

Compare the Effectiveness of Hematoma Block versus Intravenously Sedation for Reduction of Colles Fracture

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ABSTRACT

Objective: To compare the effectiveness of hematoma block versus intravenous sedation in reduction of colles fractures.

Study Design: Randomized control trial

Place and Duration: Conducted at the Emergency department of Lady Reading Hospital Peshawar for duration of six months i.e January 2020 to June 2020.

Methodology: One hundred and twenty patients of both gender presented with distal radius fracture were enrolled in this study. After taking written informed consent from all the patients' detailed demographics including age, sex, BMI, site of fracture, cause of fracture and radiographic assessment were recorded. All the patients were equally divided into two groups. Group I (Hematoma Block) consist of 60 patients and group II (Intravenous Sedation) contains 60 patients. Pain was recorded on visual analogue scale VAS at the start and after procedure of reduction. Data was analyzed by SPSS 24.0.

Results: Majority were females 40 (66.7%) in group I and 41 (68.3%) in group II and the rest were males 20 (33.3%) and 19 (31.7%). Mean age of the patients in group was 27.48±19.64 years with mean BMI 25.12±9.46 kg/m² and in group II mean age was 26.72±9.48 years with mean BMI 24.48±17.61 kg/m². In group I 35 (58.3%) had left side fracture while in group II 32 (53.3%) cases had left hand fracture. Falling was the most common cause of colles fracture found in 45 (75%) patients of group I and 42 (70%) patients in group II followed by accident 13 (21.7%) and 15 (25%) in group I and II. Before reduction mean pain score by using VAS among both groups was 8.60±8.23 and 8.03±5.23, during induction mean VAS score reduced to 3.77±5.42 and 3.09±4.44 and after reduction mean VAS score was lower in hematoma block 1.01±2.22 as compared to group II 2.06±4.14. Post-treatment complications were higher in group II as compared to group I.

Conclusion: In this research we concluded that hematoma block is a safe and effective as compared to intravenous sedation for the decrease of colles fracture pain in patients.

Keywords: Colles Fracture, Hematoma Block, Intravenous sedation, VAS, Pain Reduction

INTRODUCTION

Distal radius fractures most commonly occur as a result of colles fractures. If it extends into the radio-carpal joint or distal radio-ulnar joint, it's considered radial bursitis. An upper extremity fracture most commonly seen in children and the elderly is the distal radius fracture [1]. Biomechanics and clinical research have improved our understanding of fracture reduction, and it is now widely accepted as the first line of treatment for reducing local tissue pressure and relieving discomfort, regardless of whether or not additional open reduction and internal fixation are required. Closed reduction and casting of these fractures can provide definitive treatment for the juvenile population, therefore accurate and careful manual reduction is not necessary [3]. However, patients may experience discomfort and tension as a result of uncomfortable feelings during the manual reduction process, which can also get in the way of a successful reduction.

Patients' discomfort is minimised during manual reduction of displaced distal radius fracture in the emergency department outside the operating room with procedural sedation and analgesia (PSA), defined as a technique of administering sedatives or dissociative agents

with or without analgesics to induce a state that allows patients to tolerate unpleasant procedures while maintaining cardiorespiratory function [4, 5]. Patients with PSA may benefit from treatment with an opioid analgesic and a short-acting benzodiazepine. Additionally, there is evidence to support the use of additional sedatives including etomidate and propofol for PSA [7]. PSA, on the other hand, comes with its own set of dangers and issues when it comes to varying degrees of cardiac function monitoring. In the case of a distal radius fracture, a method known as a hematoma block (HB) employs local anaesthetic injections directly into the fracture site to help manage discomfort during manual reduction [8]. Avoidance of PSA-related dangers, high cost effectiveness and a time-saving technique are some of the potential benefits. Although meta-analyses in 2002 could show the relative effectiveness of alternative anaesthetic procedures, such as HB and PSA, due to a paucity of randomised trials, the highest level of evidence evaluation in 2003 could not [9].

