



Arthrodesis of the Trapeziometacarpal Joint with Locking Plate and Cross shaped Bone Graft

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Abstract

Background: *The trapeziometacarpal joint is the second most common site of osteoarthritis in the hand and the most frequent one to require surgery. The purpose of this study was to evaluate this technique.*

Method: *Total 9 patients of osteoarthritis of the trapeziometacarpal joint were treated in our institution. Physical therapy was started after stitch removal.*

Result: *VAS pain score significantly decreased after surgery. DASH score was also improved.*

Conclusion: *This technique is an important weapon for the management of arthritis of trapeziometacarpal joint.*

Keywords: *trapeziometacarpal joint, osteoarthritis, arthrodesis, bone graft, locking plate.*

Introduction

Osteoarthritis of the trapeziometacarpal joint is a common cause of pain at the base of the thumb. If conservative treatment fail surgical treatment is the only answer. Numerous techniques have been described for such cases but result are still controversial.

Arthrodesis for trapeziometacarpal joint is one of the valuable options for pain relief, stability and pinch strength. Disadvantages are limited mobility and non union. It is very useful procedure for relatively young and high- demand patients. Long term mobilization after surgery can improve the union rate but is inconvenient for manual workers. The purpose of this study was to evaluate the technique in relation to non union rate.

Method

All the patient of O.A. trapeziometacarpal joint moderate pain admitted in the Dept. of Orthopedics, Government Medical College, Bettiah was taken for the study.

Pain was evaluated for visual analogue scale (0-10) and function using DASH score. Bony union confirmed by plain radiograph.

Operative Procedure

A straight incision was made over the trapeziometacarpal joint. The interval between the abductor pollicis longus tendon and extensor pollicis brevis tendon was exposed. Special care was taken for superficial branch of the radial nerve. The trapeziometacarpal capsule was resected to expose the joint.

Initially the metacarpal bone of the thumb is fixed temporarily to the carpal bone or index metacarpal bone by K-wire, which was removed after plate fixation. The position of the thumb is 20° of radial abduction and 30° palmar abduction. The joint surface was shaved flat.

The longitudinal lane was made centrally through the metacarpal to the trapezium. A cross-shaped cortico cancellous bone graft was then harvested from the iliac crest. After inserting the bone graft trapeziometacarpal joint was stabilised by 2mm. T-shaped locking plate. After surgery thumb spica splint was used for two weeks. After removal of stitches free use of hand was permitted. Heavy load after 6 weeks of surgery.

Result

Total- 9 patient, Male – 7, Female – 2, age- 30-70 yrs.

Radiographic evidence of union was seen from 6-12 weeks with no delayed union or non union.

VAS pain score significantly decreases from 7.2 – 0.4 points. DASH score improved. All patients were able to return to their original occupation without restriction. No serious complication occurs. 5 very satisfied and 4 satisfied.

Discussion

The trapeziometacarpal joint is the second most common site of Osteoarthritis in the hand and the most frequent one to require surgery. Arthodesis was first proposed by Muller in 1949 and has been traditionally favoured for high demand patient who require strong pinch for activities.

The operative technique used for arthodesis include K-wire, tension bend wiring, Herbert screw, staples and plate. Overall fusion rate range from less than 7% to 100%.

Non union still occur with reluctantly unstable fixation, insufficient fixation often necessitate prolonged immobilization thus delayed the return to normal activities. A cross shaped or maltese cross bone graft was first introduced for scaphoid non union.

Galen et al harvested a cylinder shaped bone graft from the distal radius and fitted this to the same defect made at the joint. After surgery affected thumb was immobilized for 6 weeks.

In present study, we used cross shaped bone graft from the iliac crest and rigid fixation with a locking plate to save the period of cast immobilization non union. The major goals of trapeziometacarpal joint arthodesis are to prevent the shortning of thumb and stabilise the rotational movement. This technique is an important weapon for the management of arthodesis of trapeziometacarpal joint in the hand of hand surgeon.

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