ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 8, Issue, 4, pp. 16658-16660, April, 2017

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

IMPACT OF NERVE BLOCKS ON POSTOPERATIVE PAIN AND SUFFERING IN FOREFOOT BONY SURGERY – CASE SERIES OF 43 PATIENTS

Rajitha Gunaratne G D[1,2,3]., Sarah Liew[1]., Andrej Nikoloski[1,2] and Krishna Boddu[2]

[1]Sir Charles Gairdner Hospital, Nedlands, Perth, Australia
[2]Osbourne Park Hpspital, Perth, Australia
[3]Curtin University, Kent Street, Bentley, WA, 6102, Australia

DOI: http://dx.doi.org/10.24327/ijrsr.2017.0804.0192

ARTICLE INFO

Article History:

Received 18th January, 2017
Received in revised form 10th February, 2017
Accepted 06th March, 2017
Published online 28th April, 2017

Key Words:

Forefoot, Blocks, Pain, Surgical delay, Foot and ankle, Suffering

ABSTRACT

Background: Nerve blocks are commonly used in Orthopaedic forefoot surgeries to provide safe, effective and long-acting analgesia. There are several types of nerve block commonly utilised in clinical practice; including ankle blocks, saphenous nerve blocks, sciatic nerve blocks, and popliteal blocks. However, depending on the chosen technique, varying degrees of surgical delay can be expected considering the need for separate anaesthetic setupsorpatient repositioning. Also, outcomes such as time to postoperative ambulation can vary depending on the use of ankle versus more proximal nerve blocks given the muscle groups affected. Despite these varying outcomes, few studies have compared the efficacy of various blocks on controlling post-operative pain.
Method: 43 patients who underwent elective forefoot surgery under different nerve blocks (sciatic, saphenous and sciatic, and ankle) were contacted post-operatively to assess their level of self-reported pain and suffering.
Results: There was no significant differences between the three nerve block types on the survey outcomes of interest: suffering ($\chi^2(2) = .49$, $p = 0.78$) and pain ($\chi^2(2) = .89$, $p = 0.64$).
Conclusion: The use of ankle blocks in forefoot surgery provides equally effective analgesia when compared to more proximal blocks. This supports the use of ankle blocks, which can increase theatre efficiency and early ambulation for patients. This in turn decreases operating costs.

INTRODUCTION

Background

Orthopaedic forefoot surgeries, commonly performed as day procedures, have been reported to induce high levels of post-operative pain[1, 2]. These surgeries include hallux valgus correction and toe straightening operations. Inadequately controlled pain can result in delayed discharge, unplanned overnight hospital admissions, postponed return to daily activities, and increased narcotic analgesic requirements[3]. Regional nerve blocks are commonly utilised in Orthopaedic surgery to provide safe and long-acting analgesia, which minimises opioid consumption and their inherent side effects, without compromising patient satisfaction[2,4-6].Nerve blocks frequently used in forefoot surgery include ankle blocks, saphenous nerve blocks, sciatic nerve blocks, and popliteal blocks; these may be administered by Anaesthetists under ultrasoundor by surgeons using anatomical landmark techniques. The different blocks result in varying surgical delay and motor blockade. To date there have been few studies comparing the efficacy of various blocks in controlling post-operative pain. We examine three commonly used nerve blocks at a Western Australian hospital to determine if there are any differences in post-operative pain control.

METHOD

Consecutive patients who underwent elective forefoot bony surgery between August 2015 and August 2016 at a public hospital by a single foot and ankle Orthopaedic surgeon in Western Australia (Osbourne Park hospital) were included in the study. Anaesthetic charts were examined to identify which nerve block(s) had been utilised for each patient. All blocks were performed using ultrasound by the same experienced anaesthetist. Each patient had the same oral/intravenous postoperative analgesia regime. The medical file was also examined to identify any documented postoperative

Corresponding author: **Rajitha Gunaratne G D*
Sir Charles Gairdner Hospital, Nedlands, Perth, Australia

complications or history of chronic pain. Chronic pain patients were excluded from the study. Ethics approval was not required as data collection was retrospective which preserves patient confidentiality. Outcomes examined are questionnaires routinely collected as part of our standard clinical monitoring.
Postoperative pain relief and suffering were assessed by contacting each patient with a phone call on average 3 months postoperatively and asking two questions. First, patients were asked if their pain postoperatively was better than or same vs worse than expected. Second, they were asked if they suffered postoperatively, with responses being either yes or no. We chose to assess suffering though a binary "yes or no" question to limit respondent fatigue and recall bias.

RESULTS

A total of 43 patients met the inclusion criteria of the study and were contacted. Of the 43 patients, 10 patients had ankle blocks, 25 had saphenous and sciatic nerve blocks and 8 had sciatic nerve block alone. The overall response rate was 79%. Nil postoperative complications or chronic pain patients were identified according to the patient's medical file.

The statistical analyses reported here were performed using SPSS Software with an alpha of .05. Since all data (with the exception of age) was categorical, chi-square tests were performed to determine whether there were any differences between nerve block types. A one-way ANOVA was performed to determine whether there were any baseline age differences between nerve block types.

Table 1 indicates no significant baseline differences between the three nerve block types on gender ($\chi^2(2) = 2.40$, $p = 0.30$), age ($F < 1$, $p = .62$), survey response ($\chi^2(2) = 2.88$, $p = 0.24$), or operation ($\chi^2(4) = 3.10$, $p = 0.54$). There were also no significant differences between the three nerve block types on the survey outcomes of interest: suffering ($\chi^2(2) = .49$, $p = 0.78$) and pain ($\chi^2(2) = .89$, $p = 0.64$).

found the mean time taken for a surgeon administered ankle block to be sixminutes.[7]In comparison to sciatic and saphenous nerve blocks which are performed under ultrasound guidance, surgeon performed or landmark based ankle blocks are inherently faster to perform as the need for a separate anaesthetic setup and repositioning of the patient to perform the block is reduced. This in turn promotes greater theatre efficiency and can help reduce operating costs.

