ISSN: 1607-8322, e-ISSN: 2220-5799 Anaesthesia, Pain & Intensive Care
Vol 26(3); June 2022 DOI: 10.35975/apic.v26i3.1913

SHORT COMMUNICATION REGIONAL ANESTHESIA

To blunt or not to blunt: Still an outlawed practice in peripheral nerve blocks?

B.M. Munasinghe, N. Subramaniam

Author affiliation:

Department of Anesthesiology & Intensive Care, District General Hospital, Mannar, Sri Lanka

Correspondence: Dr B.M. Munasinghe; E-mail: malakafmp@gmail.com; Phone: +94773645827; Work +94232222261

Abstract

Probably the first published account of regional nerve blocks was by Gaston Labat in 1922. Since the earlier experimentation, regional anesthesia has seen many ups and downs. The concept of field anesthesia popularized by the military anesthesiologists to be used in the battlefields, was quickly picked up by their colleagues working in the civil hospitals. The real breakthrough was brought about the invention of block needles to be used specifically for the peripheral nerve blocks, and proved to be safer than ordinary hypodermic syringe needles. The block needles, however, come at a higher price and the availability remains a constant problem, especially in the remote places of the low-income countries. The next revolution came with the advent of nerve stimulator and the ultrasound in the block techniques. Both of these developments really revolutionized the art of regional anesthesia. The authors describe a technique of use of blunted stylets of the ordinary intravenous cannulas. The technique can be used if resources are scarce, and with proper sterilization.

Key words: Cannula stylets; Blunting; Peripheral nerve blocks; Ultrasound-guided; COVID-19

Citation: Munasinghe BM, Subramaniam N. To blunt or not to blunt: Still an outlawed practice in peripheral nerve blocks? Anaesth. pain intensive care 2022;26(3):391-393. **DOI:** 10.35975/apic.v26i3.1913

Received: March 30, 2022; **Reviewed:** April 22, 2022; **Accepted:** May 05, 2022

1. Introduction

Peripheral nerve blocks have evolved into an effective and safer alternative to general anaesthesia exactly a century after Gaston Labat's well-known 'Regional Anesthesia: It's Technic and Clinical Application'.[1] Ultrasound has been recently introduced in regional anesthesia, and has been considered to be instrumental in improving the safety and success rates. The commercial echogenic block needles,[2] albeit having the limited availability, especially in low-resource settings have further enhanced safety and the block success.[3, 4]

The use of 'self-improvised' block needles, such as blunted hypodermic needles, has been discussed,[3] and is being discouraged due to the deformed nature of the needles with potential for avulsion injuries and neuropraxia.[5] Given the current context of the COVID-19 pandemic with its highly contagious nature, and high risk of acquiring the infection by the healthcare workers during administration of general anesthesia, promoted peripheral nerve blocks.[6] The issues of availability and the markedly reduced purchasing power of low-income countries have been the main limiting factors in the routine use of costly commercial block needles. The prevailing circumstances prompted the authors of this manuscript to utilize blunted stylets of the peripheral intravenous cannulas as a substitute during ultrasound-guided nerve blocks with promising results and without serious complications.

2. Methodology

We used 20 G/ 22 G (pink and blue) and 18 G (green) stylets for targeted nerve blocks in the upper and lower limbs and fascial plane blocks respectively. The stylets were blunted by scraping them roughly 1 cm each time, altogether 20 times in 20 sec, in the base of a sterile galley pot, perpendicular to the bevel of the stylet. Light microscopic analysis of a pilot study showed that adequate blunting in the absence of significant deformity and 'hooking' was possible with this technique (Figure 1).

We similarly attempted tapping the stylet tip in the base of the galley pot but light microscopic view showed deformed tip, thus we abandoned the method (Figure 2).

Hydro-dissection was performed prior to administration of local anaesthetic solution to reconfirm the needle tip position already visualized by ultrasound. Retrospective data of 240 ultrasound-guided nerve blocks performed in our center over a two-year period from January 2020, in patients aged 18 to 65 y were collected.

