



COLLES FRACTURE; COMPARISON OF FUNCTIONAL OUTCOME IN TREATED WITH COL- LES PLASTER CAST AND COLLES FUNCTIONAL BRACE

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Article received on:

18/07/2014

Accepted for publication:

16/08/2014

Received after proof reading:

17/04/2015

ABSTRACT... Colles fracture is the fracture of distal radius occurring most commonly in elderly because of the osteoporotic bone. **Objectives:** To compare outcome in fracture treated with Colles Plaster Case and Colles Junctional Brace. **Study Design:** Observational Study. **Period:** February 2013 to August 2013. **Setting:** Department of Orthopedics Bainazir Bhutto Shaheed Hospital, Rawalpindi. **Methods:** A study was conducted on 140 patients suffering from Colles fracture in a period of 6 months. Patients were divided in 2 groups. In group A conventional Colles cast for 6 weeks was administered and in group B Colles cast was replaced by a functional brace after 2 weeks. Functional outcome was recorded in both groups at the end of 12 weeks. Functional outcome was analyzed as given on the performa. **Results:** Out of 140 patients 78(55.7%) were male with a mean age of 35.87. The total number of female patients were 62(44.3%) with a mean age of 46.10. The total number of patients that had excellent functional outcome at 6 weeks were 92 out of 140 patients. The excellent functional outcome was achieved in 57(40.7%) patients treated with colles brace. However, in patients treated with colles cast the functional outcome was excellent in 35(25%) patients. **Conclusions:** The best functional outcome after the treatment of colles fracture is achieved by the use of colles functional brace.

Key words: Colles fracture, brace, functional outcome, colles cast, distal radius fractures

Article Citation: Shah J, Bashir MA, Gul N, Colles fracture; comparison of functional outcome in treated with colles plaster cast and colles functional brace. Professional Med J 2015;22(4):466-470.

INTRODUCTION

Colles fracture named after Abrahams Colles¹ is the fracture of distal radius that account for one sixth of Orthopedics emergency room visits.²

The best treatment for Colles fracture is still controversial. Popular options of treatment for distal radius fractures include closed reduction and POP casting, closed reduction and pinfixation with and without external fixation, and open reduction and internal fixation with dorsal, volar, and fragment-specific approaches.³ All these operative methods have their own complications and in the view of the epidemiology of the fractures it is likely that the majority of the patients will continue to be treated conservatively.

Colles fracture lead to prolonged functional impairment⁴ mostly because of immobilization in a POP cast for more than 6 weeks. Prolonged immobilization mostly results in residual finger stiffness⁵. Complex regional pain syndrome type 1 generally termed Sudeck's atrophy and sometimes shoulder-hand syndrome. Shoulder-Hand syndrome is can a major complication requiring many months of physiotherapy to alleviate symptoms (pain and tenderness, impairment of joint mobility, swelling, dystrophy, vasomotor instability) in serious cases.⁶

Earlier works of Sarmiento et al.² suggested that early mobilization of the wrist joint after a Colles

fracture leads to earlier recovery. The functional treatment was advocated by Sarmiento to minimize the complications of immobility and stimulate fracture healing by micro motion and physiological cyclical axial loading⁷. Functionally good results can be achieved by managing these patients conservatively with closed reduction, immobilization in a plaster cast and application of a functional brace in 75% to 80% of fractures of the distal radius⁸. A study by Ledingham et al.⁹ showed 83% of the patients to have excellent results at the end of 12 weeks after using a functional brace. On the contrary, only 48% of the patients showed excellent results at the end of 12 weeks after using conventional POP cast.

Colles functional brace is not being frequently used for Colles fracture in Benazir Bhutto Hospital. The rationale of this study is to advocate the frequent use of Colles functional brace locally which is more comfortable and enables the patient to return to activities earlier compared to conventional POP casting.

Before getting into the details of treatment we must know some basic anatomical features of distal radioulnar joint and wrist

DATA COLLECTION PROCEDURE

Study was started after approval from the ethical committee of hospital. All adult patients with colles fracture seen in the A&E and OPD of Benazir Bhutto Hospital were included in the study. Fracture were reduced by the surgeon on call in the A&E and POP was applied to all patients for 2 weeks. Patients were divided in two groups randomly on basis of lottery method. Selected patients were given written informed consent. In group A, conventional POP was continued for another 4 weeks. In group B, POP was replaced by locally made Colles functional brace after 2 weeks and continued till 4 weeks. Patients' functional outcome was observed in terms of subjective evaluation according to Demerits Score on removal of POP or Colles brace. Patients were assessed again on 6th week and finally on 12th week after the removal of Colles cast or Colles brace by the researcher. Follow up was ensured

by recording the contact number of patients.

RESULTS

The study was started from 20th February 2013 to 19 August 2013 in the OPD of Orthopaedics department, Benazir Bhutto Hospital Rawalpindi, which is affiliated with Rawalpindi Medical College. This department covers all the peripheral areas of Rawalpindi district, as well as referrals from adjacent districts. On an average, more than 900 patients are seen in the OPD per week 140 patients are seen in Accident and Emergency per month.

A total of 140 patients with Colles fractures presenting in Accident and Emergency, who gave informed written consent and met the inclusion and exclusion criteria were included in this study. Out of 140 patients 78(55.7%) were male with a mean age of 35.87. The total number of female patients were 62(44.3%) with a mean age of 46.10

The total number of patients that had excellent functional outcome at 6 weeks were 92 out of 140 patients. The excellent functional outcome was achieved in 57(40.7%) patients treated with colles brace. However, in patients treated with colles cast the functional outcome was excellent in 35(25%) patients.

