Original Article

Colles Fracture

Incidence of Colles Fracture (5 years Experience) at Idris Teaching Hospital Sialkot Medical College Sialkot

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ABSTRACT

Objective: To study Incidence of Colles Fracture (5 years Experience) at Idris Teaching Hospital Sialkot Medical College Sialkot.

Study Design: Experimental and Observational study

Place and Duration of Study: This study was conducted at the Department of Surgery, Idris Teaching Hospital Sialkot during Jan 2014 to July 2019.

Materials and Methods: This study comprises 156 patients of Colles Fracture. The Performa was designed to recorded demographic data, etiology, causes, treatment given and complications of Colles fracture. Written informed consent was also taken from every patient before the start of the treatment. The Permission of ethical committee was also considered before collection of data and get publishing in the medical journal. The results were analyzed on SPSS version 10.

Results: At the age of 30-35 years, there were 1(2.43%) male and 9(7.82%) female, at the age of 36-40 years there were 3(7.31%) Male and 7(6.01%) female, at the age of 41-45 years there were 2 (4.87%) Male and 11(9.56%) Female, at the age of 46-50 years there were 4(9.75%) Male and 7(6.09%) female, at the age of 51-55 years there were 5(12.19%) Male and 6(5.21%) Female and age above 55 years there were 26(63.41%) Male and 75(65.21%) Female patients were found of Colles fracture. There were 16(39.02%) Male and 80(69.56%) female patients of Colles fracture were due to history of slip or fall. Due to RTA there were 8(19.51%) Male and 29(25.21%) Female patients of Colles fracture were detected. Due to Fight there were 17 (41.46%) Male and 6(5.21%) Female patients of Colles fracture were detected. There were 21(51.21%) Male and 97(84.34%) Female patients of Colles fracture were on conservative treatment (POP Cast). The Operative treatment there was external fixators in 7(17.07%) Male and 4(3.47%) Female, Orif e k wires was in 8(19.51%) Male and 11(9.56%) female, or if e plating was done in 5(12.19%) male and 3(2.60%) female of Colles fracture were found. Due to early complications, there was unstable reduction 3(10%) Male and 5(7.35%) Female, Post reduction swelling 11(36.66%) Male and 18(26.47%) female, compartment syndrome 00(00%) Male and 1(1.47%) Female, injury to proximal segment of bone during reduction 00(00%) Male and 00(00%) Female, infection (surgery) there was 00(00%) Male and 1(1.47%) Female patients. Due to late complications, there was malunion in 4(13.33%) Male and 7(10.29%) Female, there was rupture of ext pollio tender in 00(00%) Male and 00(00%) Female, there was frozen shoulder in 11(36.66%) Male and 31(45.58%) Female, there was non-union 00(00%) Male and 3(4.41%) Feamle, there was sudeck's dystrophy in 1(3.33%) male and 2(2.94%) female patients of Colles fracture were detected.

Conclusion: Possessing a knowledge of the incidence and outcomes of distal radius fractures allows the physician to better counsel individual patients and determine the best management to optimize treatment.

Key Words: Colles fracture, etiology, Complications and Demographic data

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INTRODUCTION

Distal radius fractures are one of the most common types of fractures, with over 640,000 cases reported during 2001 in the US alone.[1] For reasons not fully understood, and likely multi-factorial, the incidence of this fracture appears to be on the rise in the US and abroad.[2–5] Many of the societal effects of these fractures extend beyond the significant medical costs, including decreased school attendance, lost work hours, loss of independence and lasting disability. Fragmented care and coding discrepancies can make accounting for the true number of these fractures difficult, likely underestimating the rates typically quoted in the literature. When analyzing the incidence of distal radius fractures, there are three major populations to consider: children and adolescents, young adults, and the elderly.

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The pediatric and elderly populations are both considered at high risk for this injury, and the contributing factors will be examined in this paper. In addition to the 3 main age groups, gender and ethnicity may also be considered distinct risk factors within each of these populations. Understanding the epidemiology of distal radius fractures can help physicians choose the most appropriate treatment options for the fracture, as well as effectively target preventative measures towards at-risk populations.

