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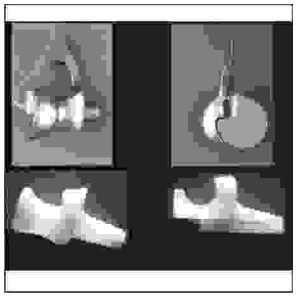
USE OF FASCIA LATA & DACRON;
IN INTERPOSITION ARTHROPLASTY OF THE ELBOW



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ABSTRACT... drmuhammadaziz@yahoo.com **Setting:** In Civil Hospital and Bolan Medical College Complex Hospital Quetta. **Period:** From 1990 to 2003. **Materials & Method:** Eighty cases of old neglected elbow dislocation were treated. by arthroplasty using fascia lata (Group A) and dacron meshwork (group B). Forty cases were included in each group. **Results:** Surgery was followed by physiotherapy. Patients were examined periodically upto six months. To evaluate the results three variables i.e range of motion, instability and pain were recorded for each patient for six months. These were recorded before operation, at the time of review and points were awarded. Young patients and dislocated elbows of less duration gave better results. Prognosis in males (As compared to females) and right elbows (As compared to left) was better. Group A achieved better results than group B. **Conclusions:** Results of both the interposing materials are encouraging. Fascia lata gave better results than dacron meshwork

INTRODUCTION

Old unreduced dislocations are serious surgical problems. The non reducibility of the dislocation depends on individual case[1]. If dislocation is not more than five months old the articular surfaces do not undergo changes except those cases in which fractures are also associated with dislocation. However the patients who are seen after six months to one year, important changes occur in the articular surfaces[2].

Interposition arthroplasty should be considered as first option in younger patients with post traumatic arthritis. Interposition arthroplasty can be effective in these patients and remain an alternative to total elbow arthroplasty[3]. In addition to the elbow this basic technique has been used for the treatment of arthritis involving temporomandibular, shoulder wrist, knee and hip joints; of these, elbows have been reported as second only to the temporomandibular as the joint most amenable to the technique[4]. Within the weight bearing joints pressure areas have been described to account for the observed degenerative leisions[5]. Post-operative treatment is an essential part of the arthroplasty procedure and success of the operation depends to a

great extent on the co-operation of the patients in after care. The patient should practice muscle contraction exercises of the arm and fore arm hourly in order to maintain their tone. Pain is not a major complaint by these patients unless the elbow has recently been manipulated by some bone setters.

The principle goal of treating elbow joint arthritis or dysfunction is the relief of pain and return of function to as near normal level as possible, while maintaining reasonable stability.

This study was carried out to evaluate and compare the results of two methods of interposition arthroplasty related to range of movements, instability and pain in affected elbow.

MATERIAL AND METHODS

During the years 1990 to 2003 eighty cases of old unreduced dislocation of elbow were treated by operation with interposition arthroplasty by using fascia lata and Dacron meshwork. In all the cases duration of dislocation was not less than three months, the reduction was closed and not open, the patients were eighteen years or more at the time of injury.

Patients were divided into two groups. In group A fascia lata and in group B dacron meshwork was used as an interposition material. Fascia lata was taken from patient's own thigh. Age and sex distribution of each group has been shown in (Table I & II). All patients complained of pain and limitation of movements. Before operation the elbows were either stiff in flexion or in extension at least in a non functional range of movements. Both flexion and extension of the elbow were measured before and after operation and charts were made to evaluate their improvement after operation. In group A dislocation with associated fracture (n=14) and without fracture (n=26). In group B dislocation with out fracture (n=22) and with fracture (n=18).

Table-I. Showing age and sex distribution of the patients (Group A).

Age	Male	Female	Total
18-39 yrs	30	4	34
40-49 yrs	2	4	6
60 & above	0	0	0
Total	32	8	40

Table-II. Showing age and sex distribution of the patients (Group B).

Age	Male	Female	Total
18-39 yrs	24	4	28
40-49 yrs	8	0	8
60 & above	4	0	4
Total	32	8	40

Before operation patients were thoroughly examined and investigated to evaluate their fitness for general anaesthesia and operation. Campbell's approach was used to approach the elbow joint. The joint was reduced with elbow flexed at 90 degrees. Reduction was transfixed with K wire if felt necessary to maintain reduction. After completion of operation the limb was put in a plaster of paris slab.

Each patient was carefully questioned and examined after two months for upto six months minimum with regard to the range movements, instability and pain. At the most recent follow up examination, the range of movement of the elbow was compared with that of movements of contra lateral (Normal) joint. A standard protocol for geometrical examination referenced from osseous land marks was noted. Vulgus imposed

symptoms indicative of mild instability was graded. Gross instability was diagnosed and if there was a history of recurrent dislocation or if at physical examination vulgus stress applied manually to the elbow demonstrated laxity of the joint

The clinical results were rated on the basis of rating system proposed by Morry[6]. This rating system consists of evaluation of range of movements, functional instability and pain these were recorded before operation and at the time of review i.e after six months and points were awarded according to the (Table III). Overall results were classified, based on total points i.e good (Satisfactory) if patient scores 75 points, fair (Acceptable) 50 -74 points and poor on scoring < 50 points.

