



ELSEVIER

ORIGINAL ARTICLE

Early results of Latitude primary total elbow replacement with a minimum follow-up of 2 years

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Background: The aim of this study was to present outcomes of primary Latitude total elbow replacement (TER) with a minimum follow-up of 2 years.

Methods: A retrospective cohort study was undertaken with prospective outcome data collection for the latest outcome. Included were 63 consecutive primary Latitude TERs in 58 patients performed during a period of 5 years at a specialist orthopedic hospital.

Results: The mean age of the patients was 62 years (33-85 years). Five primary TERs (4 patients) were lost to follow-up. The primary diagnosis was rheumatoid arthritis in 49, osteoarthritis in 8, and trauma in 6 elbows. The mean flexion-extension arc was 75° preoperatively and 97° postoperatively. Mean postoperative Elbex pain score was 19/100, and function score was 37/100. Mean postoperative scores were 42/100 for the Quick Disabilities of the Arm, Shoulder, and Hand and 38/50 for the elbow-specific American Shoulder and Elbow Surgeons assessment.

Four patients died of unrelated causes, and 8 of 63 underwent further surgical intervention, including explantation and conversion from unlinked to linked implant. On radiographic review of 41 surviving TERs, aseptic radiologic loosening was observed of the humeral component in 4 elbows and of the ulnar component in 9. Seven elbows had no radial component, and of the remaining 34 elbows, 16 (47%) had signs of loosening of the radial implant. Complications included 1 heterotopic ossification, 1 olecranon fracture, and 3 further procedures for ulnar nerve entrapment.

Conclusion: The results indicate that the early outcome of Latitude TER is comparable to that of other prostheses. There is concern about early radiologic loosening of the radial component.

Level of evidence: Level IV; Case Series; Treatment Study

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Keywords: Elbow; total elbow replacement; Elbex score; ASES-E score; QuickDASH score; early results

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Total elbow arthroplasty is most commonly used for the treatment of rheumatoid arthritis, osteoarthritis, and trauma. The Latitude total elbow replacement (TER) prosthesis (Tornier, Montbonnot–Saint-Ismier Cedex, France) is a type of third-generation convertible implant.⁶ This prosthesis has been in clinical use since 2001 and in use at Wrightington

Hospital since 2008. It is an anatomic, linkable prosthesis that can be implanted with the native radial head left in, excised, or replaced. Choosing to link depends on the primary pathologic process, the status of the soft tissue and collateral ligaments, the intraoperative assessment of the stability of the joint, and the availability of bone stock. When it is linked, this prosthesis functions as a “sloppy hinge” with an anatomic axis of rotation. When it is implanted unlinked, the stability of the elbow is dependent on the soft tissue constraints, and the radial head acts as a secondary valgus stabilizer.^{10,15}

This is the first clinical study of this implant in our country. The aim was to report the early results of TER using the Latitude prosthesis in the adult population with a minimum follow-up of 2 years. The hypothesis was that Latitude TER prosthesis has similar clinical results to other TERs.

Methods

This was a retrospective cohort with prospective outcome data collection. Local research ethical committee approval was obtained prospectively for the study. Included in this study were 63 consecutive primary Latitude TERs in 58 patients (47 women [81%], 11 men [19%]) performed during a period of 5 years at a specialist orthopedic hospital. Bilateral procedures were performed in 2 men and 3 women. The mean age of the patients at the time of surgery was 62 years (range, 33-85 years). The primary diagnosis for which surgery was performed in 63 elbows was rheumatoid arthritis in 49 (77.8%), osteoarthritis in 8 (12.7%), and trauma in 6 (9.5%).

The inclusion criteria were all adult patients undergoing primary TER with the Latitude prosthesis (linked or unlinked) for all pathologic processes during the period from October 2008 to the end of December 2012 with a minimum follow-up of 2 years. Patients having a Latitude TER as revision surgery during this time were not included.

Outcome evaluation was performed with the Elbex score; Quick Disability of the Arm, Shoulder, and Hand score; and elbow-specific American Shoulder and Elbow (ASES-E) score.^{8,17,18} These

scores were used to objectively assess pain, function, and range of movement. In the ASES-E score, only the function element was used as the pain component was calculated in the Elbex score. The function aspect of the ASES score was calculated from a total score of 50. In addition, the range of movement, represented as an arc in both flexion-extension and pronation-supination axes, and the patient's satisfaction with the procedure were also recorded. The patient's view of the outcome was recorded on a 5-point Likert scale: much worse, worse, same, better, much better. In addition, the patient's satisfaction with the outcome was also recorded on a 100-point linear scale.

Radiologic assessment of the cement mantle around the prosthesis was made according to the Wrightington method published previously⁷ (Fig. 1).

The radial head prosthesis was also evaluated by dividing it into 6 zones, 3 each on the anteroposterior and the lateral radiograph (Fig. 2). The radiographic zones for assessment of loosening around the radial implant were validated in a separate study and results presented at the 2015 annual meeting of the British Elbow and Shoulder Society.

All surgeries were undertaken in laminar flow operating rooms with body suits and double preparation per protocol. Preoperative antibiotics were given. The procedure was performed in the lateral position under tourniquet. The surgical approach was either a triceps-preserving lateral paraolecranon approach or a triceps-reflecting approach, depending on the surgeon's preference. There were 5 upper limb consultant surgeons performing these operations. The ulnar nerve was identified, and in situ decompression was performed but no formal anterior transposition. The decision to excise or to replace the radial head was dependent on the state of the radial head and proximal radioulnar articulation. The annular ligament was not divided. Detachment of the lateral ligament complex from the humerus provided access to the radial head. The ligament was repaired through the humeral spool after implantation. We then reassessed the stability intraoperatively and linked the prosthesis, if required. The decision to link the prosthesis was made by the operating surgeon intraoperatively, depending on condition of the ligaments, availability of the bone stock, and intraoperative stability. Postoperative mobilization was started immediately without a splint supervised by a physiotherapist, or a splint was provided for 2-3 weeks and

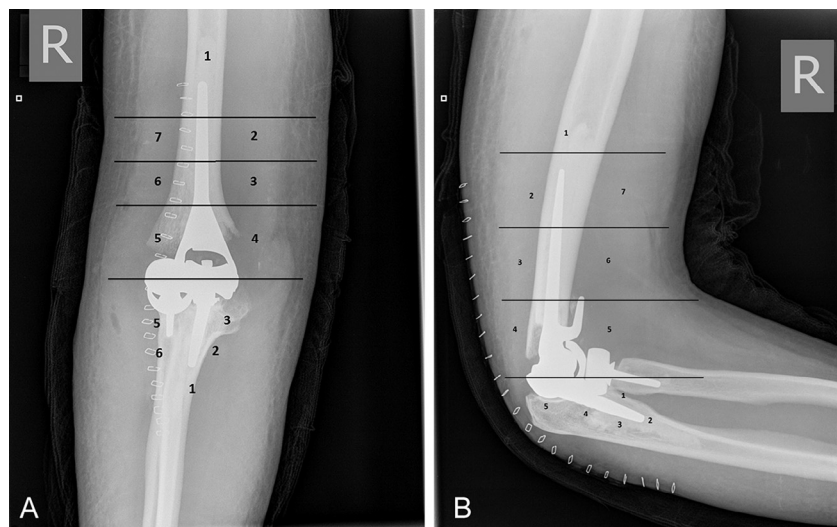


Figure 1 (A) Wrightington distribution of humeral and ulnar radiologic zones anteroposteriorly. (B) Wrightington distribution of humeral and ulnar radiologic zones laterally.

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