



A Prospective Study of Functional Outcome of Supracondylar and Intercondylar Fracture of Distal End Humerus Managed with Open reduction and Internal fixation.

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ABSTRACT

Background- Distal humerus fractures are uncommon injuries that account for fewer than 2% of all adult fractures, the complex shape of the elbow joint, the adjacent neurovascular structures and the sparse soft tissue envelope combine to make these fractures difficult to treat. The principle of anatomic restoration of articular surface, stable fixation and early motion are the optimal treatment goals. In this study, we have reviewed the functional result obtained in a series of supracondylar & inter-condylar fractures of the distal end of humerus treated by open reduction and internal fixation.

Aim & Objectives- Aim of this study is to evaluate anatomical and functional outcome of treatment of supracondylar & intercondylar fractures of distal end humerus with open reduction and internal fixation & to assess the rate of complications like non-union, malunion or infection after fixation of fracture. Objective is to achieve stable fixation and early mobilization & to evaluate the effect of this type of fracture on functional recovery and work capability in post-operative period.

Material & Methods- A prospective study of 30 cases of comminuted supracondylar & inter condylar fracture of distal end humerus treated with open reduction and internal fixation was done from period of October 2014 to April 2016. Post operatively patients were reviewed every month for the first three months and at six month till one year or until full range of motion was regained.

Results- 91% of fracture were closed and 9% were open. Majority of the patients falling in Type III (64%) Riseborough & Radin Classification. Range of motion gained post-operatively were good in 19 patients (64%) and poor in 4 patients (13%). Almost all fractures united at last follow up x-ray. 3 patients had delayed union, because of old age, type 4 injury & prolonged period of immobilization.

Discussion- These fractures are more common in middle aged and elderly individuals due to osteoporosis occurring commonly due to fall on elbow. Results were good with active mobilization of elbow started within 3 weeks. Type III fracture showed good results due to less soft tissue injury, immediate operation, less soft tissue dissection, rigid fixation, early active mobilization of elbow and absence of infection.

Conclusion- Open reduction and internal fixation provide anatomical restoration of joint and stable construct to allow early postoperative motion without compromising bone healing. It provides excellent function of elbow joint which is essential to perform day to day activities.

KEYWORDS : Distal End Humerus, Intercondylar fracture, Supracondylar fracture.

INTRODUCTION:-

Injured elbow joint presents more difficulty than almost any other because it really is three joints that move synchronously [1-2]. Supracondylar and intercondylar fracture of distal end humerus, because of their rarity and often associated significant displacement, comminution and osteopenia, present to the orthopedic surgeon with a difficult injury to treat successfully [3-6]. But modern techniques of open reduction and internal fixation provide stable construct to allow early postoperative motion without compromising bone healing [7 & 8]. The functions of elbow joint are essential for performing day to day activities, which requires the hands to reach the midline of the body such as in dressing, eating and combing hairs. This exact and demanding precision is frequently disturbed by inter condylar fracture which always results in loss of a few degree motion of the elbow regardless of any modalities of treatment [9]. The principle of anatomic restoration of articular surface, stable fixation and early motion are the optimal treatment goals [10-12]. In this study we have reviewed the functional results obtained in a series of supracondylar & intercondylar fracture of the distal end of humerus treated by open reduction and internal fixation.

MATERIAL & METHODS:-

A prospective study of 30 cases of comminuted supracondylar & intercondylar fracture of distal end humerus treated with open reduction and internal fixation from a period of October 2014 to April 2016 was done.

INCLUSION CRITERIA :-

1. Age between 18-70 years.
2. Men and Women both included in study.
3. Patients who have completed minimum of 6 months after surgery are included.
4. All types of fracture at distal humerus are included except open grade 3B.

5. Different mode of injuries are included by RTA, assaulted, fall from height, direct impact / shock.

EXCLUSION CRITERIA :-

1. Vascular injury.
2. Brachial plexus injury
3. Age less than 18 years
4. Age more than 70 years
5. Patient is not fit for surgery due to medical comorbidities.

The study was approved by the Ethical and Research Committee. After finding the suitability as per inclusion and exclusion criteria, patients were selected for the study and briefed about the nature of the study. The Intervention if any to be carried out and written, informed consent was obtained. The consented patients were included in the present study. History was obtained through verbal communication, clinical examination both local and systemic was done along with assessment of distal neuro vascular status.