Table-III. Showing the points awarded according to degree of pain, motion and instability.

CRITERIA	POINTS
Pain	
None	60
Mild	40
Moderate	20
Severe	00
Motion Flexion & Extension	
>90 Degrees	30
69-89 Degrees	20
39-59 Degrees	10
<30 Degrees	00
Instability	
Non or mild: Does not limit activity	10
Moderate: Impairs certain functions	05
Severe: Markedly limited activity	00

RESULTS

Post-operative physiotherapy is necessary for the achievement of better results . Those patients who did not follow the post –operative physiotherapy, had higher percentage of poor and fair results as compared to those attended the physiotherapy sessions or who exercised the elbow after operation.

The main effects of the above factors such as age of the patients, duration of dislocation, post-operative complications such as infection and post-operative exercise, have also been observed on the range of motion functional instability and pain.

1. RANGE OF MOTION

a) FLEXION & EXTENTION

In group A before operation all the patients had a range of motion > 30 degrees. Post- operatively the the patients (n=26) obtained a movement range of 90 degrees or more. There were (n=8) patients who had a movement ranged from 69-89 degrees and patients (n=6) obtained rang of movements from 30-59 degrees. In no patient the range of motion was below 30 degrees.

In group B, before operation all except (n=10) patients had flexion extension range < 30 degrees. In (n=10) patients the range of motion was from 30-59 degrees. At six months follow up, in (n=28) patients the movement range was 90 degrees or more. Patients (=2) obtained range 60-89 degrees and patients (n=10) had less than 30 degrees motion.

b) PRONATION & SUPINATION

In group A the mean pre-operative rotation of the fore arm was from 43 degrees of pronation (Range from 10-80 degrees) to 47 degrees of supination (Range of

movements 10-85 degrees). At follow up after six months the mean pronation was 59 degrees (Range from 20-90 degrees) and mean supination was 63 degrees (range from 20-90 degrees).

In group B 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 months follow up after six months the mean pronation was 61 degrees (Range from 15-90 degrees) and mean supination was 64 degrees (Range from 10-90 degrees).

2. INSTABILITY

Pre-operatively mild or non instability (n=20) and no severe instability was seen in group A on physical examination using passive stressing of the joint. Post-operatively at six months follow up elbows (n=8) had mild or non instability, moderate instability (n=30) and severe instability (n=2).

Interposition arthroplasty of the Elbow by using Fascia lata and Dacron meshwork, A comparative study5.

In group B before surgery (n=18) patients had non or mild instability, moderate instability (n=22). No elbow was severely instable. At six months follow up only (n=8) elbows were stable (Mild or no instability) .Moderate instability (n=30) and severe instability (n=2).

3. PAIN

Before surgery there was no pain (n=10) in the elbows of patients, mild pain (n=14) and moderate pain in(n=16) patients and no elbow had severe pain in the patients included in group A. At six months follow up no pain (n=12), mild pain (n=20) and moderate pain (n=8).

There was no pain (n=10), mild pain (n=19) and moderate pain (n=11) in the elbows of the patients included in the group B. At six months follow up, pain free (n=12), mild pain (n=24) and moderate pain (n=4).

OVERALL RESULTS OF INTERPOSITION ARTHROPLASTY.

GROUP A

Pre-operatively all the elbows were rated as poor i.e their score level was <50 points. At six months follow up 65% (n=26) obtained a score of more than 75 points and rated as good. 15% (n=6) points achieved score range between 50-74 points and rated as fair. 20% (n=8) 0btained <50 points and were rated as poor. Out of these (n=8) patients poor results were obtained by those patients (n=6) who belonged to young age group, (n=4) suffered from post -operative infection and (n=2) patients had associated fracture of ulna as well as infection supervened post-operatively. Remaining patients (n=2), obtaining poor results had age of 50 years and they were operated upon 8 months after dislocation.

GROUP B

All the elbows were rated as poor i.e their score level was < 50 points before operation. At six moths follow up 55% (n=22) patients obtained a score >75 points and rated as good. 20% (n=8) achieved score ranging between 50-74 points and 25% (n=10) patients obtained <50 points and rated as poor. Out of these, poor result occurred in those patients (n=2) who belonged to young age group, middle age(n=4)and old age group(n=4).

DISCUSSION

Gross cases of neglected trauma either due to dislocation, fracture dislocations or badly malunited fractures are encountered because of indigenous system of treatment in most of the developing countries. The elbow joints ,so treated suffer more by the treatment than their original injuries. Often simple dislocations are converted into fracture dislocations.

