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Research Article

**HUMERUS SHAFT FRACTURE OUTCOME CLINICALLY AND
RADIOGRAPHICALLY TREATED WITH FUNCTIONAL
BRACING**¹Dr. Faryal Javaid, ²Dr Mehwish Batool, ³Dr. Gulzar Fatima¹Women medical officer, Basic Health Unit Hathiwind, Sargodha²BHU 1/1.r.A, Renala Khurad, Okara³Medical officer, Hussain Memorial Hospital Lahore**Abstract:**

Objective: To determine the clinical and radiographic results of functional bracing support patients due to humeral diaphyseal fractures.

Study plan: Descriptive case series

Place and time: Orthopedic Surgical Unit II, Nishter Hospital, Multan for the period of one year from January 2017 to December 2017.

Materials and Methods: Fifteen patients were elderly to meet inclusion and exclusion criteria the average initial functional bracing support of 43 years (range 18-67 years) with arm fractures was stabilized with U-plaster of paris plate within two weeks. Radiographic and Clinical evaluations were performed weekly for the first four weeks following the application of the brace and then two weeks. Hunter criteria was used for Functional evaluation. Radiographic evaluation was done on the formation of scar tissue, front / back, side and rotation angles, and shortened considerations.

RESULTS: The majority of patients (n = 13, 86.6%) achieved mean union after 14 weeks (range 12-20 days). Two fractures (13.3%) failed to participate and were then treated surgically. nine (69.2%) patients who evaluated four (30.7%) well (G3-G4) were evaluated as functionally excellent (G5) according to Hunter criteria. The anterior angulation was 10 degrees in patients with previous mean functional reinforcement binding, while varus valgus was on average 9 degrees. One (7.6%) patients had a 2 cm shortening associated with bracing of the fractures.

Conclusion: Fractures of the humerus Shaft treated with functional orthopedic Brace provided high functional synergy with excellent functional results.

Key words: functional brace, Shaft of Humerus, results.

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INTRODUCTION:

Fractures on the axis or shaft of the humerus constitute 1% to 3% of all fractures and 20% approximately of all fractures affecting the bone. The most common complication of fractures of the humerus shaft is Radial nerve injury up to 18% of closed lesions. Most commonly, radial nerve injuries are associated with fractures of the middle shaft of the humerus. Fortunately, recovery can be expected at 90% alone, 4 months after injury. There is no evidence available for randomized controlled trials to determine whether surgery for humerus body fractures offers better results than no surgery or tests. Most of the humeral axis can be successfully treated with closed methods, closed methods; More than 90% of union rates are reported frequently. Including the use of multiple pulls, and liquid hanging arm, coaptation algebra bandage Velpeau, gypsum humerus / shoulder abduction or functional brace, techniques are available closed. Sarmiento et al This device is made of previously plastics and held together with Velcro strips after the first functional Brace 1977 is used. The broken soft tissue is held in position by compression and the clamp is squeezed as the swelling diminishes. Functional orthosis appears to be a safe method of producing a high proportion of union and treatment of closed humerus fractures. This study was designed to evaluate the clinical and radiographic results of humeral shaft fractures treated with a functional orthopedic brace implant.

MATERIALS AND METHODS:

This is a descriptive case series. A total of 15 patients from both sexes were admitted to the Orthopedic Department UnitII of Nishter Hospital, Multan from January 2017 to December 2017 of all age patients with closed humeral shaft from the fractured posterior fracture within one week or earlier. Multiple fractures, bilateral diaphysis, humerus, pathological fractures, segmental fractures, intricular extension, open fractures, humerus shaft fractures and lesions ipsilateral brachial plexus and fractured joint humerus fractures and two forearm bones were obese patients, "elbow fl oating" with the patient and the patient was removed without neurological disturbances such as mental retardation and parkinsonism, or without epilepsy. The study protocol was approved by the Hospital Ethics Committee and written informed consent was

