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Management of extra-articular distal radius fracture treated with plaster and percutaneous pinning

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Abstract
A break in the distal radius is among the most common types of bone fractures. These fractures manifest themselves at the wrist, which is where the radius bone comes to an end. However, there has been no consensus reached regarding the proper manner in which these injuries should be defined, treated, or evaluated [(1)]. An effective method to restore articular congruity following a distal radius fracture was to use a volar approach, indirect reduction, and locked plate fixation.
Methods: An extensive search of all materials related to the topic was carried out in the PubMed and Google Scholar search engines. Relevant research articles focusing on "Management Of Extra -Articular Distal Radius Fracture Treated With Plaster And Percutaneous Pinning" published in the period 1999–2019 were included in the review. A total of 11 studies similar to the current study objectives were included in the study and analyzed.
Conclusion: As reviewed the literature, Patient has better outcome in range of motion and less stiffness in percutaneous pinning compared to plaster immobilization group. Functional outcome and radiological outcome is better in percutaneous pinning compared to plaster immobilization.

Keywords: VAS, percutaneous K wire fixation, Plaster immobilization

Introduction
A break in the distal radius is among the most common types of bone fractures. These fractures manifest themselves at the wrist, which is where the radius bone comes to an end. However, there has been no consensus reached regarding the proper manner in which these injuries should be defined, treated, or evaluated [1].
The easy and effective method to maintain reduction and prevent stiffness of the wrist and hand with extra articular distal radius fractures treated with closed reduction and percutaneous K wires. However, it is obvious that some unstable fractures re-displaced following closed reduction and external splintage alone, resulting in a poor functional outcome for the patient [2].

Methods
An extensive search of all materials related to the topic was carried out in the PubMed and Google Scholar search engines. Relevant research articles focusing on "Management of Extra - Articular Distal Radius Fracture Treated with Plaster and Percutaneous Pinning" published in the period 1999-2019 were included in the review. A total of 11 studies similar to the current study objectives were included in the study and analyzed.

Results
T. Azzopardi *et al*., S. Ehrendorfer *et al*., T. Coulton *et al*., and M. Abela *et al*.,carried out a prospective, randomised study in the year 2000 to evaluate the efficacy of cast immobilisation with percutaneous pinning in the treatment of 57 patients aged 60 and older who had unstable, extra-articular distal radius fractures. The patients' fractures were classified as being extra-articular. They compared the results of 27 patients whose injuries were treated with closed reduction and 27 patients whose injuries were treated with percutaneous pinning one and four months following treatment. Closed reduction was used on 27 patients, and percutaneous pinning was used on 27 patients.

They examined the VAS, range of motion, grip strength, activities of daily living, and SF-36 questionnaire scores after 4 months. In patients who were treated with additional wires, functional outcomes such as grip strength, range of motion, and discomfort were all improved; however, only range of motion in ulnar deviation demonstrated statistical significance [3].

Sarmiento *et al*. in order to lessen the deforming force of the brachioradialis muscle, which can result in a loss of reduction. On the other hand, Wahlstrom advocated for a permanent lock in pronation due to his conviction that the deforming force that is predominantly responsible for bone loss originates in the pronator quadratus [4].

Kreder" *et al.*, An increase in the incidence of distal end radius fractures has been connected to ageing, which is linked to all of the risk factors for osteoporosis. A prospective study that took place over the course of two years and involved 113 patients indicated that external fixation and percutaneous pinning fixation were superior to the more traditional method of immobilisation using casts [5].

Herzberg *et al*. discovered that the thickness of the volar cortex was greater than that of the dorsal one. Recent articles have concentrated their attention on the distal limit and watershed line, the dorsal tubercle, and the wrist columns, all of 14 which are components of the anatomy of the distal radius [6].

Kurup *et al*., treated distal radius fractures with percutaneous K wire fixation, they discovered that regardless of the patient's age, sex, or the type of fracture, 46 there was no significant loss of decrease in fracture position when the pins were removed. This was the case even when the fracture was in an unstable position [7].

Clement *et al*. and Pichler *et al*. to measure the size of the distal dorsal (Lister's) tubercle and the depth of the EPL groove in 100 cadaver specimens and 30 forearms, respectively. Clement *et al*. 23 measured the size of the tubercle in 30 forearms [8].

Lutsky *et al*., it was discovered that an effective method to restore articular congruity following a distal radius fracture was to use a volar approach, indirect reduction, and locked plate fixation. In addition to this, they asserted that fluoroscopy may underestimate the degree to which step and gap abnormalities are present [9].

Gasse *et al*. measurements, there is around 22 mm of space between the pronator quadratus line and the tip of the dorsal tubercle. When placing a screw longer than 22 mm into the distal holes of a plate over the metaphysis, the surgeon must exercise extreme caution because this commonly coincides to the position of the dorsal tubercle [10].

Gasse *et al*. were able to verify the existence of these two separate lineages by analysing the distal radius specimens from seventy deceased individuals. We discovered that the length of the distal ulnar column was greater than that of the distal radial column, and that the radial styloid process was not located on the plane of the 16 distal radius [11].

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Imatani *et al*. evaluated the volar aspect of the distal radius by macroscopically and histologically analysing twenty distal forearms taken from ten deceased individuals. The distal forearms were examined using a macroscope. Only four of these cases featured both the pronator quadratus line and the watershed line. In addition to this, a bony protrusion that was placed medially coincided with the watershed line at the same time. These findings imply that the watershed line is not a separate line but rather corresponds to the distal boundary of the pronator fossa in the lateral half of the volar radius and to a hypothetical line between the distal and proximal lines in the medial half of the radius [13].

Conclusion

As reviewed the literature, Patient has better outcome in range of motion and less stiffness in percutaneous pinning compared to plaster immobilization group. Functional outcome and radiological outcome is better in percutaneous pinning compared to plaster immobilization.

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Author's Contribution

Not available

Conflict of Interest

Not available

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