

Erector spine plane block versus intravenous post-operative analgesia for pain control after adult minimally invasive cardiac surgery

Open Access**Abstract**

Published 09/06/2023

Copyright

© Copyright 2023

Benedetto et al. This is an open access abstract distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Distributed under

Creative Commons CC-BY 4.0

Rossella Benedetto¹, Pasquale Raimondo¹, Pierpaolo Dambruoso², Nicola Ceglie³, Fabrizia Massaro⁴, Filomena Puntillo⁵, Salvatore Grasso⁶

1. Department of Precision and Regenerative Medicine and Jonica Area, Anesthesia and Intensive Care II, University of Bari, Policlinico di Bari, Bari, ITA 2. Cardiac Anesthesia and Postoperative Intensive Care, Santa Maria Hospital, GVM Care and Research, Bari, ITA 3. Cardiac Anesthesia and Postoperative Intensive Care, Santa Maria Hospital, GVM Care and Research, Bari, ITA 4. Anesthesia and Intensive Care Unit, Department of Emergency and Urgency, Regional Hospital "F. Miulli", Acquaviva delle Fonti, Bari, ITA 5. Department of Interdisciplinary Medicine, University of Bari Aldo Moro, Bari, ITA 6. Emergency Department, University of Bari Aldo Moro, Bari, ITA

Corresponding author: Rossella Benedetto, rossbenedetto2016@gmail.com

Categories: Anesthesiology, Pain Management

Keywords: minimally invasive cardiac surgery, pain control, erector spine plane block

How to cite this abstract

Benedetto R, Raimondo P, Dambruoso P, et al. (September 06, 2023) Erector spine plane block versus intravenous post-operative analgesia for pain control after adult minimally invasive cardiac surgery. Cureus 15(9): a1019

Abstract

INTRODUCTION

Adequate post-operative analgesia also after minimally invasive cardiac surgery is fundamental to reduce post-operative pain and associated complications like hemodynamic instability, arrhythmias, late ventilator weaning, pulmonary infections, and long-lasting hospital stay [1].

Among the myofascial blocks, the Erector Spine Plane (ESP) block promises to achieve an effective thoracic pain control – compared with post-operative systemic use of opioids – through the deposit of local anesthetic in myofascial plane between erector spinae muscle and thoracic transverse processes.

This study compares ESP-block versus post-operative intravenous analgesia to control pain more effectively after minimally invasive cardiac surgery [2].

METHODS

The primary goal of the study was to evaluate differences between ESP-block group and intravenous analgesia group in post-operative pain control at rest and during motion using Numerical Rating Scale (NRS) after minimally invasive cardiac surgery [3].

Twenty patients of either sex, undergoing elective minimally invasive cardiac surgery (coronary artery bypass or valve repair/replacement) receiving the same pharmacological treatment intraoperatively, were randomly assigned to Group A (ESP-Block) or Group B (post-operative intravenous analgesia).

Group A received mono-lateral, single shot ESP block, using ropivacaine 0.375% plus dexamethasone 4 mg before anesthesia induction between T5-T6 transverse processes while Group B received post-operative intravenous analgesia (tramadol 400 mg/24 hours).

Statistical analysis was performed using the independent Student's T test considering P<0.05 as statistically significant.

RESULTS

NRS score was evaluated considering 0, 3, 6, 9, 12, 24 hours after extubation in both groups at rest and during motion (Table 1-2). The mean NRS score resulted smaller in Group A and was lower than 4 in both groups (except for the 9th hour post extubation in Group A and 6th hour in Group B). Nevertheless, the NRS score resulted statistically significant only from 6th to 12th hour after extubation, during which ESP block resulted more effective than intravenous analgesia.

In the previous (from 0 to 6th hour) and subsequent hours (from 12th to 24th hour), lower NRS means were registered for GROUP A even if with no statistical significance.

Furthermore, the first rescue analgesia was requested after 9 hours in Group A and 6 hours in group B.

CONCLUSIONS

Our data showed that the ESP block is easy to perform and provide an immediate superior pain control in comparison with intravenous post-operative analgesia and allows to reduce post-operative opioid consumption and possible related complications after minimally invasive cardiac surgery.

REFERENCES

- 1) Abu-Omar Y, Fazmin IT et al. Minimally Invasive Mitral Valve Surgery. *J Thorac Dis* 2021. 13. 1960-70.
- 2) Borys M, Gaweda B, Horeczy B, Kolowka M, Olszowska P, Czuczwar M, Woloszczuk-Gebicka B, Widenka K. Erector Spinae-Plane Block as an Analgesic Alternative in Patients Undergoing Mitral and/or Tricuspid Valve Repair through a Right Mini-Thoracotomy -an Observational Cohort Study. *Videosurgery and other Miniinvasive techniques* 2020, 15, 208.
- 3) Krishna SN, Chauhan S, Bhoi D, Kaushal B, Hasija S, Sangdup T, Bisoi AK. Bilateral Erector Spinae Plane Block for Acute Post-Surgical Pain in Adult Cardiac Surgical Patients: A Randomized Controlled Trial. *J Cardiothorac Vasc Anesth*. 2019 Feb;33(2):368-375.