Earlier ambulation is another benefit of ankle blocks when compared to the more proximal nerve blocks. For example, the saphenous block, which can result in variable motor blockade of the vastus medialis and the sciatic nerve block which affects motor function of hamstring and calf muscles.

Limitations of our study include a small sample size. It is important to interpret these results with caution since chi-square tests require at least 80% of cells to have an expected count greater than or equal to five. The small sample size of the current study led to some cells not meeting this criterion. Also the retrospective nature of data collection is susceptible to recall bias. Furthermore, we relied on subjective reporting, which may not accurately reflect the true attainment of the goals studied; similarly, responders may overstate goal achievement, for example in an attempt to please the surgeon. This study has been reported in line with 'PROCESS' criteria[8] and registered with research registry (Research Registry Unique Identifying Number: researchregistry2108).

CONCLUSION

Significant differences in terms of postoperative pain and suffering were not identified when comparing different nerve blocks in bony forefoot surgery. We support the use of ankle blocks over saphenous or sciatic blocks, given the likely reduction in surgical delay, operating costs and opportunity for early ambulation.

Table 1 Descriptive statistics for each nerve block type. Counts are presented for categorical data and means (M) and standard deviations (SD) are presented for age. Operations included toe straightening (Toe), hallux valgus (Hall.), and other (includes MTPj Arthrodesis and Cheilectomy).

Nerve Block	Gender	Responder	Age	Operation	Pain	Suffering
Ankle Block (N = 10)	M = 0 F = 10	Yes = 8 No = 2	M = 64.3 SD = 11.3	Toe = 4 Hall. = 4 Other = 2	Same or Better = 7 Worse = 1	Yes = 3 No = 5
Saphenous and Sciatic (N = 25)	M = 5 F = 20	Yes = 18 No = 7	M = 58.2 SD = 17.8	Toe = 4 Hall. = 15 Other = 6	Same or Better = 16 Worse = 2	Yes = 7 No = 11
Sciatic (N = 8)	M = 1 F = 7	Yes = 8 No = 0	M = 61.5 SD = 17.0	Toe = 3 Hall. = 4 Other = 1	Same or Better = 6 Worse = 2	Yes = 2 No = 6

DISCUSSION

Forefoot surgery is very common with hallux valgus and toe straightening surgery being prevalent. Our study demonstrated no significant differences in pain and suffering postoperatively when comparing ankle blocks, saphenous andsciatic nerve blocks and sciatic nerve block alone. Our findings support existing literature, which shows that surgeon administered ankle blocks for day case forefoot surgery can provide adequate analgesia and high patient satisfaction scores.[7]

An ankle block can be performed by the surgeon after prepping and draping, prior to making an incision. Foote *et al.* have

Future studies should investigate the efficacy of ultrasound guided Anaesthetist performed nerve blocks, in comparison to landmark based surgeon performed ankle blocks in forefoot surgery with a randomised control trial design.

References

1. Chou LB, Wagner D, Witten DM, Martinez-Diaz GJ, Brook NS, Toussaint M, Carroll IR. Post operative pain following foot and ankle study: a prospective study. Foot & Ankle International 2008; 29(11): 1063 - 68. doi:10.3113/FAI.2008.1063.

2. Dhukaram V, Kumar CS. Nerve blocks in foot and ankle surgery. *Foot and Ankle Surgery*. 2004; 10: 1 - 3.doi: http://dx.doi.org/10.1016/S1268-7731(03)00099-7
3. Wang J, Liu GT, Mayo HG, Joshi GP. Pain Management for Elective Foot and Ankle Surgery: A Systematic Review of Randomized Controlled Trials. *The Journal of Foot & Ankle Surgery* 2015; 54: 625 - 35. doi: 10.1053/j.jfas.2014.05.003.
4. Clough TM, Sandher D, Bale RS, Laurence A. The use of a local anaesthetic foot block in patients undergoing outpatient bony forefoot surgery: a prospective randomized controlled trial. *The Journal of Foot & Ankle Surgery* 2003; 42(1): 24-9. doi:10.1053/jfas. 2003.50001
5. Hegewald K, McCann K, Elizaga A, Hutchinson BL. Popliteal blocks for foot and ankle surgery: Success rate and contributing factors. *The Journal of Foot & Ankle Surgery* 2014; 53: 176-8. doi: http:// dx. doi. org/ 10. 1053/j.jfas.2013.04.008
6. Kullenberg B, Topalis C, Resch S. Ankle nerve block – perioperative pain relief in surgery of the forefoot. *The Foot* 2006; 16: 135-7. doi: http://dx.doi.org/10.1016/ j.foot.2006.03.002
7. Foote J, Freeman R, Morgan S, Jarvis A. Surgeon administeres regional blocks for day case forefoot surgery. *Foot and Ankle Surgery* 2012; 18: 141 - 3. doi:10.1016/j.fas.2011.07.003
8. Agha RA, Fowler AJ, Rammohan S, Barai I, Orgill DP and the PROCESS Group. The PROCESS Statement: Preferred Reporting of Case Series in Surgery. *International Journal of Surgery* 2016; (article in press)

How to cite this article:

Rajitha Gunaratne G D *et al*.2017, Impact of Nerve Blocks on Postoperative Pain And Suffering In Forefoot Bony Surgery – Case Series of 43 Patients. *Int J Recent Sci Res.* 8(4), pp. 16658-16660. DOI: http://dx.doi.org/10.24327/ijrsr.2017.0804.0192

****