It is not uncommon to see an adult distal radius fracture in the ER that needs manipulation and reduction surgery. During the process, the patient's discomfort is reduced using a variety of analgesic treatments. IVRA, nitrous oxide-demand valve, hemostasis block,

intramuscular sedation and general anaesthesia are some of the options [10].

They all have significant drawbacks, such as insufficient anaesthetic, pain relief or muscle relaxation, which could jeopardise the entire treatment procedure and outcome. Each of these treatments has possible risks. Any of the agents utilised could cause adverse medication responses. Many people are concerned about the toxicity of local anaesthetics [11], and it is also well-known that anaesthetic leakage from a poorly confined Bier's block, maybe as the result of an inadequate cuff, can be quite dangerous.

To find out if hematoma block or intravenous sedation is better at reducing fractures of the distal radius, we're doing a research study.

MATERIAL AND METHODS

This Randomized control trial was conducted at the Emergency department of Lady Reading Hospital Peshawar for duration of six months i.e January 2020 to June 2020. The study consisted of 120 patients. After taking written informed consent from all the patients' detailed demographics including age, sex, BMI, site of fracture, cause of fracture and radiographic assessment were recorded. Patients had other fractures, multisystem trauma, neurovascular injury, skin infection at wrist, blood disorders, allergies to medicines and those did not give any written consent were excluded from this study.

All the patients were equally divided into two groups. Group I (Hematoma Block) consist of 60 patients and group II (Intravenous Sedation) contains 60 patients. In group I patients area was scrubbed first with Methylated Spirit and then with Pyodine (7.5 percent Povidone iodine) then 5 milliliter of 1.5 percent Xylocaine was injected into hematoma from the dorsum with 10 ml disposable syringe of 22G needle.

Group II patients had an emergency tray on hand in case they needed intravenous benzodiazepines or opioids, and a mixture of Injection Diazepam (Valium) 10mg and Tramadol (Tramal) 50mg diluted in 10ml of distilled water was injected slowly into their veins. Pain was recorded on visual analogue scale VAS at the start and after procedure of reduction. Data was analyzed by SPSS 24.0.

RESULTS

There were 40 (66.7%) females in group I and 41 (68.3%) in group II and the rest were males 20 (33.3%) and 19 (31.7%). Mean age of the patients in group was 27.48±19.64 years with mean BMI 25.12±9.46 kg/m² and in group II mean age was 26.72±9.48 years with mean BMI 24.48±17.61 kg/m². In group I 35 (58.3%) had left side fracture while in group II 32 (53.3%) cases had left hand fracture. Falling was the most common cause of colles fracture found in 45 (75%) patients of group I and 42 (70%) patients in group II followed by accident 13 (21.7%) and 15 (25%) in group I and II.(table 1)

We found that before reduction mean pain score by using VAS among both groups was 8.60±8.23 and 8.03±5.23, during induction mean VAS score reduced to 3.77±5.42 and 3.09±4.44 and after reduction mean VAS score was lower in hematoma block 1.01±2.22 as compared to group II 2.06±4.14.(table 2)

Table 1: Baseline detailed demographics of presented cases

Variables	Group I	Group II
Mean age (years)	27.48±19.64	26.72±9.48
Mean BMI (kg/m ²)	25.12±9.46	24.48±17.61
Gender		
Female	40 (66.7%)	41 (68.3%)
Male	20 (33.3%)	19 (31.7%)
Side of fracture		
Left	35 (58.3%)	32 (53.3%)
Right	25 (41.7%)	28 (46.7%)
Cause of Colles Fracture		
Fall	45 (75%)	42 (70%)
RTA	13 (21.7%)	15 (25%)
Sports	12 (20%)	13 (21.7%)

Table 2: Comparison of pain reduction before and after treatment among both groups

Variables	Group I	Group II
Before Reduction		
Mean pain score (VAS)	8.60±8.23	8.03±5.23
During Treatment		
Mean pain score (VAS)	3.77±5.42	3.09±4.44
After Treatment		
Mean pain score (VAS)	1.01±2.22	2.06±4.14

Table 3: Post-treatment complications were higher in group II as compared to group I.

