Comparison of the Effectiveness of Hematoma Block Versus Conscious Sedation in Close Reduction of Distal Radius Fracture

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ABSTRACT

Objectives: To compare the effectiveness of hematoma block versus conscious sedation in close reduction of distal radius fracture in term of pain reduction

Methods: This Randomized controlled trail was conducted in the Department of Orthopaedic Hayatabad Medical Complex Peshawar from March 2015 to February 2016. In this study a total of 76 (38 in each group) patients were observed. Hematoma block was allocated group–A and conscious sedation was allocated group-B.

Results: The mean age in group A was 42.05 (SD ± 12.08) years. While the mean age in group B was 47 (SD ± 11.61) years. In group A, male patients were 11 (28%) while female were 27(72%). Male patients were in group B 12(32%) while female was 26(68%). Effectiveness in group A was 26(68%) while (12)32% was non-effective. Effectiveness in group in group B was 11(28%) while 27(72%) was non-effective.

Conclusion: Our study show that hematoma block is more effective than conscious sedation in close reduction of distal radius fracture in term of pain reduction.

Key Words: Hematoma block, Conscious Sedation, Distal radius fracture

INTRODUCTION

Distal radius fracture (DRF) accounts for 20% of the whole-body fractures in casualty [1]. Every year one can encounter with one in six fractures managed in casualty would be fracture of the distal radius. It has two peaks in life; one around the age of 5-24 while second peach is in female of age more than 65 years [2]. There are different methods for its management but the best methods have to be defined yet [3]. In the career of an orthopedic surgeon DRF are not uncommon fractures that are managed by him/her. Nevertheless DRF are complicated fractures with altered prognosis and if it is not managed properly, it can end with a variety of complications [4]. From decades the options for management is continuously changing; ranges from non-surgical to surgical methods [5]. In emergency department, usually benzodiazepines and narcotics are given to the patients and then close reduction is attempted [6]. Narcotics is used for relief of pain and benzodiazepines is used as muscle relaxant; respiratory arrest and seizure]6]. Local anesthesia in the form of hematoma block is a safe and effective alternative [7]. One study shows that with hematoma block there was no pain in 51.43%, during close reduction and cast application for DRF [8]. Other study shows pain reduction of 20% with intravenous benzodiazepines while in Bier's block it was 17% [9]. The hematoma block has edge over conscious sedation that it has offers pain relief without the additional risk cardiac arrest, increased hospital cost, and decreased management time [9]. This study is therefore designed to evaluate the effectiveness of hematoma block in comparison to conscious sedation. The results of studies conducted in other countries may not be applicable to our population. If we found hematoma block more effective in term of pain reduction as compared conscious sedation then result will be disseminated with other Orthopedic surgeon to make it as guidelines. So the objective of this study is to compare the effectiveness of hematoma block verses conscious sedation in close reduction of distal radius fracture in term of pain reduction

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METHODS

This Randomized controlled trail was conducted in the Department of Orthopaedic Hayatabad Medical Complex Peshawar from March 2015 to February 2016.

In this study a total of 76 (38 in each group i,e. Group A and group B) patients of either sex, aged between 18 and 80 years were studied using effectiveness of hematoma block. Patients presented to emergency department with pain and deformity of radius, confirmed fracture of any type on radiograph were included while those who had other fracture, multisystem trauma, neurovascular injury, skin infection at wrist, blood disorders, allergies to medicines use in this study and addicted individuals were excluded from the study.

Patients having trauma to wrist with diagnosis of distal radius fracture that has been confirmed with radiographs and fit into the inclusion and exclusion criteria, were informed about the objectives and procedures of the study and informed written consent taken. The patients were randomly allocated in groups. Randomization was done by odd & even method. Hematoma block was allocated group–A and conscious sedation was allocated group-B.

In group A patients area was scrubbed first with Methylated Spirit and then with Pyodine (7.5% Povidone iodine) then 5 milliliter of 1.5% Xylocaine was injected into hematoma from the dorsum with 10 ml disposable syringe of 22 G needle.

In group B patients were prepared for intravenous benzodiazepines and opioids with emergency tray at hand. A mixture of Injection Diazepam (valium) 10mg and Tramadol (Tramal) 50mg diluted in 10ml of distilled water was injected slowly intravenously.

After five minutes of wait for the pain relief, the fracture was reduced and immobilized in cast splintage by the post graduate resident. Pain was recorded on visual analogue scale at the start of procedure of reduction. Pulse, blood pressure and pulse oximetry were checked throughout the procedure. All the data was recorded with the help of proforma thus put into and analyzed with SPSS versions 10. All the results were presented as tables and charts.

RESULTS

Seventy-six (38 in each group) patients were studied to compare the effectiveness of hematoma block versus conscious sedation in close reduction of distal radius fracture in term of pain reduction.