Treatment protocol:-

After thorough clinical evaluation, x-ray of the affected elbow was taken in both AP and Lateral view. If needed as per fracture type, CT scans were obtained. According to the X-rays, fractures were classified according to RISEBOROUGH AND RADIN classification. The limb was immobilized in above elbow slab. Intravenous analgesics were given and intramuscular TT injections with intravenous antibiotic was administered in case of an open fracture. The patient was taken up for surgery after routine investigations e.g blood and urine investigations, ECG, chest x-ray, HIV & Hbsag. Medical fitness was obtained prior surgery for all patients.

A number of classification schemes have been proposed for the so called "T" or "Y" distal humeral fracture after 1969. The most popular system in North America is that of Riseborough & Radin [13]. Much more comprehensive scheme is the revised classification of Muller

et al. This system is very thorough & allows better documentation & specific comparison of fracture types in future[14]. The major deficiency of all systems available today is that they do not separate the high supracondylar (above the olecranon fossa) from the low supracondylar (transcondylar, through the olecranon fossa) fracture types.

CLASSIFICATION OF RISEBOROUGH AND RADIN:-

Type - I	No displacement of the fragments. Undisplaced fracture between capitulum and trochlea.
Type - II	T shaped inter condylar fracture with separation of trochlear and capitulum fragments, but not appreciably rotated in the frontal plane.
Type - III	T shaped intra condylar fracture with separation of the fragments and significant rotatory deformity.
Type - IV	T shaped inter condylar fracture with severe comminution of articular surface and wide separation of the humeral condyles.

Advantages of Riseborough & Radin Classification:-

1. Gives information about displacement and severity of the fracture.
2. Gives idea about comminution.
3. Helps in management protocol.
4. Helps to judge the prognosis of fracture.

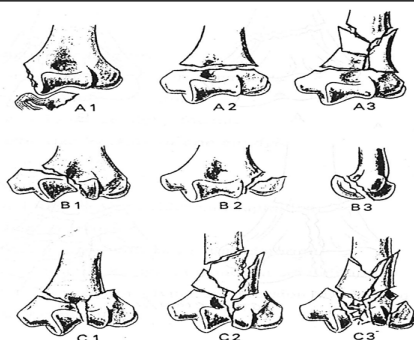
Disadvantages of Riseborough & Radin Classification:-

1. Does not give idea about fracture pattern in other view.
2. Lacks in location of comminution of supracondylar or articular comminution.
3. There was not much difference in type - I and type - II fracture. Management and prognosis is same in both type so there is no need to classify them separately.

Muller's AO classification:-

1. To fulfill the fallacy of Riseborough & Radin Classification the AO group developed standard classification system for all type of fractures for all bones of the body
2. The bi-condylar distal humeral fracture are divided into three main groups, further sub divided into three main subgroups. This system is very thorough & allows better documentation & specific comparison of fracture types in the future.

Type - A : Extra articular fracture	
A1	Avulsion fracture of collateral ligaments
A2	simple supracondylar fracture
A3	comminuted supracondylar fracture
Type - B: Intra-articular fracture of one condyle.	
B1	fracture of trochlea
B2	fracture of capitulum
B3	Tangential fracture of trochlea and capitulum.
Type - C : Bicondylar fracture	
C1	Bicondylar with or without rotatory deformity
C2	Bicondylar fracture with supracondylar comminution
C3	Bicondylar fracture involving compression and/or comminution to articular components



The AO classification of distal humeral fractures

Indication for surgery:-

1. Intra-articular displacement greater than 2 mm.
2. Marked supracondylar comminution and displacement.
3. Open fracture.
4. Compartment syndrome.
5. Multiple injured patient.

Preoperative planning:- These fractures are frequently comminuted and this is not clearly evident on the radiographs. The exact nature, geometry and configuration of fracture fragments are assessed and understood before surgery is performed[15]. This was accomplished by antero-posterior and lateral radiographs, traction radiographs and CT scans whenever necessary. High quality antero-posterior and lateral roentgenograms of elbow are required. Opposite normal side should be compared radiologically, using the appropriate implant transparencies, the fixation can be planned. A detailed neurovascular examination as well as the status of patient's compartments are documented. Proper selection of implants and can be ordered accordingly. If fracture with extensive comminution then bone graft should be planned. CT scan required to rule out associated injuries to radial head or neck that will alter surgical plan[16-17]. 3D reconstructions with radius and ulna subtracted are beneficial. CT scan is typically indicated for complexity of most distal humerus fractures. Partial intra-articular fractures required CT scan and 3D reconstruction to fully evaluate the involved fragments[18].

