



## A RETROSPECTIVE AUDIT OF IMPACT OF REGIONAL ANAESTHESIA TRAINING IN A SPECIALISED TRAUMA CENTRE IN INDIA

### Anaesthesiology

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### ABSTRACT

Regional anaesthesia is a rapidly evolving sub-speciality of anaesthesia. A retrospective audit of impact of regional anaesthesia fellowship training was studied. Impact on knowledge and skills in peripheral nerve blocks was the main focus of this study. The study was performed in anaesthesia department of a specialised trauma centre in June 2019. A total of 11 dedicated regional anaesthesia fellows were included in the study. Comfort level of fellows while performing various peripheral nerve blocks increased considerably after fellowship training, 11 (100%) fellows reported major improvement in comfort with using ultrasound, 10 (91%) fellows reported major improvement in dexterity with the block, 9 (82%) fellows reported major improvement in anatomy and landmark knowledge. Regional anaesthesia fellowship programmes can contribute valuably to the knowledge and skills of the newly qualified anaesthesiologists.

### KEYWORDS

Regional anaesthesia, peripheral nerve blocks, training

#### INTRODUCTION:

Regional anaesthesia including peripheral nerve blocks is a rapidly evolving field due to technological advancements like ultrasound and a trend towards day care surgery. Peripheral nerve blocks provide better intra and post-operative pain relief, help avoid side-effects of opioid and general anaesthesia like post-operative nausea and vomiting, constipation, pruritus<sup>[1]</sup>. Peripheral nerve blocks can prove an effective tool in critically ill patients who cannot tolerate a general anaesthetic or a central neuraxial blockade<sup>[2]</sup>. Also the role of ultrasound in securing central venous access, peripherally inserted central lines and arterial lines is well established, and this skill of using ultrasound with comfort can be developed while performing peripheral nerve blocks.

With peripheral nerve blocks assuming a vital role, it is imperative that anaesthetists develop the necessary skills and incorporate it into their daily practice. A regional anaesthesia fellowship programme incorporating ultrasound guided peripheral nerve blocks is one of the means to achieve it.

This audit aims to know the impact of a regional anaesthesia training programme in a specialised trauma centre in India.

#### MATERIALS AND METHODS:

A retrospective survey was performed in the department of anaesthesia in a specialised trauma centre in June 2019. A total of 11 dedicated regional anaesthesia fellows, who underwent a fellowship programme (9 fellows underwent a 6-month fellowship, 2 fellows underwent a 1-year fellowship), participated in this survey. A questionnaire was prepared which included pre-fellowship and post-fellowship questions as follows -

#### Regional anaesthesia questionnaire/ short survey

##### Current designation/Position:

Total number of years in anaesthesia (including DA/DNB/MD training years):

Current place of practice: A) Metro city B) Tier-2 city C) Town D) Rural place

##### Pre-fellowship questions

- Did you have a dedicated rotation in regional anaesthesia during your DA/DNB/MD training? Yes/No
- If your answer to question 1 is yes, what was the duration of the rotation? A) < 1 month B) 1 to 3 months C) 3 to 6 months D) > 6 months
- Approximately how many peripheral nerve blocks have you performed during your DA/DNB/MD training? A) 0-4 blocks B) 5-10 blocks C) 11-25 blocks D) > 25 blocks
- Please list your comfort level with the following blocks prior to the fellowship:

	Not comfortable	Limited experience	Reasonably comfortable	Very comfortable
Interscalene				
Supraclavicular				
Infraclavicular				
Axillary				
Cervical plexus				
Femoral				
Lateral femoral cutaneous nerve				
Adductor canal				
Obturator				
Popliteal sciatic				
Subgluteal sciatic				
TAP				
QL				

TAP = Transversus abdominis plane block

QL = Quadratus lumborum block

##### Post-fellowship questions

- Approximately how many peripheral nerve blocks have you done in your fellowship? A) 100-200 B) 200-300 C) 300-400 D) > 400
- Please list your comfort level with the following blocks after the fellowship:

	Not comfortable	Limited experience	Reasonably comfortable	Very comfortable
Interscalene				
Supraclavicular				
Infraclavicular				
Axillary				
Cervical plexus				
Femoral				
Lateral femoral cutaneous nerve				
Adductor canal				
Obturator				
Popliteal sciatic				
Subgluteal sciatic				
TAP				
QL				

- Did any of the following improve with the fellowship that you underwent? If yes to what degree?