In group A the mean age was 42.05 (SD ± 12.08) years while it was 47 (SD ± 11.61) years in group B. In group A, male patients were 11(28%) while female were 27(72%). Male patients were in group B 12(32%) while female were 26(68%). (Table No 1)

Effectiveness in group A was 68% while 32% was non-effective. Effectiveness in group in group B was 28% while 72% was non-effective.

In both groups 51-60 years of age group patients more. In group A, 51-60 years of age were 16(42%) patients while in group B17(45%) patients. (Table No 2)

Effectiveness in group A among the two groups was 26(68%) while non-effective in 12(32%) patients, whereas was effectiveness in Group B was 11(28%) while non-effective in 27(72%) patients. (Table No 3)

Table 1: Gender (n=76)

SEX	GROUP A	GROUP B
Male	11(29%)	12(32%)
Female	27(71%)	26(68%)
Total	38(100%)	38(100%)

Group A: Hematoma block
Group B: Conscious sedation

Table 2: Age Distribution (n=76)

AGE	A	B
20-30 years	2(5%)	2(5%)
31-40 years	7(18%)	6(15%)
41-50 years	13(35%)	13(35%)
51-60 years	16(42%)	17(45%)
Total	38(100%)	38(100%)
Mean and SD	49.05 ± 12.08	47 ± 11.61

Group A: Hematoma block
Group B: Conscious sedation

Table 3: Efficacy (n=76)

EFFICACY	GROUP A	GROUP B
Effectiveness Visual analogue score (≤ 3)	26(68%)	11(28%)
Not effective Visual analogue score (> 3)	12(32%)	27(72%)
Total	38(100%)	38(100%)

Group A: Hematoma block
Group B: Conscious sedation

DISCUSSION

Doctors working in accident and emergency department in all over the world are dealing with more fractures of radius than other bones [7]. These are more frequent fracture in old age which is prevalent in 20 percent population [7]. Metaphyseal fractures of

radius counted for every 1 out of 6 fractures that has been managed in A & E per year. These fractures occurs in two peaks; the first peak is from 5 years to 24years and the second peak is one in 65 and above age group [8]. These fracture are more common in female [8]. Various management protocol has been evolved but no final consensus has been made yet [7,8]. DRF are routinely treated by most of orthopedic surgeons by closed reduction and cast splintage. These are complicated fractures that has an unpredictable prognosis. If these fractures are not treated properly and optimally, then it can lead to complications. It may lead to early and late complications of non union, mal union, loss of functions or sympathetic dystrophy [9].

Treatment protocol for distal radius fracture changing day by day that ranges from non-operative to operative method [10]. The non-operative method includes closed reduction and cast splintage while the operative method includes open reduction and internal fixation or close reduction or external fixation [10]. The non-operative method needs that the patient has to be sedated with narcotics and benzodiazepines for closed reduction. Opioids are used for pain control and benzodiazepine is used for muscle guarding. They both have good response but they have the risks of respiratory depression and seizure [11].

In our study, in group A the mean age was 42.05 (SD ± 12.08) years while it was 47 (SD ± 11.61) years in group B. In group A, male patients were 28% while female were 72%. Male patients were in group B 32% while female was 68%. In both groups 51-60 years of age group patients more. In group A, 51-60 years of age were 16(42%) patients while in group B17(45%) patients. Effectiveness in group A was 68% while 32% was non-effective. Effectiveness in group in group B which was conscious sedation group was 28% while 72% was non-effective.

Local anesthesia in the form of hematoma block is safe and effective in closed reduction for DRF [12]. Study done on hematoma block elsewhere showed that no pain was recorded in 51.43% in reduction of distal radius fracture [13]. Another study shows that intravenous benzodiazepines reduces pain of 20%, while Bier's block has (17%) reduction of pain [14].

Kendall in 1995 [15] studied the popularity of the hematoma block in reducing Colles' fracture, and showed the increasing popularity of the hematoma block (7% in 1989 vs. 33% in 1994), compared with 5 years ago at the expense of the general anesthetic (44% in 1989 vs. 24% in 1994).

Ogunlade in 2002 [16] studied 35 patients and showed that a significant reduction of the pain occurred following hematoma block and obtain adequate reduction in all cases.

Handoll in 2002 [17]. reviewed Cochrane Database in which he included 18 studies that consisted of 1200 patients, regarding anesthesia for treating distal radial fractures in adults. Although general anesthesia gives better pain relief during manipulation but makes patients stay longer, with high procedural costs compared with hematoma block. These studies also indicate that there was more pain post manipulation after general anesthesia.

Singh in 1992 [18] studied analgesia for reduction of Colles' fracture by double blind RCT between hematoma Group and conventional sedation. They showed that pain scores during fracture reduction in the Hematoma Group were acceptably low, that is < 3 (median=1.8) as compared to sedation group which has unacceptably high, that is >3 pain scores (median =8.7).

CONCLUSION

Our study show that hematoma block is more effective than conscious sedation in close reduction of distal radius fracture in term of pain reduction.

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