After initial work up, the operative fixation of the fractures was performed. Prior to surgery, detailed instructions were given to each patient that the result of the procedure considerably depended on the patient's own motivation to regain full function subsequently and that active motion of the joint in spite of the post-operative pain is an essential part of the treatment. Radiographs were taken at regular intervals to assess that the movements did not affect rigidity of fixation. Anatomical plates were made available at the time of surgery. Depending on the type of fracture assessed with the help of radiograph usually 5-10 holed plate were kept for surgery along with cortical and locking screws. In addition cancellous screws and k-wires are made available at the time of surgery. A dose of tetanus toxoid and antibiotic were given preoperatively. Preparation of the part was done an hour before surgery and above elbow Plaster of Paris slab was reapplied. Instrument to be used were checked beforehand and sterilized. Surgery was performed under brachial block and supplemented with general anesthesia whenever required.

The Position & The Approach:-

This depends on surgeons, we preferred lateral decubitus as a choice position, with the patient lying on the side opposite the involved extremity with shoulder in 90° abduction and elbow 90° flexion with well-padded support. Few surgeon prefer prone position with arm resting on side arm rest. The advantages are, it automatically exposes the posterior aspect of elbow and allows direct unobstructed surgical approach, the elbow is free to flex through a full range which is important for reduction. The gravity will maintain traction on the forearm and keeps it in correct position. Tourniquet should be applied as high as possible on the arm and for limited duration. We do not use tourniquet in our patients. The ideal surgical exposure for internal fixation of distal humerus fracture permits adequate exposure, extensile options, soft tissue dissection without osteotomy, dissection in the internervous plane and not across the nerves. All surgical alternatives to be performed through same exposure. Rapid rehabilitation of the involved part[19].

Campbell's Triceps Splitting Approach:-

"THE FRONT DOOR TO THE ELBOW IS AT THE BACK"

The Campbell's posterior approach to the elbow was used in few cases. To achieve adequate exposure a straight posterior incision over the distal humerus, curving laterally around the olecranon and then along the upper fourth of the ulna (i.e., a longitudinal incision started 10-15 cm proximal and extending 5 cm distal to the

olecranon). The ulnar nerve was identified in all cases. The radial nerve was identified when the fracture was more proximal requiring fixation close to the spiral groove. To gain adequate exposure and a clear view of the articular surface on its posterior inferior as well as anterior aspects, an osteotomy of olecranon, originally described by Cassebaum is absolutely essential[20].

Olecranon Osteotomy Approach:-

While performing the osteotomy, a very thin bladed instrument was used and the bone loss was minimal. A thin oscillating saw or osteotome is then used to make a transverse non-articular osteotomy at the bare area situated between the olecranon articular facet and coronoid articular facet, and it is completed with a thin, fine-pointed osteotome at the subchondral bone level. Once completed, the triceps insertion was detached. Proximal olecranon was gently dissected free from thin surrounding tissues and lifted proximally as a single unit. This enables the exposure of the posterior and inferior joint surface and the posterior surface of the trochlea (or trochlear fragments).

ANATOMIC REDUCTION AND SUBSEQUENT STABLE FIXATION:-

The first step is anatomic restoration of articular surface. Provisional fixation can be accomplished with a K-wire while holding the fragment with a pointed bone holding forceps. Once this is accomplished, the two condyles should be fixed in a stable manner with a lag screw using 4.0mm cancellous screw. In order to facilitate this procedure it is easier to initially drill with a drill bit from inside out through the lateral condyle prior to anatomical reduction[21]. This will ensure that the screw is in the right position. The condyles are then reduced as described above and drilled from the lateral condyle through the trochlea and fixed with the screw making sure that the threads are not at the fracture site. The ensuing step in the operative procedure is anatomic reduction and restoration of condyles to the humeral shaft. This can be temporarily accomplished with the use of irschner wires drilled from distal to proximal through condyles in a criss-cross manner. It is necessary to maintain 40 degrees of anterior alignment of condyles relative to humeral shaft when undertaking this provisional stabilization. Inclusion of a lag screw for the articular segment in the last hole of either the medial or lateral column is desirable[22]. It is important to ensure that none of the implants encroach upon the olecranon fossa which will result in impairment of extension. Care also must be taken when the transverse condylar screws are inserted so as to make sure they do not penetrate or burrow under the articular cartilage of the trochlea. Transverse screws well within the anterior or posterior limit of the condyle can pass through the articular surface of the trochlea[23]. Fixation of olecranon osteotomy can be done using the tension band wiring technique or a cancellous Screw. Closure, when using the posterior Campbell's approach, the defect in the triceps tendon are repaired with multiple interrupted sutures. When using the trans olecranon approach, reduce the proximal fragment and insert 2 K-wires in the previously drilled holes. Drill a transverse hole in the ulna distal to the osteotomy site and pass a no 20 wire through this hole around the k-wires and tighten it in a figure-eight manner. A negative suction drain is kept and incision is closed in layers.