Chung and Spilson used data from the National Hospital Ambulatory Medical Care Survey (NHAMCS) database and determined that 1.5% of all emergency department visits were due to hand and wrist fractures. Radius and ulna fractures consisted of 44% of these fractures.[1] This study corresponds to a study by Larsen and Lauritsen showing that distal radius fractures accounted for 2.5% of all emergency department visits.[6]These numbers vary more widely in earlier reports, but still represent a high incidence rate. In 1962, an analysis of fractures in Sweden documented the number of distal radius and ulna fractures to be as high 75% of all forearm fractures.[7] A study by Knowelden et al. in 1964 found 32% of all fractures seen in women over the age of 35 in the distal end of the radius.[8]

Current and past clinical data point to a rise in the incidence of distal radius fractures for the pediatric, adult, and elderly populations in recent years. This phenomenon has been a subject of debate as early as the 1960's when Alffram and Bauer published their report on the increasing occurrence of distal radius fractures in a large Swedish city.[7] A study from Rochester, Minnesota found a 17% increase in the incidence of this injury over a 40 year period.[2] The incidence in Sweden almost doubled for the elderly population over a 30 year time span when compared to previous data from the same location. During the same study period as this increase, the incidence rates of shaft fractures of the radius and ulna remained the same, lending further validity to the increase in distal radius fractures as a legitimate trend.[9] Although there is no single factor responsible for this phenomenon due to the absolute prevalence of distal radius fractures, any individual contributing factor is bound to have confounding variables.

Many theories have been proposed to determine the source of the increasing rates of distal radius fractures, but studies correlating a specific cause to the incidence of this injury must be carefully evaluated. The influence of lifestyle and environmental factors on the risk and incidence of distal radius fractures has recently been assessed to further examine the causes for the increasing rates. One study found a 30% greater risk for a distal radius fracture in urban women over rural women.[10] Although the data indicated a significant difference between risk factors, it could not seem to determine the cause of this discrepancy, even after analyzing lifestyle and health factors. Others point to the impact of epigenetic influences on the development of diseases such as childhood obesity and osteoporosis as a basis for the increasing incidence of this fracture in different populations.[11,12] It is possible that changing cultural dietary habits may be altering bone metabolism, affecting the overall incidence of distal radius fractures. Additionally, as the population ages and individuals strive to remain active, fractures due to relatively minor traumas have increased.[7] Other theories will be discussed in further detail throughout the following sections.

As the incidence of distal radius fractures rises, the short and long term costs become apparent. Each year, fractures account for over half of the days patients spend in the hospital receiving treatment and care for upper extremity injuries.[1,13] The costs of treating distal radius fractures in the pediatric population of the United States has been cited to be in upwards of $2 Billion per year.[12] This is not surprising considering the overall prevalence of this injury. Chung et al. recently evaluated the costs that accompany this injury with respect to the elderly community. They found in 2007, Medicare paid $170 million in distal radius fracture related payments.[14] Additionally, they projected that the future burden of Medicare could be $240 million if the current trend in the use of internal fixation continues. These costs did not include any secondary expenses associated with this injury such as prescription drugs, lost time at work, and loss of independence, which may be more significant than the direct costs. This data reveals the significant socioeconomic costs incurred as a direct result of distal radius fractures, and highlights the importance of analyzing preventative measures and treatment protocols for individuals who are at a high risk for or suffer from this injury.

MATERIALS AND METHODS

This study comprises 156 patients of Colles Fracture. The Performa was designed to recorded demographic data, etiology, causes, treatment given and complications of Colles fracture

Written informed consent was also taken from every patient before the start of the treatment. The Permission of ethical committee was also considered before collection of data and get publishing in the medical journal. The results were analyzed on SPSS version 10.