Destruction of the articular surfaces in old dislocations as a result of obstruction of nutrition to the joint cartilage

and malignment of the joint may be treated by interposition or excisional arthroplasty. In such cases there is no loss of bone itself[7].

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

Dislocated elbow may be regarded as irreducible after three weeks from the time of injury[8]. Close reduction of the elbow is impossible after three weeks even after preliminary traction. As more time passes, adhesions develop that restrict motion causing the elbow to be held in complete extension or 20 degrees of flexion[2].

1. AGE INCIDENCE

In group A from mean achievement of 25 points in the range of motion, young patients obtained 21.5 points score and middle aged scored 3.5 points.

In group B from mean achievement of 22 points in the range of motion, young patients secured 19 points and middle aged obtained 3 points. It means younger is the age better are the results. failure to achieve better results in elder patients were due to the fact that old people are reluctant to exercise, they have more muscle wasting and have less responsibilities regarding to the adjustment in society than young and enthusiastic people

It means fascia lata as interposition material showed best results in young adults

2. SEX INCIDENCE

In both, A and B groups males (n=32), females (n=8) and males (n=36), females (n=4) were included respectively. This difference in sex distribution in study is because of different social set up in our country. Most of the female patients were house wives and they did not performed laborious activities while males are mostly exposed to heavy duties and chances to the injuries are more comparatively. There is no any report in literature where the results of arthroplasty differ as regard to sex difference, showing that this difference is not important and both sexes respond equally to the procedure. In group A out females(n=8) patients good results were achieved by (n=6) patients and in (n=2) patients results were fair.

Interposition Arthroplasty of the Elbow by using Fascia lata and Dacron meshwork,A comparative study[7].

In group B out of total females (n=4) patients, good results (n=3), fair results (n=1). It means difference of sex is not a major factor which affects the results of arthroplasty[9,10].

3. SIDE EFFECTED

Left is most commonly involved as compared to right[9]. Regarding to the success in present study the right extremity showed better results as compared to the left in both groups. Although no report is available which could explain the reason for t5rhis difference. Being Muslims in both the groups, were with the habits of working with right hand might had played some role by achieving more exercise than left side.

4. DURATION OF DISLOCATION

It is an important factor while deciding about the treatment of old dislocated elbow joint regarding restoration of useful functions. For an adult with unreduced dislocation more than eight weeks, both open reduction and arthroplasty should be performed at the same time[8]. As dislocation becomes old, it gets ankylosed. The causes of ankylosis are multiple. The procedure can be carried out with safety at least a year

has elapsed from the time of disappearance of all symptoms of disease[11].

In group A, out of mean 25 points secured in the range of motion, 18 points were obtained (n=26) by those patients who had dislocated elbows 3-6 months old. 4 points by (n=8) patients having 7-12 months old dislocated elbows. Patients (n=6) obtained 3 points having one year or more old dislocated elbows.

Patients included in group B secured mean 22 points. 16.5 points were obtained by (n=24) patients with 3-6 months old, 1.5 points by (n=6) patients with one year or more old dislocated elbows.

The maximum achievement was obtained by the patients whose duration of dislocation was less and the patients were young. In old cases it was concluded that muscles have undergone atrophic changes and it was difficult to rehabilitate the muscles which have remained inactive for long time. While in those cases where the duration of dislocation was less, the muscles respond well to physiotherapy measures and regain the original strength earlier. Most of the patients with less duration were younger, the age might be a factor in achieving good results.

5. RANG OF MOVEMENTS

In group A mean achievement before operation was 0.50 points post operatively it was 25 points. Thus achievement was 24.5 points regarding range of motion.

In group B pre-operatively. At six months follow up mean score was 22 points . thus the total achievement was 19.5 points.

The difference between before and after operation (At six months follow up) in supination and pronation was hopeless.

Interposition Arthroplasty of the Elbow by using Fascia lata and Dacron meshwork, A comparative study[8].

6. INSTABILITY

Pre-operatively mean score regarding instability was 7.5 points in group A and 7.25 points in group B. Post-operatively at six months follow up it was 5.75 points in each group. Thus there was loss of 1.75 and 1.5 points respectively.

Some instability is present in all cases and becomes functional problem to a person who is dependent on crutches for stability[12]. Mild degree of instability of the elbow joint following arthroplasty does not does not represent disability in function to the patient provided he had obtained a joint with good range of motion, good muscle strength and free from pain. We also noted that after operation the elbow may be quite unstable when limb is relaxed but when patient tightens the muscle a reasonable fulcrum may be created[13].

7. PAIN

Regarding pain mean score before operation was 37 points. At six months follow up it was 42 points. Thus achievements of 5 points in group A.

In group B pre-operative score was 39.5 points and post operatively it was 44 points, so the achievement was 4.5 points .

Usually no patients has more pain after operation than before and it was not a problem for the patients before and after operation[14]. It always subsides when movements begin[15].

CONCLUSION

Results of both the interposing materials are encouraging. Fascia lata gave better results than dacron

meshwork.

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