	No improvement	Minor improvement	Major improvement
Anatomy/Landmark knowledge			
Dexterity with the block			
Comfort level with US			

4. Do you prefer using US over landmark/PNS guided blocks? Yes/No
5. Would you like to add nerve catheter placement techniques to the fellowship programme? Yes/No/Can't say
6. Is there anything else that you would like to add to the current fellowship programme?

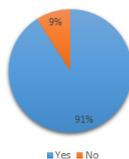
7. Would you recommend all trainee anaesthetists to undergo a regional anaesthesia fellowship programme? Yes/No/Can't say

The responses were analysed and are presented in the results section.

**RESULTS:**

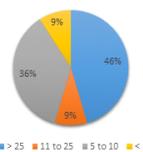
Mean anaesthesia experience of all participants was 6.2 years and were working at various positions ranging from registrar to consultant. 8 (73%) participants practice in a metro and tier-2 city, 2 (18%) practice in town and 1 (9%) participant practices in a rural place. 10 (91%) participants did not have a dedicated regional anaesthesia rotation during their post-graduation training (Refer Fig.1). 6 (54%) participants performed < 25 peripheral nerve blocks during their post-graduation training (Refer Fig.2). Except for axillary nerve block, most of the participants were either not comfortable or had a limited experience with all other peripheral nerve blocks prior to the fellowship training (Refer Fig. 3). 10 (91%) participants performed > 300 peripheral nerve blocks during the fellowship training (Refer Fig. 4). Except for subgluteal sciatic nerve block and quadratus lumborum block, most of the participants were either reasonably comfortable or very comfortable with all other peripheral nerve blocks, after the fellowship training (Refer Fig. 5). 11 (100%) participants reported major improvement in comfort with using ultrasound, 10 (91%) participants reported major improvement in dexterity with the block, 9 (82%) participants reported major improvement in anatomy and landmark knowledge after the fellowship training (Refer Fig. 6). 11 (100%) participants preferred using ultrasound over peripheral nerve stimulator or landmark techniques for peripheral nerve blocks. 10 (91%) participants claimed they would like to learn catheter placement techniques as well. Addition of PNS + USG guided combined blocks, truncal blocks, USG guided epidurals, lumbar and sacral plexus blocks were the suggestions made by participants to further enhance the fellowship programme.

Did you have a dedicated rotation in regional anaesthesia during your DA/DNB/MD training?

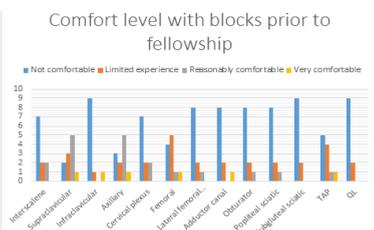


**Figure 1: Data depicting regional anaesthesia rotation in formal post-graduation training**

Approximately how many peripheral nerve blocks have you performed in your DA/DNB/MD training?

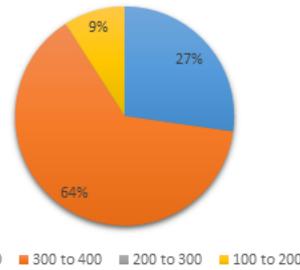


**Figure 2: Data depicting number of peripheral nerve blocks performed prior to fellowship**



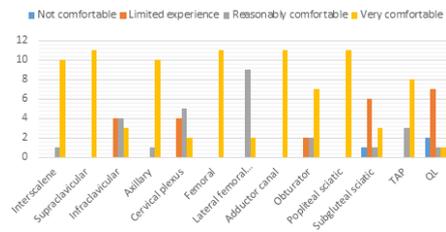
**Figure 3: Data depicting comfort level with blocks prior to the fellowship**