Variables	Group I (n=60)	Group II (n=60)
Complications		
Swelling of Hand	2 (3.3%)	3(5%)
Displaced and re-manipulation	1 (1.7%)	2 (3.3%)
Bronchial spasm and needed Intubation	1 (1.7%)	2 (3.3%)
Infection	1 (1.7%)	1 (1.7%)

We noticed that the satisfaction among patients of hematoma block was greater 56 (93.3%) as compared to group II 51 (85%). (table 4)

Table 4: Post-treatment comparison of satisfaction among both groups

Variables	Group I (n=60)	Group II (n=60)
Satisfaction		
Yes	56 (93.3%)	51 (85%)
No	4 (6.7%)	9 (15%)

DISCUSSION

The correct reduction of a Colles fracture necessitates adequate anesthesia. Anesthesia can take many forms when performing a manipulative reduction on a fracture like this. Each approach has drawbacks, advantages, and downsides.

In this randomized control 120 patients of both genders had colles fracture were presented. All the patients were equally divided into two groups. Group I (Hematoma Block) consist of 60 patients and group II (Intravenous Sedation) contains 60 patients. Majority were females 40 (66.7%) in group I and 41 (68.3%) in group II and the rest were males 20 (33.3%) and 19 (31.7%). Mean age of the patients in group was 27.48±19.64 years with mean BMI 25.12±9.46 kg/m² and in group II mean age was 26.72±9.48 years with mean BMI 24.48±17.61 kg/m². Our findings were comparable to the previous some studies in which most of the patients were females with age ranges

25-45 years.[14-16] Left was the most common side of fracture 35 (58.3%) and 32 (53.3%) in group I and II.[17] Falling was the most common cause of colles fracture found in 45 (75%) patients of group I and 42 (70%) patients in group II followed by accident 13 (21.7%) and 15 (25%) in group I and II. These results were comparable to the previous study.[18]

In this study hematoma block was effective and less complicated as compared to intravenous sedation in terms of pain reduction for the treatment of colles fracture. We found that before reduction mean pain score by using VAS among both groups was 8.60 ± 8.23 and 8.03 ± 5.23 , during induction mean VAS score reduced to 3.77 ± 5.42 and 3.09 ± 4.44 and after reduction mean VAS score was lower in hematoma block 1.01 ± 2.22 as compared to group II 2.06 ± 4.14 . These were comparable to the previous studies in which hematoma block showed better results than other anesthesia.[16-16,19] The results of 50 patients who received brachial plexus block (BPB) against 50 patients who received closed reduction of distal forearm fractures (HB) were studied by Bajracharya et al[20]. They measured the outcome using VAS scoring. HB was found to be effective at providing analgesia as BPB, according to their research. There was only a little difference in VAS scores between the BPB and HB groups, with the HB group having a mean of 2.08 ± 0.85 S.D. and the BPB group having a mean of 1.70 ± 0.64 S.D.

Post-treatment complications were higher in group II as compared to group I. Kendall et al.[21] investigated the effectiveness of hematoma block in reducing Colles' fracture and found that patients were becoming increasingly concerned about the financial and time implications of the procedure. There were fewer complications with hematoma block, according to this study. Ogunlade [22] studied 35 patients in 2002 and found that hematoma block significantly reduced pain in all cases and obtained adequate pain relief.

We found that the hematoma block by local anesthetic is a safe and effective, it can be done easily in emergency department compared to general intravenous anesthesia in reduction of pain among patients of colles fracture.

CONCLUSION

In this research we concluded that hematoma block is a safe and effective as compared to intravenous sedation for the decrease of colles fracture pain in patients.

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