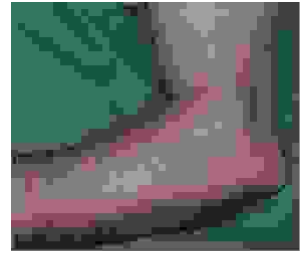


ORIGINAL

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TREATMENT OF NEGLECTED ELBOW DISLOCATION BY DACRON MESHWORK INTERPOSITION ARTHROPLASTY



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ABSTRACT... drmuhammadaziz@yahoo.com **Objective:** To observe the results and complication of interposition arthroplasty by using dacron meshwork. **Design:** A prospective and retrospective study. **Period:** 1990 to 2003. **Subject and Method:** Forty cases of old unreduced dislocated elbows were treated with the procedure of interposition arthroplasty by using Dacron meshwork. **Results:** Young and middle aged patients gave best results. Poor results by the elder patients and the patients who sought for treatment after prolong period. **Conclusion:** Elbow responds well to the arthroplastic treatment.

Key words: Elbow dislocation, dacron meshwork, arthroplasty.

INTRODUCTION

Old unreduced dislocations of the elbow are rare in advanced countries because of availability of adequate medical care¹. These are occasionally seen in developing countries. It may be the result of poor initial treatment or fault of the patient in, not seeking of medical advice. The non reducibility of the dislocation depends upon individual case².

The treatment of the unreduced dislocation (80% posterior) is challenging for orthopaedic surgeons in developing countries³. Many methods have been tried to gain mobility in ankylosed joints. Various non absorbable materials have been employed as interposition e.g a piece of wood, ivory pig, pupovac magnesium sheet, gutta percha, temporary gauze packing, yellow wax, lanolin, periosteal flaps, cartilage

flap of muscle and fascia Lata⁴. However, it was concluded that there was no ideal interposition agent available⁵.

Interposition arthroplasty is most suited for patients who require a greater angle of motion or relief of pain to continue their activities of daily living. In young patients with post traumatic arthritis, the results of replacement arthroplasty are unpredictable and interposition arthroplasty is a viable option for such cases⁶.

AIMS & OBJECTIVES

To assess the results of interposition arthroplasty by using Dacron meshwork in patients between 18-62 years of age.

To find out the difficulties and complications related to the surgical procedure.

PATIENTS & METHODS

Forty cases of old unreduced dislocation of elbow were treated by surgery with interposition arthroplasty using dacron meshwork as interposition material during the year 1990 to 2003 . Duration of elbow dislocation was 3 months to 3 years and the dislocations were closed and not open. The age of the patients were 18-60 years or more.

Out of forty patients 28 were young (18-39years),8 were middle aged (40-59years) and 4 patients were old i.e 60 years or above. The mean age was 32 years. The oldest patient was a male of 65 years.

All patients complained of marked limitation of movement and pain. Before surgery the elbows were either stiff in flexion, or at least in a non-functional range of movements. Both flexion and extension of the elbows before surgery were measured and charts were made to evaluate their movement after surgery. Rotation i.e supination and pronation was also measured by a hand held goniometer, posterior dislocation being (n=24) and posterolateral (n=16). There was no anterior dislocation. Other types of dislocation were not encountered during the course of this study.

Associated fracture was present in 4 patients. Thirty six Patients had received treatment from so called setters, 2 patients from rural health centers and 2 from both. The patients were thoroughly examined and investigated to evaluate their fitness for surgery, anaesthesia and presence of any systemic disease. General anaesthesia was used for all the patients. Campbell approach was adapted to reach the elbow joint. The elbow was reduced with the joint fixed at 90 degrees. Reduction was transfixed with K wire if felt necessary to maintain reduction. After complication of surgery the limb was put in a plaster of paris slab.

Each patient was followed up every two months

for minimum of six months with regard to the following features;

RANGE OF MOVEMENTS

The range of movements of elbow was compared with the movement of contra lateral (Normal) joint. A standard protocol for geometric examination referenced from osseous land mark was noted . These were assessed and noted at every followup visit.

PAIN

Discomfort and generalized aching in the elbow was noted at each followup visit.

INSTABILITY

Symptoms caused by valgus deformity indicative of mild instability were graded. Gross instability was diagnosed if there was a history of recent dislocation or if on physical examination valgus stress applied manually, the elbow demonstrated laxity of the joint. It was noted at each follow up visit for comparison.

MUSCLE POWER AND BULK

Major neuromuscular defect was noted. Sensations to the pin prick and two point discrimination were evaluated in all patients who had neurological complaints either at the time of injury or subsequently. Motor and sensory examination in a standard way was carried out at each follow up visit.

