Thoracic Segmental Spinal Anaesthesia for Upper Extremity Surgery: A Critical Evaluation

Letter

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ABSTRACT

We would like to express our appreciation for publishing the article titled "Thoracic Spinal Anaesthesia for Paediatric Upper Extremity Surgery in Limited-Resource Hospital: A Case Report" in Ain-Shams Journal of Anesthesiology, 15:72, 2023. Authors have explored the use of Thoracic Segmental Spinal Anesthesia in upper extremity surgery in a 15-year-old patient in a limited resource setting. Although the article is of great interest in the current anesthesia practice as Thoracic Segmental Spinal Anesthesia is an upcoming technique, we want to discuss certain salient points as a reader and healthcare professional that warrant consideration. Segmental Thoracic Spinal anesthesia is a feasible, safe, and economical anesthesia technique for some special indications. We understand that the case report has significant value in highlighting innovative approaches to anesthesia in resource-constrained environments. Addressing various concerns and providing a more comprehensive and authentic literature would further enrich the article and contribute to the scientific knowledge in this field.

Key Words: Brachial plexus block, regional anesthesia, thoracic segmental spinal anesthesia, upper extremity.

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INTRODUCTION

We would like to express our appreciation for publishing the article titled "Thoracic Spinal Anaesthesia for Paediatric Upper Extremity Surgery in Limited-Resource Hospital: A Case Report" in Ain-Shams Journal of Anesthesiology, 15:72, 2023[1]. Authors have tried to explore the use of Thoracic Segmental Spinal Anesthesia in upper extremity surgery in a 15-year-old patient in a limited resource setting. We congratulate the authors for throwing light on this untraditional use of Thoracic Segmental Spinal Anesthesia. Although the article is of great interest in the current anesthesia practice as Thoracic Segmental Spinal Anesthesia is an upcoming technique[2], we want to discuss certain salient points as a reader and healthcare professional that warrant consideration.

Authors have mentioned that general anaesthesia is currently the standard technique of anaesthesia used for upper extremity surgery. However, the choice of anesthetic techniques depends on many factors. There are several excellent blocks for providing effective anesthesia and analgesia for the upper extremity, for example, brachial plexus block and Bier's Block[3,4]. Second, the authors have used hyperbaric bupivacaine for this case. However, available evidence shows that isobaric Bupivacaine may be more suitable for such a scenario[5]. Low-dose hyperbaric drugs may be used in lateral decubitus position with operative side dependent. Another option may be a hypobaric local anesthetic in a lateral decubitus position with the operative side up. Authors have described a paramedian approach but, in the photograph provided it seems a midline approach. It is advised to move the spinal needle millimeter by millimeter with the stylet till the loss of resistance is felt and then only the stylet should be removed to observe a free flow of CSF at the needle hub otherwise needle may get blocked by tissues encountered in its course. It may provide a false impression of a dry tap and inserting more depth inadvertently may lead to trauma to the spinal cord. Moreover, the spread of hyperbaric drugs is gravity-dependent. There is also a discrepancy with the concentration of bupivacaine used. In the conclusion section there is a false impression that the block was given at the C4 level. This paper briefly describes the successful use of Thoracic Segmental spinal in a child but lacks a detailed discussion on the potential risks, complications, and safety considerations associated with it. An in-depth literature review of these aspects is crucial for reaching an evidenced-based decision. Expected long-term outcomes and any delayed complications should be discussed. The article would benefit from a more thorough discussion of alternative anesthesia methods suitable for paediatric

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upper extremity surgery in limited-resource settings. This could help readers weigh the pros and cons of different approaches.

Regional anesthesia is an easy and safe option for children and central neuraxial blocks have been progressively replaced by peripheral nerve blocks[6]. Segmental Thoracic Spinal anesthesia is a feasible, safe, and economical anesthesia technique for some special indications[7,8]. We understand that the case report has significant value in highlighting innovative approaches to anesthesia in resource-constrained environments. Addressing these concerns and providing a more comprehensive and authentic literature would further enrich the article and contribute to the scientific knowledge in this field. We look forward to any potential revisions that may address these concerns in future publications. Thank you for your dedication to advancing medical knowledge through your journal, and we remain a committed reader and contributor to its growth.

ABBREVIATIONS

C4: Cervical level 4

CSF: Cerebrospinal Fluid

CONFLICT OF INTEREST

There are no conflicts of interest.

REFERENCES

1. Prima, A., Hamdi, T., Sitepu, J.F. *et al*. Thoracic spinal anaesthesia for paediatric upper extremity surgery in limited-resource hospital: a case report. Ain-Shams J Anesthesiol 15, 72 (2023). https://doi.org/10.1186/s42077-023-00369-9

2. Khan I, Ansari M. Thoracic Segmental Anesthesia: A New Paradigm in Anesthesiology Practice. Arch Anesth & Crit Care. 2023;.

3. Lee MG, Jung WS, Go DY, Choi SU, Shin HW, Choi YS, Shin HJ. Efficacy of a single injection compared with triple injections using a costoclavicular approach for infraclavicular brachial plexus block during forearm and hand surgery: A randomized controlled trial. Medicine. 2020 Oct 10;99(43).

4. Nijs K, Lismont A, De Wachter G, Broux V, Callebaut I, Ory JP, Jalil H, Poelaert J, Van de Velde M, Stessel B. The analgesic efficacy of forearm versus upper arm intravenous regional anesthesia (Bier's block): A randomized controlled non-inferiority trial. Journal of Clinical Anesthesia. 2021 Oct 1;73:110329.

5. Uppal V, Retter S, Shanthanna H, Prabhakar C, McKeen DM. Hyperbaric versus isobaric bupivacaine for spinal anesthesia: systematic review and meta-analysis for adult patients undergoing noncesarean delivery surgery. Anesthesia & Analgesia. 2017 Nov 1;125(5):1627-37.

6. Merella F, Canchi-Murali N, Mossetti V. General principles of regional anaesthesia in children. BJA education. 2019 Oct;19(10):342.

7. Khan I, Paliwal N, Ahmad S. Safety and Feasibility of Segmental Thoracic Spinal Anaesthesia (STSA): A Scoping Review. Scholars Journal of Applied Medical Sciences. 2022 Oct;2022:1718-22.

8. Upadhyay S, Khan IA, Singh SK. Breast Debridement under Segmental Spinal Anaesthesia in a Low Resource Setting: Feasibility and Safety Concerns. Journal of Anaesthesia and Critical Care Case Reports. 2022;8(3):00-.