POST-OPERATIVE CARE:-

1. The patient is placed in a posterior splint (i.e. above elbow slab) with a bulky dressing and neurological status is checked.
2. After 48 hours, the first post-operative dressing is done, drains are removed.
3. The subsequent dressing is light and firm.
4. Patients were discharged by 6th day and advised to review on 11th day for dressing and suture removal was done on 21st post-operative day.
5. The patients were given injection Cefuroxime 1.5g and injection Amikacin 500mg for 5 days and converted to oral antibiotics which were continued for 5 days.
6. The patient was advised at the time of discharge to continue the slab, arm pouch and oral antibiotics.

Follow up:-

The patient were called for follow up on 11th postoperative day for dressing and later the sutures were removed on 21st postoperative day. In patients with rigid fixation, active gentle motion of involved limb several times a day in concurrence with the pain was advised. Pt can be subjected for active physiotherapy after one month and full activity after 3 months. Full activity was allowed at three to four months as fracture consolidation occurred. Post operatively patients were reviewed every monthly for the first three months and at six month for a year or until full range of motion was regained.

MAYO ELBOW PERFORMANCE SCORE:-

Function:

Pain (max., 45 points)

None (45 points)
Mild (30 points)
Moderate (15 points)
Severe (0 points)
Mean

Range of motion (max., 20 points)

Arc > 100 degrees (20 points)
Arc 50 to 100 degrees (15 points)
Arc < 50 degrees (5 points)

Stability (max., 10 points)

Stable (10 points)
Moderately unstable (5 points)
Grossly unstable (0 points)
Mean

Function (max., 25 points)

Able to comb hair (5 points)
Able to feed oneself (5 points)
Able to perform personal hygiene tasks (5 points)
Able to on shirt (5 points)
Able to put on shoes (5 points)
Mean

Mean total (max., 100 points)

RISEBOROUGH AND RADIN Rating criteria for evaluation of result:

Result Range of motion
Flexion Further
Deformity flexion
Good <30 115 with or without minor subjective symptom
Fair 30-60 115 -do-
Poor >60 <115 with or without major subjective symptom

Minor subjective symptom: Mild pain on heavy weight lifting, aching in damp weather.

Major subjective symptom:- Sufficient to limit functions significantly.

RESULTS:-

The maximum incidence was recorded in third and fourth decade of life. The youngest patient was 18 years and the oldest patient was 70 years old in our study [Table 1 & Diagram 1]. Fracture was equal in both male and female [Table 2]. Majority of patients had fracture, due to direct fall on elbow [Table 3 & Diagram 2]. 91% of fracture were closed and 9% were open [Table 4]. Among open fractures most were compound Gr.II injuries in our series. One patient having compound grade 2 fracture of distal humerus had infection in post-operative period that subsided by debridement of wound and antibiotics. Maximum number of patients falling in Type III, Type IV are rare injuries and they are due to high velocity trauma grading of Riseborough and Radin classification system [Table 5 & Diagram 3]. 23% patients we had done ORIF through Trans olecranon approach and 77% of patients ORIF done through posterior Triceps lifting approach in our series [Table 6].

Postoperative mobilization of the elbow was started within 1-3 weeks in 77% cases, within 3-6 week in 23% [Table 7 & Diagram 4]. 57% of patients had complications following surgery, among them 1 patient developed infection of wound for which they required daily dressing and antibiotics. 1 patient had ulnar nerve palsy due to improper placement of implant and 1 patient had malunion leading to cubitus varus deformity, 1 patient having myositis ossificans and none patients had implant failure [Table 8 & Diagram 5]. Main complication is stiffness may be due to inadequate anatomical reduction of articular component, noncompliance of for physiotherapy. Range of motion gained after operation were good ROM achieved in 19 patients (64%), fair amount of ROM achieved in 7 patients (23%) and poor ROM achieved in 4 patients [Table 9].

