

# Hematoma Block Verses General Anesthesia For Close Reduction And Percutaneous Pinning Of Distal Radius Fractures In Elderly Patients

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## Abstract

**Objective:** The objective of our study is to compare two techniques used for analgesia, hematoma block and general anaesthesia, in patients presented with a fracture of the distal radius in the trauma centre of Aziz Bhatti Shaheed Hospital Gujrat.

**Methods:** Our study was conducted at the Trauma Centre of Aziz Bhatti Shaheed Hospital Gujrat from January 2021 to April 2023. All the patients having distal radius fractures who met the inclusion criteria were included in our study. The patients were placed into two groups, A and B. All the patients were treated by close reduction and percutaneous pinning. The analgesia method used in group A was Hematoma block while in group B was general anesthesia. Data was analyzed using SPSS.

**Results:** 156 patients met the inclusion criteria. The mean age was  $61.3 \pm 6.6$  years. These patients were placed in two groups, A and B, of 78 patients each. There was significantly less pain intensity at 2 and 6 hours after the procedure in the hematoma block group ( $P < 0.001$ ). Duration for manipulation did not differ significantly between the two groups. Duration for surgery was significantly shorter for the hematoma block group ( $P 0.02$ ). In 100 per cent of cases, anatomical reduction was achieved in both groups.

**Conclusion:** Hematoma block used as analgesia for the management of fractures of the distal radius in elderly patients is a more effective and safe method than general anaesthesia in emergency trauma centres.

**Keywords:** Hematoma block, distal radius fracture, elderly.

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## 1. Introduction

Fracture of the distal radius is the most frequent fracture of the upper limb with double peaks of incidence, in children and the geriatric population.<sup>1</sup> The prevalence of distal radius fractures is increasing over current years and about 1.5% of cases in trauma centres are of distal radius fractures.<sup>2</sup>

With better knowledge of its biomechanics as well as clinical research, initial management is done by close reduction of the fracture displacement that reduces local tissue pressure and gives immediate relief in a trauma centre.<sup>3</sup> Many different definitive treatment methods have been used, including external fixation, CRPP and open reduction with internal fixation (ORIF). ORIF is becoming the mainstay of treatment due to favourable outcomes concerning healing and intraarticular congruence.<sup>4</sup> However close reduction with percutaneous pinning is still preferable in simple types of distal radius fractures.<sup>5</sup> Adequate analgesia is

crucial for carrying out these procedures. Different methods can be used for analgesia during treatment intervention. Some of these methods are hematoma block, Bier's block, intravenous sedation and general anaesthesia. Different side effects are accompanied by each of these methods used for analgesia. General anaesthesia and intravenous sedation have various risks when used in patients over 60 years of age with various comorbidities. Hematoma block is a procedure in which a local anaesthetic drug is injected into the fracture site. It is a safe and effective method for pain control in both elderly patients and children.<sup>6,7,8</sup> Its benefit is avoidance of GA with associated risks and is a cost-effective method with sparing of time and resources. Despite being the common forearm fracture in elderly patients of our country with people having various comorbidities, high-quality scientific data are lacking.

Our study aims to compare hematoma block and general anaesthesia in terms of manipulation time,

surgery duration, pain score during and 2 and 6 hours after procedure and achievement of anatomical reduction. Previously no single study was done to compare these parameters in our population and it is important to properly reduce fracture under a safe analgesia method in patients with different comorbidities.

## 2. Materials & Methods

After approval from the hospital's ethical board, a Randomized control trial was carried out at the Trauma Centre of Aziz Bhatti Shaheed Hospital Gujrat from January 2021 to April 2023. All the cases of distal radius fractures that met inclusion criteria were studied. Since the method of whole sampling is used, there is no need for sample size calculation. Patients were divided into two groups using block randomization generated by computer software

Patients aged 40 years and above having close, isolated and displaced fractures of the distal radius, with ASA physical status 1&2 were included in the study.

Patients presented with an indication of open reduction, or associated neurovascular injury, or presented with open fractures, presented after 5 days of injury or presented with multiple injuries or polytrauma, were excluded from the study.