WOUND HEALING

status of healing was observed at each followup visit.

INFECTION.

Wound infection was judged and if pus suspected or found coming out of the wound, it was sent to the laboratory culture and sensitivity at each followup visit.

ROENTGENOGRAM

Both anterior and lateral views were taken in full flexion and extension of the elbow to show the range of motion.

To evaluate the results three variables were recorded for each patient.

1. Degree of pain.
2. Range of movements.
3. Instability.

These were recorded before surgery and at the time of follow up. Points were awarded according to the Table I. Overall results were classified on the basis of total points i.e good (satisfactory) if patient obtained 75 points, fair (Acceptable) with 50- 74 points and poor on scoring <50 points.

Table-I . Showing the points awarded according to degree of pain, motion and instability.	
PAIN	POINTS
Non	60
Mild	40
Moderate	20
Severe	0
MOTION. Extension & Flexion.	
> 90 degrees	30
69-89	20
30-59	10
<30degree	0
INSTABILITY	
Non or mild: Does not limit activity	10
Moderate	5
Severe	0

RESULTS

The clinical results of interposition arthroplasty (By using Dacron meshwork) of the elbow joint were rated on the basis of rating system proposed by Morry⁷.

This rating system consists of evaluation of pain, range of movement and functional instability. This numerical system allows better evaluation of results. The results were evaluated after a period of six

months follow up.

Regarding the age of patients, which have a great correlation with the amount of maximum success in the results, young and middle aged patients obtained higher rate of success as compared to the elderly patients.

Those patients who did not appear for followup and post operative physiotherapy, had higher percentage of poor results. In contrast to this, fair results were obtained by those patients who attended the physiotherapy sessions or who did exercise of the elbow after surgery.

The main effects of the factor such as the age of patients, duration of dislocation, post operative complications such as infection and post operative exercise have also been observed on the range of motion, functional stability and pain. As surgery has resulted invariably in some loss of stability depending upon the gained range of motion. correlation between range of motion was also made with degree of instability.

RANGE OF MOTION

a. FLEXION & EXTENSION LOWER CASE

Before surgery 30 patients had flexion extension range of less than 30 degrees. While in ten patients the range of motion was 30-59 degrees. At six months follow up, in 28 patients the movement range was 90 degree or more, in 2 patients, it was 60-90° and in 10 patients had less than 30 degrees motion.

Pre-operative mean score of motion was 2.5 points. At six months follow up examination, mean score was 22 points, thus total achievement was 19.5 points.

b. ROTATION PRONATION & SUPINATION LOWER CASE

The mean pre-operative rotation of the fore arm was

from 41 degrees of pronation (Range from 0-90 degrees) to 46 degrees of supination (Range from 5-80 degrees). At six month follow up the mean pronation was 61 degrees (Range from 15-90 degrees and mean supination was 64 degrees (Range from 10-90 degrees).

PAIN

Pre-operatively 14 patients had no pain, 20 patients complained of mild pain and 6 patients had moderate pain.

At six months follow up 12 patients were pain free, 24 patients complained of mild and 4 patients had moderate pain.

INSTABILITY

Before surgery 18 patients had mild instability, 22 patients had moderate and no patients had severe instability on physical examination using passive stress on the patient.

At six months follow up, only eight elbows were stable (Mild or no instability). Moderate instability was present in 30 and severe instability was seen in two patients

OVERALL RESULTS

Pre-operatively all the elbows were rated as poor i.e their score level was considered less than 50 points.

At six months follow up 22(55%) patients obtained a score of more than 75 points and rated as good. 20% (n=8) achieved score range between 50-74 points and rated as fair and 25% (n=10) obtained less than 50 points and rated as poor.

Two patients with poor results occurred in those patients who belonged to young age group. Four poor results occurred in those patients who were middle aged and 10% (n=4) poor results occurred in those patients who were from old age group. Regarding the duration of dislocation 10% (n=4) poor results achieved by those patients whose duration of dislocation was more than one year, 10% (n=4) poor result was achieved by those whose

duration of dislocation was 7-12 months and 5% (n=2) poor result was obtained by those patients whose duration of dislocation was 3-6 months.

COMPLICATIONS

Post-operative infection was the main problem during the present study. 60% of the total complication were due to post operative infection. In such cases pin was removed and treatment with proper antibiotics started, the drainage ceased within 3-5 days in rest of the patients it took average fifteen days to control the infection. Rate of infection was 20% (n=8). Ulnar nerve involvement was also seen (n=2) complete recovery was seen in both the patients. Paralysis of all three nerves seen (n=2), alone median or radial nerve was not seen.