64% of patient having good results, 23% of patient having fair results and 13% patient had poor result due to restricted elbow movement [Table 10]. The results of operative open reduction and internal fixation of supra condylar and inter condylar humerus fractures of in 30 patients were 64% good, 23% fair and 13% poor [Table 11].

In our study patients got adequate rehabilitation and with the help of physiotherapy, the range of movement achieved adequately even after immobilizing for more than 3 wks. Poor result among type 4 due to inadequate anatomical restoration of articular surface even after best possible effort and noncompliance of patient towards physiotherapy because of post-operative pain and lack of awareness. Almost all fracture were united seen in last follow up x-ray. 3 patients had delayed union, because of old age, type 4 injury & prolonged period of immobilization and 3 patient had malunion [Table 12].

Table No-1:- Age Incidence

Age(years)	Cases	Percentage
<20	4	13%
21-30	9	30%
31-40	8	27%
41-50	5	17%
>50	4	13%

Table no-2:- Sex Incidence.

Sex	Cases	Percentage
Male	15	50%
Female	15	50%

Table No-3:- Mode Of Injury.

Mode	Cases	Percentage
Direct fall on elbow	14	47%
Vehicular accident	16	53%

Table No-4:- Types Of Fracture.

Type	Cases	Percentage
Closed	27	91%
Compound grade 1	01	3%
Compound grade 2	02	6%

Table No-5:- Riseborough & Radin Classification Type of Fractures.

Type	Cases	Percentage
Type 1	0	
Type 2	06	20%
Type 3	19	64%
Type 4	05	16%

Table No-6:- Surgical Approach.

Approach	Cases	Percentage
Posterior Trans olecranon	07	23%
Triceps lifting approach	23	77%

Table No-7:- Period Of Post-operative Mobilization.

weeks	Cases	Percentage
<2wks	0	0
2-3wks	23	77%
>3wks	7	23%

Table No-8:- Complications.

Complication	Cases	Percentage
None	13	43
Delayed union	3	10
Stiffness	14	46
Infection	1	3
Ulnar nerve palsy	1	3
Olecranon osteotomy nonunion	1	3
Myositis ossificans	1	3

Table No-9:- Range Of Elbow Motion At Last Follow Up.

Range of Elbow Movements			Cases	Percentage
	FLEXION DEFORMITY	FURTHER FLEXION		
Good	15-30	120-130	19	64%
Fair	30-40	90-120	7	23%
Poor	40-50	<90	4	13%

Table No-10:- Patient's Satisfaction (According to Mayo's Elbow Score)

	Cases	Percentage
<60 Poor	4	13%
61-75 Fair	7	23%
76-90 Good	19	64%

Table No-11:- Results According to Riseborough & Radin Criteria.

Result	Cases	Percentage
Good	19	64%
Fair	7	23%
Poor	4	13%

Table No-12:- Radiological Union.

X-ray finding at last follow up	Cases	Percentage
Union	24	80%
Delayed union	03	10%
Mal union	03	10%
Nonunion	00	

Diagram 1:- Age Distribution.

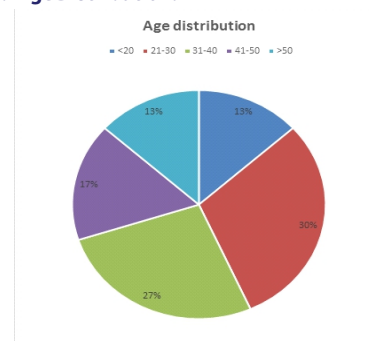


Diagram 2:- Mode Of Injury.