3. Results

Eighty percent (190) were upper and lower limb targeted nerve blocks, while 50 (20%) were fascial plane blocks. Sixty percent (145) were upper limb blocks; consisting of axillary brachial plexus (30%), forearm (20%), supraclavicular brachial plexus (5%), and interscalene (5%) blocks. Main lower limb blocks included popliteal sciatic with inguinal femoral (15%, 35), inguinal femoral (3%), and adductor canal saphenous nerve (2%) blocks. The majority of the upper limb blocks, e.g., 100 (70%), were performed as a part of multimodal analgesic regimen in elective orthopaedic surgeries while 30% of the blocks were used as the sole mode of anaesthesia, mainly (25%)

for emergency or urgent surgical patients (mainly for wound debridement of the upper limb). The majority of the lower limb blocks [40 (16%)] were used as the sole mode of anesthesia for lower limb wound debridement. The fascial plane blocks included transversus abdominis plane (12%), lumbar erector spinae (4%), and serratus

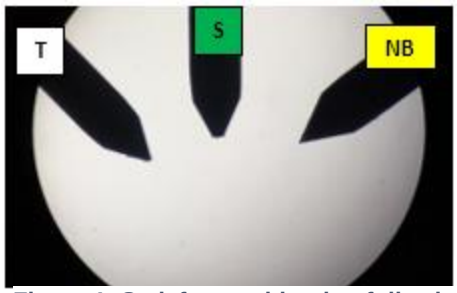

Figure 1: Satisfactory blunting following 'scraping method'. T-tapped, S-scraped, NB- non-blunted (Optical microscopic view 40x)

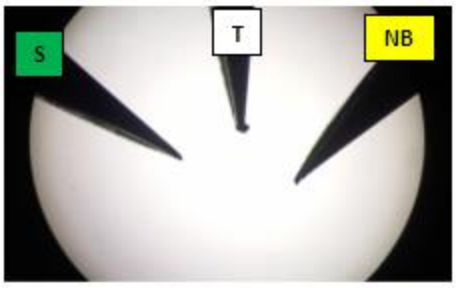

Figure 2: Deformed tip following 'Tapping method'. S-scraped, T-tapped, NB- non-blunted (Optical microscopic view 40x)

Table 1: Retrospective data of the nerve blocks conducted with blunted peripheral venous cannula stylets

Parameter	Upper limb blocks, n (%)	Lower limb blocks, n (%)	Fascial and truncal blocks, n (%)
Number performed	**145 (60%)** axillary (30%) forearm (20%) supraclavicular (5%) interscalene (5%)	**45 (20%)** popliteal sciatic with inguinal femoral (15%, 35) inguinal femoral (3%) adductor canal saphenous nerve (2%)	**50 (20%)** transversus abdominis plane (12%) lumbar erector spinae (4%) serratus anterior plane (4%)
Indication	– as part of multimodal analgesia (elective orthopedic surgeries) **100 (70%)** – as the sole mode of anesthesia (in urgent / emergency wound debridement) 30%	– as the sole mode of anesthesia (lower limb wound debridement) **40(16%)**	multimodal analgesia following: – open appendicectomy (12%) – total abdominal hysterectomy (4%)
Complications	partial block **12 (5%)** transient neuropraxia **1 (0.4%)**	None	None
Pain during the procedure	Numerical scale 1-2 All patients: skin and subcutaneous tissue infiltration of 2% plain lignocaine 2-3 ml **20 (8%)** intravenous midazolam 1-2 mg as sedation		
Patient satisfaction	Not assessed	Not assessed	Not assessed
Surgeon's satisfaction	Not assessed	Not assessed	Not assessed

anterior plane (4%) blocks. The commonest use of these was as a component of multimodal analgesic regimen following open appendicectomy (12%) and total

abdominal hysterectomy (4%). Out of the total, 40 (16%) patients were managed in the hospital with concurrent COVID-19. Out of this cohort, general anaesthesia was the standard practice in the pre-COVID-19 era in the following; upper limb fracture surgeries (5%), open appendicectomy (5%), and lower limb wound debridement (3%), where central neuraxial anesthesia was contraindicated. All patients of this cohort received appropriate nerve blocks under ultrasound guidance with excellent intraoperative and postoperative analgesia with avoidance of detrimental pulmonary and cardiovascular effects of general anaesthesia.