After the admission of patients who met inclusion criteria, case history including comorbidities was taken in detail. Clinical examination and vital signs were recorded. Temporary immobilization with back slab done. Patients who met inclusion criteria were investigated to get fitness for anaesthesia and fulfilled the American Society of anesthesiologist's criteria of physical status 1 & 2. Any other associated injury was examined. X-ray of the distal radius AP/Lat. the view was taken and the fracture was classified. Patients who met inclusion criteria were investigated to get fitness for anaesthesia purposes and prepared for surgery. 156 patients met the inclusion criteria. Written informed consent was taken. Patients were divided into groups A and B (78 patients in each group) using block randomization generated by computer software. Patients in group A were given a hematoma block by the orthopaedic surgeon and patients in group B were given general anaesthesia by Anesthetist.

The hematoma block method sterilised the surgical site using a povidone-iodine solution. 10 ml syringe is filled with ink. lidocaine 1% and injected into the bone at the

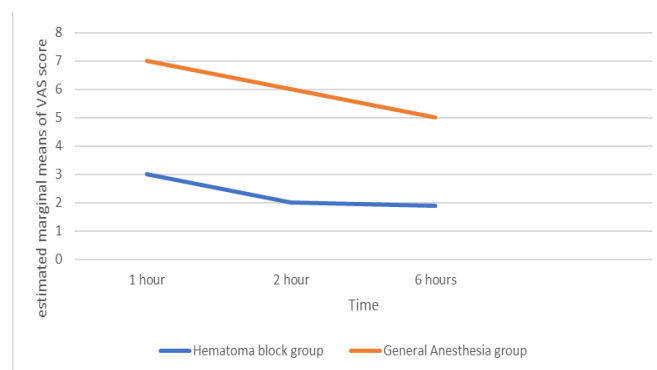
fracture site after confirmation of the needle's location by aspiration of fracture hematoma and use of a C-arm image intensifier. 10 ml of ink. lidocaine 1% was also injected subcutaneously at pinning locations. The procedure started 15 min after the hematoma block.

After the patient was placed in the supine position and analgesia was given, all patients underwent reduction by traction counter traction method. A c-arm image intensifier is used to confirm adequate alignment. Fracture fixation by percutaneous pinning was done by 1.5mm k wires, from the radial and ulnar side. Immobilization by cast done. Patients were shifted to the ward and discharged when vitally stable. Data was recorded according to the questionnaire.

Data is analyzed using SPSS. Frequency and percentage are used for categorical variables like gender and achievement of reduction. Mean and standard deviation are used for quantitative variables like age, manipulation time, surgery duration, VAS during the procedure and VAS after the procedure. Comparison in both groups was done by using an independent t-test for manipulation time, surgery duration, VAS during the procedure and VAS after the procedure. P-value  $\leq 0.05$  is taken as statistically significant.

## 3. Results

156 patients met the inclusion criteria. The mean age was  $61.3 \pm 6.6$  years. These patients were placed in two groups, A and B, of 78 patients each. The two groups were analyzed and matched for variables like age, sex and diseases that showed no significant difference. There was significantly less pain during the initial time after fracture reduction in group A ( $P < 0.001$ ). Figure 1.



**Figure 1: Comparison of changes of pain intensity scores between haematoma block and GA GROUP**

Duration for manipulation did not differ significantly between the two groups. Duration for surgery was

significantly shorter for the hematoma block group (P 0.02). Table 1. In 100 per cent of cases, anatomical reduction was achieved in both groups. Five patients from group B required shifting to intensive care after surgery. No patient from the hematoma block group required ICU care. Also in the hematoma block group, no complication is noted as neurovascular injury or development of compartment syndrome. During the procedure of 2 patients, despite the hematoma block, complete analgesia was not induced and they were unable to endure pain so GA was given.