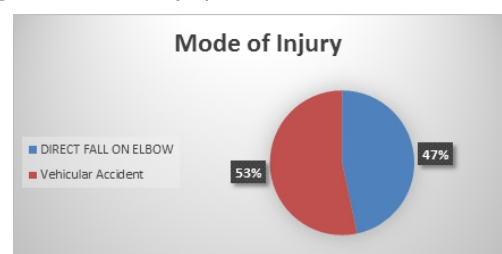
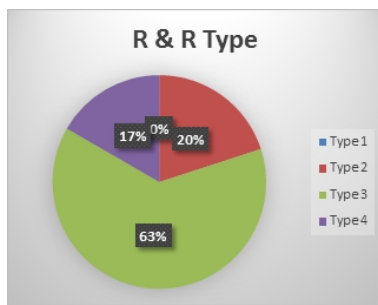
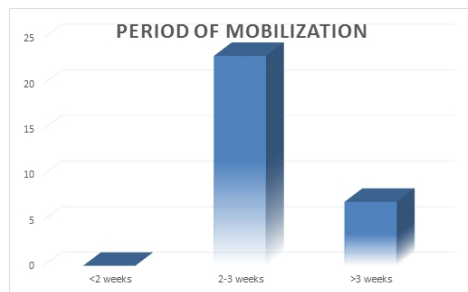
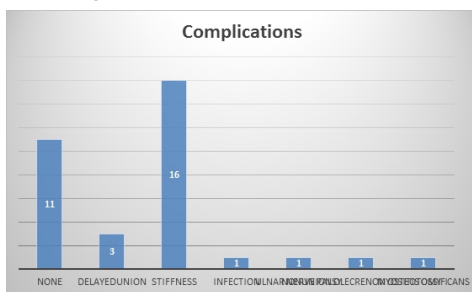


Diagram 3:- Riseborough & Radin Classification**Diagram 4:- Period Of Post-operative Mobilization.****Diagram 5:- Complications****DISCUSSION:-**

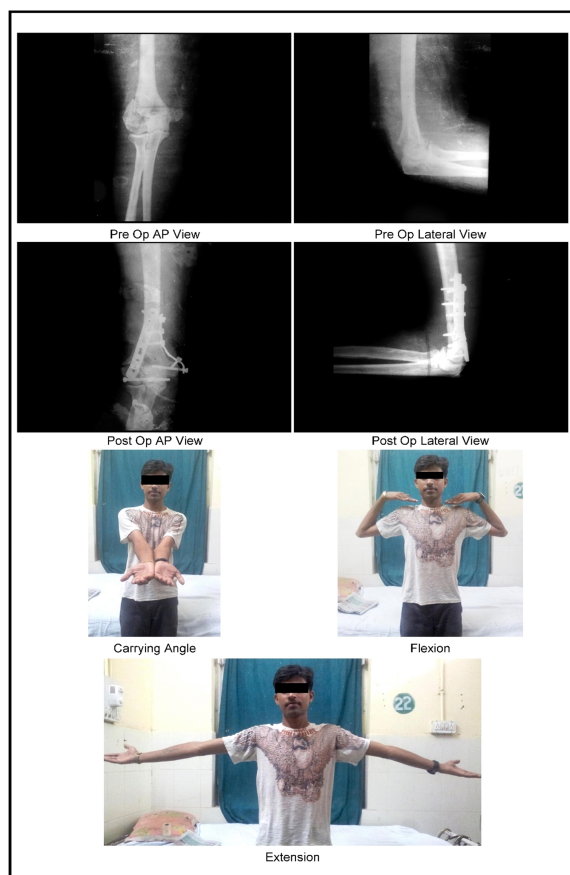
The management of inter condylar fractures of humerus has progressed from conservative approach in the form of cuff and collar sling, olecranon pin traction, closed reduction and pinning, closed reduction and plaster immobilization to the modern era of operative management in form of open reduction and rigid fixation, and further advancement in form of total elbow arthroplasty. With better understanding of surgical anatomy and biomechanics of elbow joints, the development of new implants and improved surgical techniques have improved the results of operative treatment of intercondylar fractures and increased the indications of operative management. Even with modern available operative facilities the management of supracondylar & inter condylar fracture has been an enigma for an orthopedic surgeon because the achievements of perfect articular congruity is difficult which leads to an inevitable restriction of elbow movement at varying degrees. The incidence of Supracondylar and Inter condylar fractures was found high among middle and old age population in our study which corresponds to earlier studies by Jupiter et.al 1985 & Henley et.al. 1987[24 & 25]. Average age in most series is 4th and 5th decade. This suggest that inter condylar fractures are more common in middle and old aged patients. This is because of osteoporosis of bone, weakened metaphyseal bone and poor bone stock. So inter condylar fracture are easily caused by minor trauma like fall on elbow in middle and old age. Now-a-days, there is increasing incidence of intercondylar fracture in younger age group patients. This is due to increased road traffic accidents. Less than 20 year of age patient have good results (all 4 having good results), in between 20-50 years most of patient having good results but three patient having poor results due to type 4 injury and associated with poly trauma, increased injury operation duration due to poly trauma and late presentation of patient. Most of patient were from type 3 Riseborough & Radin Classification system and type 4 were rare