RESULTS

At the age of 30-35 years , there were 1(2.43%) male and 9(7.82%) female , at the age of 36-40 years there were 3(7.31%) Male and 7(6.01%) female , at the age of 41-45 years there were 2 (4.87%) Male and 11(9.56%) Female , at the age of 46-50 years there were 4(9.75%) Male and 7(6.09%) female , at the age of 51-55 years there were 5(12.19%) Male and 6(5.21%)

Female and age above 55 years there were 26(63.41%) Male and 75(65.21%) Female patients were found of Colles fracture as shown in table no 1.

Table No. 1: Age- Gender Distribution

Sr. No	Age	Male	Female
1	30-35	1(2.43%)	9(7.82%)
2	36-40	3(7.31%)	7(6.01%)
3	41-45	2(4.87%)	11(9.56%)
4	46-50	4(9.75%)	7(6.09%)
5	51-55	5(12.19%)	6(5.21%)
6	Above 55	26(63.41%)	75(65.21%)
Total patients=156		41(100%)	115(100%)

There were 16(39.02%) Male and 80(69.56%) female patients of Colles fracture were due to history of slip or fall. Due to RTA there were 8(19.51%) Male and 29(25.21%) Female patients of Colles fracture were detected.Due to Fight there were 17 (41.46%) Male and 6(5.21%) Female patients of Colles fracture were detected as shown in table no 2

Table No. 2: Aetiology Distribution

Aetiology	Male	Females	Total fracture (Male + Female)
h/o slip or fall	16(39.02%)	80(69.56%)	96
RTA	8(19.51%)	29(25.21%)	37
Fight	17(41.46%)	6(5.21%)	23
Total	41(100%)	115(100%)	156

There were 21(51.21%) Male and 97(84.34%) Female patients of Colles fracture were on conservative treatment(POP Cast) . The Operative treatment there was external fixators in 7(17.07%) Male and 4(3.47%) Female , Orif e k wires was in 8(19.51%) Male and 11(9.56%) female , orif e plating was done in 5(12.19%) male and 3(2.60%) female of Colles fracture were found as shown in table no 3.

Table No. 3: Treatment Distribution

Treatment	Male		Females
Conservative (POP Cast)	21(51.21%)		97(84.34%)
Operative	External fixators	7(17.07%)	4(3.47%)
	Orif e k wires	8(19.51%)	11(9.56%)
	Orif e plating	5(12.19%)	3(2.60%)
Total	41(100%)		115(100%)

Due to early complications, there was unstable reduction 3(10%) Male and 5(7.35%) Female , Post reduction swelling 11(36.66%) Male and 18(26.47%) femlale , compartment syndrome 00(00%) Male and 1(1.47%) Female , injury to proximal segment of bone during reduction 00(00%) Male And 00(00%) Female, infection(surgery) **there** was 00(00%) Male and 1(1.47%) Female patients.Due to late complications , there was malunion in 4(13.33%) Male and 7(10.29%) Female , there was rupture of ext pollio tender in 00(00%) Male and 00(00%) Female , there was frozen shoulder in 11(36.66%) Male and 31(45.58%) Female , there was non union 00(00%) Male and 3(4.41%) Feamle , there was sudeck's dystrophy in 1(3.33%) male and 2(2.94%) female patients of Colles fracture were detected as shown in table no 4.

Table No. 4: Complications Distribution

	Complications	Males	Females
Early	Unstable reduction	3(10%)	5(7.35%)
	Post reduction swelling	11(36.66%)	18(26.47%)
	Compartment syndrome	0(00%)	1(1.47%)
	Injury to proximal segment of bone during reduction	0(00%)	0(00%)
	Infection(surgery)	0(00%)	1(1.47%)
Late	Malunion	4(13.33%)	7(10.29%)
	Rupture of Ext Pollio Tender	0(00%)	0(00%)
	Frozen Shoulder	11(36.66%)	31(45.58%)
	Non union	0(00%)	3(4.41%)
	Sudeck's dystrophy	1(3.33%)	2(2.94%)
Total		30(100%)	68(100%)