**Table 1: Duration of Surgery**

parameter	Hematoma block group	General anesthesia group	P value
Manipulation duration (minute)	4.5±2.6	4.8±2.3	0.1
Surgery duration	16.5±9.4	34.3±6.5	0.02
Need for ICU	-	5(14.7)	0.04

#### 4. Discussion

Analgesia can be given by different methods during manoeuvre for manipulation and fixation of distal radius fractures in trauma centres. There are concerns regarding the safety of different analgesia methods. In the setting of background diseases, general anaesthesia is having more adverse effects in elders. In previous studies, various analgesia methods are compared, for the management of patients with distal radius fracture. A method that is easy to perform, efficacious and in which patients have short hospital stays is required for elderly patients.<sup>4,6,8</sup> Previously less importance was given to hematoma block due to fear of infection, local anaesthetic toxicity, and development of compartment by volume of local anaesthetic but studies showed low evidence of such complications.<sup>2,6</sup>

Our study showed statistically significantly less pain intensity during the initial hours after fracture reduction and no complication in the hematoma block group. Like the results of our study, many publications showed the efficacy of the hematoma block in having greater pain control, higher rates of patient acceptance, higher cost-effectiveness and very less adverse effects as compared to general anaesthesia.<sup>2,3,4,7,9</sup> The demographics and

results of our study are also comparable to national research.<sup>10,11</sup>

Our study has its limitations as it is carried out in a single setup and includes fewer variables to be studied. We could not include postoperative long-term complications and follow-up treatment outcomes which can be included in future studies. Multi-centric study should be conducted and more tertiary centers are needed for better scientific validation of study.

#### 5. Conclusion

Hematoma block used as analgesia for the management of fractures of the distal radius in elderly patients is a more effective and safe method than general anaesthesia in emergency trauma centres.

**CONFLICTS OF INTEREST-** None

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**Contributions:**

M.Z.S, T.T, W.A - Conception of study

M.Z.S, T.T, W.A - Experimentation/Study Conduction

M.Z.S, T.T, W.A, R.R.A -

Analysis/Interpretation/Discussion

M.Z.S, T.T - Manuscript Writing

W.A, R.R.A, M.S, N.A - Critical Review

R.R.A, M.S, N.A - Facilitation and Material analysis

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

#### References

- Alluri RK, Hill JR, Ghiassi A. Distal radius fractures: approaches, indications, and techniques. *J Hand Surg Am.* 2016; 41(8):845–54.
- Maleitzke T, Plachel F, Fleckenstein FN, Wichlas F, Tsitsilonis S. Haematoma block: a safe method for pre-surgical reduction of distal radius fractures. *J Orthop Surg Res.* 2020; 15(1):351.
- Tseng PT, Leu TH, Chen YW, Chen YP. Hematoma block or procedural sedation and analgesia, which is the most effective method of anesthesia in reduction of displaced distal radius fracture? *J Orthop Surg Res.* 2018; 13(1):62.
- Lee R, Lee D, Ramamurti P, Fassihi S, Heyer JH, Stadecker M, et al. Complications following regional anesthesia versus general anesthesia for the treatment of distal radius fractures. *Eur J Trauma Emerg Surg.* 2021; 29(1):1–8.
- Dzaja I, MacDermid JC, Roth J, Grewal R. Functional outcomes and cost estimation for extra-articular and simple intra-articular distal radius fractures treated with open reduction and internal fixation versus closed reduction and percutaneous Kirschner wire fixation. *Can J Surg.* 2013; 56(6):378-84. doi: 10.1503/cjs.22712.

6. Tabrizi A, Mirza Tolouei F, Hassani E, Taleb H, Elmi A. Hematoma Block Versus General Anesthesia in Distal Radius Fractures in Patients Over 60 Years in Trauma Emergency. *Anesth Pain Med.* 2017; 7(1):e40619.
7. Bear DM, Friel NA, Lupo CL, Pitetti R, Ward WT. Hematoma block versus sedation for the reduction of distal radius fractures in children. *J Hand Surg Am.* 2015; 40(1):57–61.
8. Fathi M, Moezzi M, Abbasi S, Farsi D, Zare MA, Hafezimoghadam P. Ultrasound-guided hematoma block in distal radial fracture reduction: a randomised clinical trial. *Emerg Med J.* 2015; 32(6):474-7.
9. Myderrizi N. Factors predicting late collapse of distal radius fractures. *Malays Orthop J.* 2011; 5(3):3-7.
10. Inam M, Nehal Ahmad, Faisal Kamran MS. Comparison of the Effectiveness of Hematoma Block Versus Conscious Sedation in Close Reduction of Distal Radius Fracture. *JPOA* 2018; 29(04):168-71.
11. Afsar SS, Idrees M, Gulzar M. Pain lowering effect of hematoma block for close Reduction of distal radius fractures. *Gomal J Med Sci* 2014; 12:15-18.