injuries (they occur due to high velocity trauma). It corresponds to earlier studies by Jupiter et.al 1985 & Henley et.al 1987[26-28]. Jupiter series shows (79.4%) good result, Bradford series shows (70%) good result and present series shows (64%) good result[29]. This show, that in all series results of operative treatment of supracondylar and intercondylar fracture distal end humerus are good and more than 60% of cases. This suggest that operative treatment is preferable in supracondylar & intercondylar fracture distal end humerus. Poor results were 3 (8.8%) cases in Jupiter series, 2 (5.8%) cases in Bradford series and 4 (13%) cases in present series. This poor results is due to associated injuries prevents active mobilization of elbow causing severe restriction of elbow movement on long follow up, noncompliance of patient for physiotherapy. Results were good with active mobilization of elbow started within 3 weeks (100%) good results (23 cases) , >3 weeks 4(57.14%) cases good results and 2 cases (28.57%) fair results and 1 case(14.28%) poor results. It highlights the critical role of early active physiotherapy in management of supracondylar & inter condylar fracture. Good results are more in triceps lifting (100%) compared to trans olecranon approach (57.28%). Triceps lifting approach gives good results in type II and type III fracture because in this fracture exposure of articular surface is not required[30-32]. Less peri articular dissection leads to less subsequent peri articular fibrosis. This loss of extension is small range and does not affect activities of daily living. Further, extension loss of small range is compensated by gravity.

Transolecranon approach were used in both type III and type IV fracture but it is more useful in type IV fracture as it gives better exposure of articular surface, less peri-articular dissection allows good reduction of articular surface, less subsequent peri-articular fibrosis. In present series 19 cases good results in cases, fair results in 7 cases and poor results in 4 case. Excellent results found in 9 cases where all fractures are closed type and these patients were operated within 72 hours, all fractures were fixed with bipolar plates and screws. In fair results most patients were closed type III fracture, fixed with plates and screws, but active mobilization and exercise were started late around more than three weeks. So final outcome of range of motion of elbow joint is fair.

Poor results in 4 cases due to type 4 injury, associated injuries, increased injury operation interval. Prolonged period of immobilization. good results were more common in type III fracture than in type IV fracture. In type IV fracture, fair and poor results were because of articular and supracondylar comminution causing poor fixation, more soft tissue injury, require more immobilization, lack of active mobilization exercise and infection. Even after best possible effort we are able to achieve good results in type 4 injuries. In type III fracture, good results were due to less soft tissue injury, immediate operation, less soft tissue dissection, rigid fixation, early active mobilization of elbow and absence of infection. 1 poor result in type three was due to compound injury & prolonged period of immobilization.

Following are three Cases from study:-**CASE NO.1:-Preoperative & Post-Operative Xray and Postoperative Elbow ROM.**



CASENO-3:-



Preoperative and Post operative AP & Lateral Xrays

Extension, Flexion and Ulnar Claw hand
Clinical images at 6 months followup

CONCLUSION:-

Most of the Supracondylar & Intercondylar fracture distal end humerus fracture are caused by fall on elbow. Riseborough and Radin type III and IV are more common than Type I and II. Although trans olecranon approach used less commonly, but it should be used in type IV fracture than Campbell's triceps tongue approach. Rigid internal fixation is best accomplished by dual plate fixation and for optimum biomechanical stability both plates should be placed at a right angle to each other. Post-operative physiotherapy is most vital part in management of these fractures and preferably physiotherapy should be started within 7 days of operation. The

ulnar nerve palsy can be prevented by proper placement of implants and size of implants and gentleness during surgery and inserting the screw from medially for intercondylar fracture. More than 90% of excellent to fair results can be obtained by open reduction internal fixation. The best results are obtained if the Supracondylar fracture of humerus fracture are reasonably aligned with minimum soft tissue damage. The principle of anatomical restoration of articular surface, stable rigid fixation and early motion are the optimal treatment goals.

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