Sex	Mean	N	Std. Deviation
F	46.10	62	12.023
M	35.87	78	13.941
Total	40.40	140	14.038

Table-I. Results Age

Excellent	Mean	N	Std. Deviation
No	49.81	48	10.208
Yes	35.49	92	13.270
Total	40.40	140	14.038

Table-II. Results excellent functional outcome

		Group			Total
		Consrvative	Colles brace		
Excellent	No	Count	35	13	48
		% of Total	25.0%	9.3%	34.3%
	Yes	Count	35	57	92
		% of Total	25.0%	40.7%	65.7%
Total	Count	70	70	140	
	% of Total	50.0%	50.0%	100.0%	

Table-III. Excellent * group Crosstabulation

Chi Square value = 15.344 P-value = 0.00001

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	15.344 ^a	1	.000		
Continuity Correction ^b	13.981	1	.000		
Likelihood Ratio	15.782	1	.000		
Fisher's Exact Test					
No of Valid Cases	140			.000	.000

Table-IV. Chi-Square Tests

- a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 24.00.
- b. Computed only for a 2x2 table

treatment option in most of the institutions.¹⁰ However, the earlier works of Sarmiento et al has advocated that the use of early functional brace has reduced many complications as compared to immobilization in conventional Colles cast .According to studies by Sarmiento et al^{11,12} functional bracing in tibial and femoral fractures, permitting active joint motions during healing has been shown to reduce stiffness and osteoporosis after union.Later on Sarmiento et al suggested that Colles fracture that are stable after reduction can be immobilized in functional which allows early range of motion at elbow and wrist leading to very good functional outcome as compared to other aggressive treatment option^{13,14,15} sarmiento study.

At our institution a locally made polyethylene below elbow functional brace was used which immobilized the wrist in pronation avoiding extension at the wrist joint. The brace was worn after removing the conventional colles cast after 2 weeks in one group.The study was conducted mainly to assess the functional outcome after colles cast and a colles functional brace.

The study was conducted on a total of 140 patients out of which 78(55.7%) were male and 62(44.3%) were female.

In a study by Gartland and Werley¹³ at 6 months 68.3% excellent results were obtained by using a volar splint in pronation and the flexion of the wrist. In our series using a similar evaluation criteria but a brace fabricated differently, as described above, we were able to obtain an excellent functional outcome in 57(40.7%) patients .The follow up in our study contrary to the Gartland and werley¹³ study was done at 3 months.

Similarly in a study by Moir JS¹⁶ 85 patients were taken in the study out of which 44 patients were subjected to functional brace and the rest were given conventional cast. The follow up like our study was done at 12 weeks. Functional outcome in this study too was better compared to conventional group.

In a study by Dias JJ¹⁷ 47 patients were treated

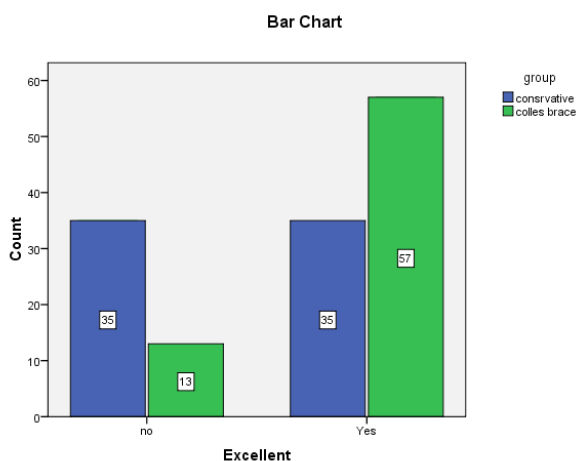


Figure-1. Functional outcome (excellent)

DISCUSSION

Even after profound progress in the treatment options of Colles fracture closed reduction and immobilization in plaster of Paris remains mainstay

with conventional colles cast and 43 patients were allowed flexion of the wrist while prohibiting extension in the cast. In conventional group 6.4% patients achieved excellent functional outcome while 24% patients achieved excellent results in the brace group at 13 weeks. In our study excellent functional outcome was achieved in 57(40.7%) patients treated with colles brace. However, in patients treated with colles cast the functional outcome was excellent in 35(25%) patients.

However in a study by Stewart HD¹⁸ 235 patients were included in the study and the mean functional outcome at 3 months was 10 in both conventional plaster and brace showing no difference at all in the 2 groups.

The study that was most consistent and supportive to our study was that of Ledingham⁽¹⁰⁾ which showed 83% of the braced patients to have excellent results compared with 43 % in control group at 12 weeks.

CONCLUSION

The colles fracture is a common fracture which is best treated by conventional colles cast followed by a colles functional brace. The functional brace is light and very patient friendly compared to conventional Colles cast. The functional brace helps avoiding many complications such as range of motion, grip strength, finger stiffness and sudecks atrophy common with conventional colles cast. So, this study proposes a frequent use of functional bracing in colles fracture.

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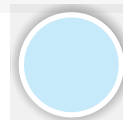
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“Wish the same for your brother
which you wish for your self.”

Al-Hadith



CORRECTION

The amendment of the Professional Vol: 22, No.02 (Prof-2679) on page 186 is as under;



INCORRECT

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CORRECT

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3	Dr. Navid Gul	Major	