Total Elbow Arthroplasty in Post Traumatic Arthritis

Mohan Kumar J, Vijay Kulkarni
Department of Orthopaedics, Kauvery Hospital, Electronic City, Bengaluru
*Correspondence: drjmohankumar@yahoo.co.in

Abstract

Elbow arthritis is a very painful condition with limited movements and restricting the day to day activities. Not many options are there to treat this condition. Options are either Arthrodesis or Arthroplasty. Arthrodesis involves fusing the arthritic joint thereby pain is eliminated but with no movement. Arthroplasty replaces the arthritic joint with an artificial joint (Implant); it restores the movement which is pain-free. Elbow Arthroplasty is a relatively new and rarely done procedure. We present a case of Total Elbow Arthroplasty for post-traumatic arthritis of the elbow.

Background

Replacement arthroplasty of the elbow is in constant evolution. Although it was initially used mainly in patients with inflammatory arthritis, its indications were expanded to other conditions, which place higher demands on the implants and seem to lead to higher failure rates [1]. Elbow arthroplasty presents some unique peculiarities. Compared to the hip and knee joints, the elbow is relatively small and its stability depends greatly on ligamentous integrity. Elbow arthroplasty is further complicated by the need to violate the extensor mechanism for exposure, the increased risk of infection, the role of the radial head, and potential clinical problems related to the ulnar nerve.

There are two types of implant design, Unlinked and Linked implants. The most commonly used is a linked semi-constrained Coonrad-Morrey® (Zimmer, Warsaw, IN, USA). The TEXX (Biotek) total elbow system is also a linked semi-constrained (Fig. 1), it restores the elbow's rotational axis. It can restore the length of the humerus with the anterior flange of the humeral implant, which will resist rotational forces and anteroposterior stresses. The benefit of an anterior flange has been investigated for other implants as well [2]. The ulnar component and humeral components are intended to be fixed with polymethyl methacrylate (cement). The components are linked with a cobalt-chrome axis pin, which articulates with the polyethylene bushings of the ulnar and humeral components and allows approximately 10 degrees of varus-valgus and rotational laxity.

Fig. 1. TEXX (BIOTEK) total elbow system

Case Presentation

We present a case of 58 years aged gentleman who presented to us with a 1-year-old history of trauma to his right elbow, severe pain in elbow with very minimal movements. Unable to perform his day-to-day activities. Radiograph revealed arthritic elbow joint (Fig. 2). In view of his age and requirements we decided to perform a total elbow arthroplasty. We used the TEXX total elbow arthroplasty system from Biotek. Using a standard Bryan and Moorey triceps reflecting approach, the arthritic surfaces (Fig. 3) were removed, joint prepared and the implant was cemented. Ulnar nerve was anteriorly transposed. Wound was closed with repair of the extensor mechanism. Post operatively the joint was immobilised in a above elbow splint. After staple removal the elbow was mobilised and regular physiotherapy done. At 3 months follow up patient had a pain-free functional range of movements and able to perform his daily activities.

Fig. 2. Pre op x ray showing arthritic elbow.

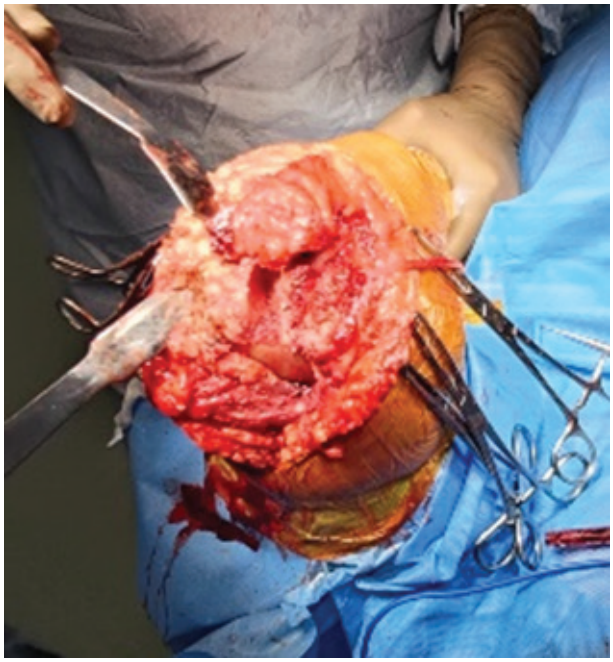

Fig. 3. Intra Op picture showing arthritic joint surfaces.

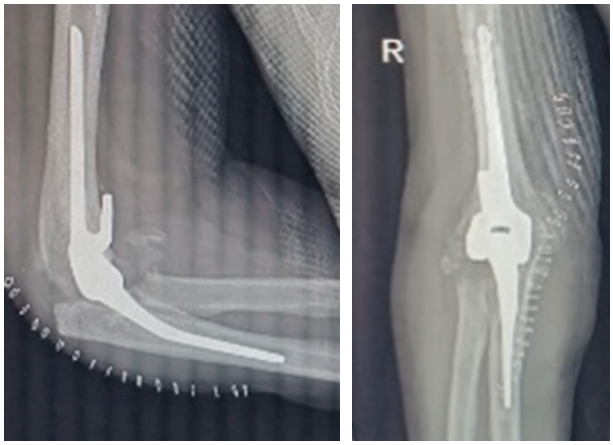

Fig. 4. Post Op x ray

Discussion

The field of elbow arthroplasty continues to experience substantial improvements. Currently, elbow replacement represents a successful treatment alternative for patients with inflammatory conditions as well as selected patients with posttraumatic osteoarthritis, elderly patients with low, comminuted distal humerus fractures, the salvage of distal humerus nonunion, ankylosis, haemophilic arthropathy, and elbow reconstruction after tumor resection. Although elbow arthroplasty is sometimes the only option to improve pain and function in a wide range of patients, this procedure may be associated with complications which may be difficult to solve, including infection, extensor mechanism dysfunction, periprosthetic fractures, wear, loosening and osteolysis

References

[1] Fevang BT, et al. Results after 562 total elbow replacements: a report from the Norwegian Arthroplasty Register. J Shoulder Elbow Surg. 2009;18(3):449–56.

[2] Quenneville CE, et al. Role of an anterior flange on cortical strains through the distal humerus after total elbow arthroplasty with a latitude implant. J Hand Surg Am. 2008;33(6):927–31.