received in all the subjects included. A complete neurological examination of the extremity was performed and posterior and lateral views of the radiographic humerus were obtained. Fifteen fractures were stabilized with the help of plate under the first plaster (GYPSONA-BSN Medical 6 '), diluted Diazepam (Valium-Martin Dow) and Sosegan (Pentazocine HCI-Searle) IV sedation. After the cotton wool is positioned towards the humerus, it is wrapped around the arm and the elbow is brought to the 90 degree flexion. To grab the shoulder of the billet, it is applied in a width of 6 inches and 8 to 10 layers, and the forearm neutral.13 is in position after two weeks of applying acute pain on the plate and parallel swelling and functional orthosis applied. In order to leave the antecubital region open and allow 120 ° elbow flexion, all patients were treated with the help of intact arm-taking measures Brace. Adhesive tapes were arranged according to swelling in the soft tissues and continuous braces were used. The straps extend from the 1.3 cm medial epicondyle to a level thermoplastic polyethylene extending from the 2.5 cm level under the seat to the level just above the acromion of the lateral epicondyle, as described by Sarmiento. A handkerchief holding the elbow on a 90 degree flexor was placed. Patients were encouraged to perform active and passive exercise exercises for all joints of the fractured extremity. The neck arm suspension was applied for the first two weeks except for the periods in which the patient was constantly exercising. After a week of practicing the orthosis they started pendulum exercises with an elbow extension. Clinical and radiographic evaluations were performed weekly for the first four weeks after the onset of brace administration and then every two weeks. The application of functional support is terminated by satisfactory scarring, pathological movement of the fracture line, and pain disappearance appearance. Nerve conduction study (NCS) and electromyogram (EMG) were taken after 6 weeks of radial nerve paralysis patients and were repeated at week 12 if observed back. This disease was immediately followed by a dynamic splint and passive hand and wrist exercises began. Functional and radiographic evaluations were performed on patients' follow-ups. Functional evaluation was performed according to the Hunter criteria by comparison with the healthy side (Table 1).

Table1: Hunter Criteria

Grade	Description
G1	Complete absence of shoulder and elbow movements and complete impairment in daily activities
G2	Lesser degree of movement and important impairment in daily activities
G3	Small impairment in daily activities because of restricted movement
G4	Mild restriction in movement not affecting daily activities
G5	Full range of motion in shoulder and elbow

Radiographic evaluation was carried out taking into consideration the anterior-posterior, lateral and rotational texture of the wound and the formation of shortening. healing occurs within 24 to 24 weeks when it is not called boiling, healing occurs within 16 to 24 weeks Healing is called delayed union. An acceptable alignment of fractures of this humerus shaft was thought to be 3 cm short varus / valgus 30 ° angulation and 20 ° front / rear angulation. All statistical analyzes 13. Mean values were calculated using the SPSS version and data sheets were drawn when necessary.

RESULTS:

Fifteen patients with 11 (73.3%) male and 4 (26.6%) female patients with a mean age of 43 (range 18 to 67) were included in the study. The right humerus was fractured in 10 patients (66.6%) and the left humerus in 5 (33.3%) patients. The causes of fractures were traffic accidents in 7 patients (46.6%), decrease in 4 patients (26.6%), physical aggression in 2 patients (13.3%) and sports injuries in 2 patients (13.3%) patients. The frequency and pattern of fractures of the anterior axis of the humerus are shown in Table 2.

Table 2: Frequency and patterns of humeral shaft fractures

Level of fracture	Number of fractures	Transverse		Oblique		Spiral		Comminuted	
		No.	%	No.	%	No.	%	No.	%
Proximal 1/3	04	02	50%	01	25%	01	25%	00	00
Middle 1/3	08	04	50%	02	25%	01	12.5%	01	12.5%
Distal 1/3	03	01	33.3%	01	33.3%	01	33.3%	00	00
Total	15	07	46.6%	04	26.6%	03	20%	01	6.6%

The majority of patients (n = 13, 86.6%) were grouped after an average of 14 weeks (12 to 20 weeks). Two fractures (13.3%) failed to participate and were then treated with bone grafts and plaques. Two fractures without consolidation, one simple transversal fracture in the middle third, and an oblique fracture in the distal third of the humerus. Varus-valgus and posterior / anterior angulations were measured in patients treated with functional orthopedic braces on the last control radiographs. Median varus-valgus angulation was 9 degrees (0-12 degrees) while anterior medial anterior angulation was 10 degrees (0-17 degrees) in patients with functional support.