Total peripheral nerve blocks during fellowship training



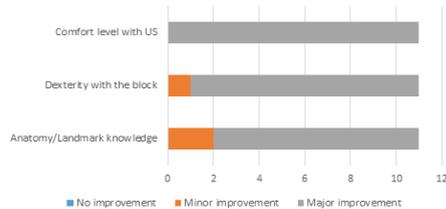
**Figure 4: Data depicting number of peripheral nerve blocks performed during the fellowship**

Comfort level with blocks after fellowship



**Figure 5: Data depicting comfort level with blocks after the fellowship**

Impact of fellowship training



**Figure 6: Data depicting impact of fellowship training**

**DISCUSSION:**

Regional anaesthesia has steadily grown in our country. The availability of modern ultrasound machines has greatly increased the dimensions of peripheral nerve blocks. The western world has been quick in updating the training curriculum and has included regional anaesthesia rotation in their training programme. The American Society of Regional Anaesthesia and Pain Medicine, and the European Society of Regional Anaesthesia and Pain Therapy have published joint recommendations for education and training in ultrasound-guided regional anaesthesia [1]. In India, formal inclusion of regional anaesthesia rotation including peripheral nerve blocks has not yet taken place uniformly in the post-graduation training programme.

This study focused on the impact of regional anaesthesia fellowship programme on the confidence and comfort level of performing peripheral nerve blocks by recently qualified anaesthetists. A similar study was performed in context of a regional anaesthesia workshop in United States of America [6]. A study on awareness about ultrasound guided regional anaesthesia has been performed in India [5], but such an audit analysing the impact of fellowship training has never been conducted in a specialised trauma centre settings in our region. This study analysed how many peripheral nerve blocks were performed during the tenure of the fellowship and how the knowledge and comfort level of anaesthetists changed after the fellowship and what additions were suggested by the fellows to the programme.

This audit shows that except 1 participant, none of them had a formal regional anaesthesia rotation and consequently roughly half the participants performed very less peripheral nerve blocks (< 25 blocks) during their post-graduation training. All the participants had very less experience and poor comfort and confidence level while performing almost all the peripheral nerve blocks prior to the fellowship. This reflects the fact that regional anaesthesia post-graduation training in India has not yet achieved the level at par with their western

counterparts. After completing the fellowship training programme, there was more than 10-fold increase in the number of blocks performed by all the fellows. Also, there was a considerable increase in anatomy and landmark knowledge, dexterity with the block and comfort level with ultrasound while performing most of the peripheral nerve blocks. All the fellows claimed that they preferred using ultrasound over peripheral nerve stimulator and landmark techniques, which reflects that the fellows understand the importance of safety and accuracy while performing blocks. All the fellows highly recommend this fellowship programme to all the anaesthetists. Certain additions were recommended by the fellows which include addition of nerve catheter placement techniques, PNS + USG guided combined blocks, truncal blocks, USG guided epidurals, lumbar and sacral plexus blocks. This reflects that although highly productive, the fellowship programme still has room for improvement.

This audit has its limitations. The sample size of 11 is too small to conduct a statistical analysis to discover any possible significance, generalise and extrapolate the findings to the entire anaesthesia fraternity in the country. Nevertheless, it is a head start to explore new training methods like fellowship programmes and simulation<sup>[6]</sup>, analyse their impact and effectiveness and subsequently incorporate them into formal post-graduation anaesthesia training.

#### **CONCLUSION:**

This audit brings us to the conclusion that this particular regional anaesthesia training programme is effective in improving the knowledge, skills and comfort level of newly qualified anaesthetists with respect to commonly performed ultrasound guided peripheral nerve blocks. Also, it highlights the fact that incorporation of a regional anaesthesia rotation including peripheral nerve blocks into formal post-graduation training should be undertaken to meet the international standards.

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