DISCUSSION

Stabilisation of intra-articular fracture of the distal radius is a challenge for the orthopaedic surgeon. Despite numerous published outcome studies, there is no gold standard surgical technique.[11] Volar LCPs have shown greater rigidity and superiority when compared to conventional volar or dorsal plates in biomechanical studies.[12] Introduction of LCPs in combination with the volar approach has shown a lower complication rate and an increasing popularity in comparison to the dorsal approach. In contrast to conventional plating, LCP fixation stability does not rely on the friction between the implant and the bone; the inherent angular stability of the screw and plate mechanism acts as a single unit to hold and support the bone fragments.[13] Therefore, it is not necessary for the fixed-angle locking plate to conform perfectly to the palmar cortical surface of the distal radius. This makes the plate application technique simpler and further preserves the blood supply to the bone fragments, which is crucial for fracture healing.[13] Multiple studies have shown good results with use of LCP for distal radius intra-articular fracture with regard

to function of hand. Ayhankilic et al.[8] reported good or excellent DASH scores in 74% patients, satisfactory in 23% and poor in 3%. Similarly, Figl et al.[14] reported good scores with the use of LCP for distal radial. Rozental et al.[15,16] reported 41 patients treated with volar fixed-angle plating for unstable distal radius fractures, with average follow-up period of 17 months. Radiographs in the immediate postoperative period showed a mean radial height of 11mm, mean radial inclination of 21 degrees, and mean volar tilt of 4 degrees. At fracture healing, the above values were 11mm, 21 degrees, and 5 degrees respectively[17,18]. The average DASH score was 14..In our study, due to early complications, there was unstable reduction 3(10%) Male and 5(7.35%) Female , Post reduction swelling 11(36.66%) Male and 18(26.47%) femlale , compartment syndrome 00(00%) Male and 1(1.47%) Female , injury to proximal segment of bone during reduction 00(00%) Male And 00(00%) Female, infection(surgery) there was 00(00%) Male and 1(1.47%) Female patients.Due to late complications , there was malunion in 4(13.33%) Male and 7(10.29%) Female , there was rupture of ext pollio tender in 00(00%) Male and 00(00%) Female , there was frozen shoulder in 11(36.66%) Male and 31(45.58%) Female , there was non union 00(00%) Male and 3(4.41%) Feamle , there was sudeck's dystrophy in 1(3.33%) male and 2(2.94%) female patients of Colles fracture were detected[19,20] .

Luhas k. et al.[21,22,23,24] reported 40 cases of intra-articular distal radial fractures managed with LCP with a mean follow-up of 18 months. Four of their cases required surgical revision (1 because of loss of reduction, 2 due to fracture incongruity as seen on the postoperative computer tomogram and 1 case of screw displacement in the radial shaft). Immediate postoperative radiographs showed mean radial inclination of 22.1° and mean volar tilt of 7.2°. At follow-up examination, radial inclination was 23.8° and volar tilt was 6.2°. They had a mean DASH score of 18 points (26 very good, 11 good, 1 satisfactory and 2 poor). Complications were an extensor pollicislongus (EPL) tendon rupture, a tendon irritation and a complex regional pain syndrome in a patient who underwent revision.

CONCLUSION

Possessing a knowledge of the incidence and outcomes of distal radius fractures allows the physician to better counsel individual patients and determine the best management to optimize treatment. Although treatment outcomes for pediatric and young adults are fairly well defined for distal radius fractures, recent research in the elderly population has made decision-making for the patient and surgeon more complex. It is becoming increasingly difficult to define the difference between the active "older" adult that will continue to place high demands on an injured wrist, and the true "elderly" that may better adapt to an imperfect outcome. Large multi-center studies, such as the WRIST study, with long-term follow-up may be the only way to accurately delineate the best treatment options for an individual based on outcomes for a similar patient population.

Author's Contribution:

Concept & Design of Study:	Muhammad Asif Saeed
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Conflict of Interest: The study has no conflict of interest to declare by any author.

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