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A CASE REPORT OF STIFF ELBOW TREATMENT BY INTERPOSITION ARTHROPLASTY

Orthopaedics

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ABSTRACT

Objective: Assess the results of the elbow interposing arthroplasty technique for treatment of stiff elbow. Method: A case of stiff elbow was operated and followed up at Gcs Medical college, Hospital & Research Centre after establishing the inclusion criteria; with informed consent regarding procedure and study. Patient was 19 year old male with post-trauma sequel leading to right stiff elbow. Preoperative range of motion was 70 to 75 degree of flexion. Patient was followed up for one year and range of motion improvement was assessed. **Results:** The follow up time was 12 months. Patient showed improvement of the range of motion, which, preoperatively, was 70 to 75 degree of flexion, increasing to 5 to 110 degree of flexion postoperatively in last follow up. **Conclusion:** Interposition arthroplasty is a salvage procedure which seems to have good results functionally.

KEYWORDS

Elbow joint; Stiff elbow; Interposition Arthoplasty; Range of motion;functional outcome

INTRODUCTION:

Interposition arthroplasty of the elbow was initially described in the 1880s to treat stiff elbow resultant from infection. Since then it has been advocated for a variety of pathological conditions of the elbow including post traumatic arthritis.The literature concerning this surgery is limited and this paper tries to summarize the management of such a case.

According to Morrey *et al*, most activities performed with the arms depend on a 100° range of motion of the elbow ranging between 30° and 130°, and 100° of pronosupination.

The loss of degrees of movement generates functional deficits, impeding the simple activities of daily living, such as taking the hand to the mouth and personal hygiene, among others, as well as progressive and incapacitating pain.

In recent years, interposition arthroplasty of the elbow has been used as a treatment of joint stiffness when the indication of other surgeries, such as by replacement arthroplasty or arthrodesis, cannot meet all of the patient's needs. Interpositions with biological tissues such as fascia lata and adipose tissue to coat bone ends was introduced by Murphy in 1902.

This paper aims to present the results of interposition arthroplasty of the elbow with fat and cutis autograft in the treatment of stiff elbow.

MATERIALS AND METHODS:

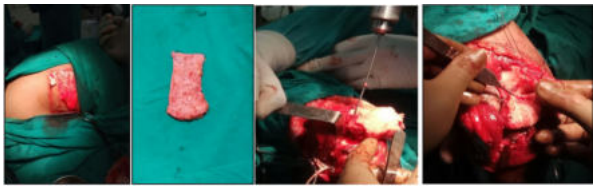
One patient with stiff elbow was operated and followed up for 12 months at Gcs Medical College, Hospital & Research Centre, where we used interposition arthroplasty with fat cutis autograft. The inclusion criteria was patient whose range of motion in the affected elbow was less than the functional, along with destruction of the articular surface demonstrated by imaging studies, coupled with contraindications for total elbow prosthesis. The patient was 19 year old male with right side stiff elbow. The duration of symptoms after initiation of the causative agent was 3 years.The etiology of the lesion was post traumatic. The preoperative range of motion of the elbow ranged from 70 to 75 degree of flexion.

Postoperatively patient was kept in posterior plaster splint in 90 degree flexion for 2 weeks followed by hinged cast brace for 4 weeks, resistive flexion exercises started at 1 month and extension strengthening exercises started at 6 weeks. Patient was followed up for 12 months and range of motion was assessed monthly.

DESCRIPTION OF THE SURGICAL TECHNIQUE:

Patient was operated under general anaesthesia; Lateral position; by posterior approach; Ulnar nerve was identified traced & saved. Triceps was preserved; lifted from medial and lateral sides; Extensor mass, periosteum and lateral collateral ligament dissected off the lateral condyle; Medial collateral ligament sectioned from within. Elbow dislocated and distal end of humerus was prepared by removal of osteophytes, articular cartilage, bone fragments with help of burr, chisel, osteotome. Smooth rounded surface obtained nearly 4 cm wide & 2 cm anterior to posterior. Radial head was removed.

Deep dermal layer is excised from subcutaneous fat (**Cutis**) from donor site(non hairy part of back)(7cmx6cmx0.5cm) and overlying skin sutured.



Cutis graft draped over distal humerus with superficial cut surface of dermis applied to bone. Dermal graft sutured with drill holes in medial and lateral ridges with mom absorbable sutures. Joint was reduced. Medial and lateral repair done. Range of motion checked under anesthesia(5-120 flexion possible). Joint was stable. Closure done in layers with 2 drain in situ.

RESULT:

Patient was followed up for 12 months. Preoperatively right elbow was in fixed flexion deformity of 70 degree; further flexion possible upto 75 degree. At 1 year follow up flexion was possible from 5 to 110 degrees. No complications at operative and donor site seen; pain relief was complete at 1 year follow up.

Preop radiograph: **Postop radiograph:**

Preop 70 degree fixed flexion deformity **Post op 12 months follow up**

DISCUSSION

Interposition elbow arthroplasty has emerged as an alternative for the treatment of severe limitation of movement in the elbow, especially in young patients, in whom total arthroplasty should be postponed as long as possible[2].

In all cases in studies by Pignatti et al[1], Volkov et al [4], Cobb et al[5], and in most cases in cheng et al[3], traumatic causes are responsible for the sequelae of elbow stiffness as is our case in this study.

The average age of the patient at the time of the surgical procedure varies according to the mechanism of injury. As in the literature[1,3], in cases of trauma, the average is usually between the second and fourth decades of life. Our patient was 19 year old.

Cobb and Morrey[5]; in their study; used postoperative analgesia with catheter for brachial plexus block for 24 to 48 hours, and physical therapy with a device for continuous passive motion for 7 to 10 days aided by dynamic external fixator. In our clinic, analgesia is controlled intravenously during the immediate postoperative period; and postoperative physiotherapy protocol followed.

Complications such as ulnar nerve injury have been described[3], however, we did not experience this kind of complication. Other complications mentioned[2] such as infection did not occur in our patient.

Results were assessed functionally in our study at timely intervals which showed gradual improvement in range of motion of the affected elbow with physiotherapy.

CONCLUSION:

Interposition arthroplasty is a salvage procedure which seems to have a good results functionally.

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Ethical approval: The study was approved by the institutional ethics committee

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