The tip and the shaft of the needle were clearly visualized and demarcated from the surrounding tissue in all the blocks. The block was completed within 5 min from the initial skin entry of the needle in all attempts. Ninety-five percent (230) of the patients had effective analgesia with adequate duration.

Five percent (12) of the patients complained of partial block (all were axillary brachial plexus blocks) which were effectively supplemented with local infiltration and low dose intravenous opiate (morphine 1.5 - 3 mg) whereas complete block failure was not witnessed in any of the patients. Only one patient (0.4%) developed a transient neuropraxia over the radial nerve territory following a supraclavicular brachial plexus block. This was completely resolved in 72 h. We did not encounter breakage of the stylet and retention of the fragments, significant hematoma formation, or vascular injury in any of the nerve blocks. Pain during the conduct of the nerve block (assessed by numerical rating scale) was in the range of 1 to 2, achieved by skin and subcutaneous tissue infiltration of 2% plain lignocaine 2-3 ml and in 20 (8%) by additional intravenous midazolam 1-2 mg as sedation. Details are summarized in Table 1.

4. Discussion

The long-term residual effects related to the nerve block and the surgeon / patient satisfaction were not assessed as this was a retrospective survey. It would have yielded more useful data with regard to the potential for acceptance of this novel technique. The use of 18 G cannula stylet was preferred during fascial plane blocks due to the increased length required during these blocks (to reach the intended fascial plane) and increased resilience to deformity in comparison to more superficial upper and lower limb nerve blocks.

The initial skin prick was difficult due to blunting; however, this was easily overcome by parallel skin entry of the stylet and entry through the site of local infiltration. Moreover, this method was noticeably cost-effective. An additional benefit we noted was that being a center with a minimal cadre of operating room doctors and supporting staff, whenever an assistant was not available, the blocks could be done by a single operator. The learning curve was found to be shorter in the cases of junior anesthetists.

The authors are conducting a prospective study on the utility of blunted cannula stylets as nerve block needles. The long-term outcomes following the blocks will be assessed and analyzed. The benefits of this novel, cost-effective nerve block technique will be further evaluated and scrutinized subsequent to the study.

5. Conclusion

The improvised use of intravenous cannula stylets for ultrasound guided peripheral nerve blocks is a practical technique, provided adequate safety measures are adopted.

6. Ethical approval

The study was reviewed and approved by the Institutional Review Committee (IRC).

7. Conflicts of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

8. Acknowledgement

The authors acknowledge the departmental support by the Zarqa University to conduct this study.

9. Author Contributions

Both authors took equal part in the concept, application of the concept, and preparation of the manuscript.

10. References

1. Labat G. Regional anesthesia; its technic and clinical application: WB Saunders; 1922.
2. Marhofer P, Greher M, Kapral S. Ultrasound guidance in regional anaesthesia†. BJA. 2004;94(1):7-17. [PubMed] DOI: 10.1093/bja/aei002
3. Singh SK, Gulyam Kuruba S. The loss of resistance nerve blocks. Int Schol Res Notices. 2011;2011:421505. DOI: 10.5402/2011/421505
4. Munasinghe BM et al. A retrospective survey on utility of ultrasound guided nerve blocks and assesment of cannula stylets as improvised 'block' needles in a district general hospital. Unpublished manuscript. [FreeFullText]
5. Prakash S, Kumar A. Needle tip and peripheral nerve blocks. J Anaesthesiol Clin Pharmacol. 2018;34(1):129-30. [PubMed] DOI: 10.4103/0970-9185.227375
6. Uppal V, Sondekoppam RV, Landau R, El-Boghdadly K, Narouze S, Kalagara HKP. Neuraxial anaesthesia and peripheral nerve blocks during the COVID-19 pandemic: a literature review and practice recommendations. Anaesthesia. 2020;75(10):1350-63. [PubMed] DOI: 10.1111/anae.15105

