5 cases of simple hallux (41.7%).
Discussion

Traditional surgery for hallux valgus correction [18] has been until recently a relatively complex surgery as regards surgical and anesthesiological technique. An ischemia tourniquet on the affected extremity was necessary to get an adequate surgical field. This has been until now a very important limiting factor to choose an adequate anesthesia technique. But above all, patients undergoing this type of surgery suffered intense postoperative pain. [9, 22, 75] This required patients to stay confined in hospital to recover from anesthesia and to need postoperative pain control with intravenous analgesia. With the growing development of ambulatory surgery units, without confinement [24], and especially, the recent evolution of surgical techniques there is a change of direction in the anesthetic care of these patients. Hallux valgus percutaneous surgery permits a faster and less painful postoperative recovery because bone injuries and, especially, soft tissue injuries are reduced. The fact that ischemia is not required to perform the surgery has allowed us to go from conventional neuroaxial anesthesia techniques to using less expensive peripheral nerve block techniques with less complications. [23] Also, there is the additional advantage of offering the patient a lasting postoperative analgesia. [2] The results of our study confirm these assertions. The difference with other techniques described elsewhere [11, 7, 5, 6, 8] is that in our case the blocked nerve zone is smaller due to a more peripheral performance of the block. This has allowed our patients to walk unaided once the surgery is finished (Photograph 4). Also, another remarkable difference between our study and others [3, 4, 10, 14, 19, 20] is that there is no need to place a perineural catheter to get good postoperative anesthesia.

In agreement with what the literature usually describes, hallux valgus pathology in our sample is more common in females, with a greater incidence in ages between 40 and 75. At these ages, an association with metatarsalgia is more common. Although we have not identified the connection between overweight and incidence of hallux valgus, there may be a greater incidence of metatarsalgia among those patients with a higher BMI. Despite the performance of the peripheral nerve blocks without a neurostimulator, the results obtained as regards its efficacy have been very satisfactory. Thus, we can assert that it is a valid technique for this kind of surgery. In more aggressive surgeries the results have been less satisfactory. Such is the case of like hallux valgus + metatarsalgia, in which the nerve zone that has to be blocked is bigger. Despite this, it was not necessary a change of anesthesia in any case of our study. The associated anesthesia complications have been minimal and there were no unplanned hospitalizations. However, the most important and remarkable advantage is the quality of the postoperative analgesia. This and the few incidences of anesthesia complications have allowed these patients to be included in a surgery circuit without hospitalization and with a short stay time before discharge. In the existing bibliography, most of the authors have required the use of analgesia techniques in addition to the anesthesia technique. [5] In our work, the obtained nerve block has been innocuous and prolonged enough to allow the patients to leave the hospital unaided, with VAS results significantly lower than in most cases, always < 1 at the time of discharge, even in the case of more complex surgery. There were no differences between the groups as regards postoperative pain at the time of the hospital discharge and after 24 postoperative hours. However, we have identified that, after 48 hours, there are significant differences. This may be because at that time, the sensory block has already dissipated (14h.16min average time) and hallux valgus + metatarsalgia surgery is still slightly painful. This is unlike simple hallux valgus surgery, where 48 hours after the operation the pain diminishes independently of the used anesthesia technique. During the first 24 hours the consumption of non-steroidal anti-inflammatory drugs was higher, in relation to the block ending and the manifestation of pain; whereas after 48 hours of surgery, the consumption of analgesics decreases. A possible explanation would be that the only patients that required analgesia at that time were those with higher VAS, such as the case of hallux valgus + metatarsalgia.
We conclude that in hallux valgus corrective surgery, the peripheral nerve block at the ankle level is considered an effective, easy and innocuous anesthesia technique. It provides a good and prolonged postoperative analgesia, thus allowing surgery without confinement and providing an excellent degree of comfort and satisfaction for the patients.

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