No rotational deformity was observed in any patient. None of these expansions were considered functional or cosmetic problems. One (7.6%) of the patient's fractures had a 2 cm shortening cramped together, and all remaining cases had full length. Radial nerve palsy was reported in the middle third (6.6%) due to spiral fracture and the nerve functions spontaneously recovered after 4 months. With orthopedic device, maceration occurred in three (20%) patients due to skin irritation. Skin care and dermatological products were used for these macerations without stopping the use of the orthopedic device. There was a mild restriction of motion in the 4 patients who did not affect the daily activities (Hunter G3-G4) and all movements (30.7%) on the functional evaluation according to the Hunter criteria after fracture healing. G5) 9 (69.2%) patients were observed. The most common functional deficits were restraint in 3 (23%) patients with shoulder abduction (mean 30 degrees loss) and 1 (7.6%) patients with external rotation restriction (15 degrees loss).

DISCUSSION:

Functional bracing support has been recognized as the gold standard in the conservative treatment of humeral shaft fractures. In our study, a functional humeral bracelet was reported with a send rate of 86.6%. Especially when used in closed fractures, functional bracing support for the treatment of humerus shaft fractures is associated with a high joint rate. Angular deformations are now generally functional and aesthetically acceptable. In another study, a 77% binding rate was reported (proximal third association rate of the humerus was 81% and the middle and distal thirds were 81% and 86%, respectively). However, the fracture reinforcement in this study was applied immediately after injury. We applied a functional bracelet two weeks after fracture when acute pain and swelling developed. In our study, functional evaluation was performed after fracture healing according to Hunter criteria and there

was a mild restriction of movement (Hunter G3-G4) in 4 patients (30.7%) who did not affect daily activities.) and 9 (69.2%) patients were in full range of motion (Hunter G5). Özkurt and Altay achieved a unionization rate of 80% with functional orthopedic brace and the functional outcome was excellent in 20% (G5) and 80% of patients (G3-G4). The most frequent functional losses in our study were restraint in 3 (23%) patients and 1 (7.6%) restraint in external rotation (15 degrees loss) in shoulder abduction (average 30 degrees loss).) patient. Sarmiento¹⁹ reported loss of external rotation in 21 of Fjalestad and Stromsoe fractures (38%) while causing more than 25 degrees of shoulder movement loss in only 2% of patients. Consolidation of the fracture in malrotation was frequently observed in the study, and a linear correlation was found between clinical findings and loss of external rotation and CT findings. Rosenberg and Soudry were treated with a 15-month follow-up of patients with humeral shaft fractures and followed for a mean of 30 months (range 12-57 months) and assessed with the Constant and Oxford Shoulder Scores. Although the consolidation of fractures can usually be obtained after a functional reinforcement, they have come to the conclusion that the function of the shoulder may be impaired in the injured limb²³. We documented the unionization as only two (13.3%). We documented that only two patients (13.3%) had a fracture of the distal oblique, and both patients smoked, and that they could not quit smoking while using orthopedic device fractures. despite repeated instructions. Despite the strengths of our work, some limitations deserve to mention. The sample size may not be large enough and the follow-up time was short. For this reason, we recommend a larger series of cases with a longer follow-up period. Since there are so few research data available in this regard, the need for further research can not be emphasized any more.

CONCLUSION:

Fractures of the humerus shaft treated with a functional orthopedic implantation resulted in a high rate of consolidation with excellent functional results. Early entry of functional activity along the extremity appears to provide a desirable physiological environment that leads to rapid healing and prevents loss of work power. It is easy to apply, to adjust, to avoid the risk of surgery, economically advantageous, and high acceptance of this treatment method. Because our results confirm the efficacy of this treatment modality, functional enhancement should therefore be considered primarily in the treatment of humerus. Diaphyseal fractures due to low complications are only very high success rates.

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