Other complication like seroma or haematoma formation, mediolateral subluxation, vascular complication and triceps rupture, bone resorption, heterotopic bone formation were not seen during the course of present study.

DISCUSSION

The satisfactory management of the neglected elbow injuries has been a problem in many developing countries where gainful employment is difficult to obtain. A painful elbow with restricted movement or one with very limited motion is a handicap not only in daily living but also in facing the challenge of able bodied in employment opportunities.

Dislocation of the elbow may be irreducible after three weeks from the time of injury⁸. Close reduction of the elbow is impossible after three weeks even after preliminary skeletal traction. As more time passes adhesions are formed that restrict motion causing the elbow to be held in complete extension or twenty degrees of flexion⁹.

AGE INCIDENCE

In present study total achievement of 55% in the range of motion was obtained, young patients secured 47.5% while middle aged obtained 7.5%. It means prognosis is better in young patients. The

reason of achieving poor results in elderly patients may be due to more stiffness and more muscle wasting.

SEX INCIDENCE

In present study male (n=36) and female (n=4) both were included. This difference in sex distribution in present study is because of social set up in our country. Most of the female patients are house wives and they do not perform laborious activities while males are mostly exposed to heavy duties and chances to the injury are comparatively more. In the present study out of total female (n=4) patients, good results were achieved in (n=3) patients and fair result in (n=1) patient. It means difference of sex is not a major factor which affects the results of arthroplasty^{10,11}.

SIDE EFFECTS

Left elbow is most commonly involved as compared to the left¹⁰. In present study left (n=24) and right (n=16) both elbows were included. In present study better results were noticed in right extremity as compared to the left. All the patients were Muslims and they were in habit of working with right hand, so this might be the possible cause in achieving more mobility as compared to left.

DURATION OF DISLOCATION

If the duration of dislocation is longer and patient is young, arthroplasty should be considered as first option¹². As dislocation become old it gets ankylosed. The causes of ankylosis are multiple. The procedure can be carried out with safety at least a year after disappearance of all symptoms of disease. Out of 24.5% points achievement in range of motion, 11.5% points were obtained by the patients (n=22) having dislocation of elbows 3-6 months old. 3.75 % by patients (n=2) with 7-12 months old and 10% points by patients (n=6) whose dislocated elbow were more than one year old. Mean duration was 14 month, and maximum time elapsed after which the patient operated was 5years.

The maximum achievement was obtained in those cases whose duration of dislocation was less and the

patient was young. In old cases muscle undergo atrophic changes and it is difficult to rehabilitate them. In addition to this, age play an important role in achieving good results. The young patient are mobile and active, moreover they respond well to post operative physiotherapy.

RANGE OF MOVEMENTS

a. FLEXION & EXTENSION

Pre-operatively all patients had flexion extension range of <30 degrees except (n=10) patients whose range of movements was 30-59 degrees. At six month follow up > 90 degrees (n=28) were obtained. 60-89 degrees (n=2) movements and patients (n=10) secured <30 degrees of the elbow or were ankylosed.

Pre-operatively mean score of motion was 2.5 points. At six months follow up mean score of range of movements was 22 points, thus total achievement of 19.5 points i.e 65%.

b. PRONATION & SUPINATION

The mean pre-operative rotation of the fore arm was 41 degrees of pronation (Range 0-90 degrees) to 46 degrees of supination (Range 5-80 degrees). At follow up after six months the mean pronation was 61 degrees (10-90 degrees) and mean supination was 64 degrees (10-90 degrees). The difference between pre-operative and post operative pronation and supination was not significant.

INSTABILITY

At follow up stable elbow (n=8), moderately unstable (n=30) and severely unstable (n=2) were seen .some instability is present in all cases and become functional problem to a person who is dependent on crutches for mobility¹³. It has been suggested that surgery should not be performed in patients whose work involves heavy labor, in which great strength and absolute stability are essential or in a patient who uses crutches for walking⁸. However mild degree of instability is not a reason of disability in function provided that joint has good range of motion , good muscle strength and freedom from pain.

PAIN

There was no pain post-operatively (n=12) , mild pain (n=24), and severe pain (n=4) was noticed .Usually no patient has more pain after operation than before and it is not a problem for the patient before and after operation¹² .It always subsides when movements begin¹⁴.

CONCLUSION

Neglected dislocated cases of the elbow are common in our country due to presence of so called bone setters. Our results have proved that the elbow lends itself well to the arthroplastic measures. The best results were achieved in young and middle aged patients while in elderly patients the results were not encouraging. The duration of dislocation plays some role but it was not a decisive element in achieving good results .

Indigenous treatment should be prevented by health facilities in remote areas and by giving health education to the people. people should also be educated to seek medical advice well in time.

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