



ANATOMIC RECONSTRUCTION OF THE DISTAL RADIOULNAR LIGAMENT FOR DISTAL RADIOULNAR JOINT INSTABILITY- A CASE REPORT

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ABSTRACT

Stability of the distal radioulnar joint (DRUJ) is provided by bony architecture and by soft tissues such as the triangular fibrocartilage complex (TFCC), the joint capsule, and surrounding muscles. The objective of this study was to analyze clinical outcomes after anatomic reconstruction of the distal radio-ulnar ligaments in a patient with posttraumatic chronic instability of the DRUJ. Anatomical reconstruction of the distal radioulnar ligaments is thought to be an effective procedure for treating posttraumatic DRUJ instability.

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INTRODUCTION

Cadaver studies have demonstrated that the volar and dorsal distal radioulnar ligaments, which are components of the TFCC, play a major role in stabilizing the joint¹⁻². Many authors have made various attempts to restore DRUJ stability surgically following trauma. However, these nonanatomic procedures are not reliable³⁻⁴. Anatomic reconstruction of the major structures responsible for joint stability is the most important principle for the treatment of instability of an injured joint with an intact articular surface. The objective of this study was to analyze clinical outcomes after anatomic reconstruction of the distal radio-ulnar ligaments in a patient with posttraumatic chronic instability of the DRUJ.

Case history

Twenty six year male having Chief complain of pain on the left wrist joint during movement and inability to lift the heavy weight in that hand. He had history of injury 4 year back, for which he was treated by crep bandage application and medication. He noticed some insecurity and odd feeling during his daily activity after few days. He visited ¾ places for that problem and treated with medication but not relived. Then he came to SVNIRTAR on 24.1.11. On examination there is a dimple in the ulnar side on pronation of fore arm photograph-1. The Piano key sign is positive. All the Wrist range of movements is within normal limit. No significant tenderness is found.

Surgical steps

A 4 to 5 cm curvy- linear skin incision photograph-2 was made from the distal ulnar head extending proximally along the fifth extensor compartment. The 5th extensor compartment was opened, and the extensor digiti minimi tendon was retracted radially. An L-shaped flap was created in the DRUJ capsule, with one limb made along the dorsal rim of the sigmoid notch and the other made proximal and parallel to the dorsal DRUL. A Palmaris longus tendon graft photograph-3 was harvested, and each end of the graft was connected to a thread to facilitate easy passage through the tunnels. A 2.0 mm drill hole was made in the radius, and then gradually enlarged with a straight curette to allow for passage of the tendon graft. To make the ulnar tunnel, the wrist was flexed volarly and the TFCC was pulled distally to expose the ulnar fovea. With the ulna pulled dorsally, a tunnel was made through the ulnar fovea at a tilt angle towards the ulnar side of the ulnar neck in the same way for the radial tunnel photograph-4. The tendon graft was passed through the radial tunnel and both of its limbs were brought to the opening in the ulnar fovea. Then both limbs were passed through the ulna tunnel to the ulnar side of the ulnar neck. The limb on the volar side surrounded the ulna and was sutured with the other limb using 3-0 nonabsorbable sutures photograph-5. During the suturing procedure, both limbs were pulled taut with the forearm in neutral position, and care was taken not to restrict forearm rotation by imposing excessive tension. Motion of the wrist joint and the DRUJ was checked, and the final status of the reconstructed tendon was

assessed with the anteroposterior stress test. Postoperatively, long-arm cast was applied for 6 weeks, followed by range of motion exercise to restore normal joint mobility. Normal activity was allowed at 10- 12 weeks postoperatively, once normal range of motion was achieved.

RESULT

Objective clinical examination was performed using the anteroposterior stress test, range of motion evaluation, grip strength assessment using a dynamometer and plain radiography. Subjective clinical evaluation was performed using the Patient Rated Wrist Evaluation (PRWE)⁵ and the Disabilities of the Arm, Shoulder and Hand (DASH)⁶ at six month & one year . Till date patient have no similar complain as before.



Photograph -1



Photograph-2



Photograph-3



Photograph-4



Photograph 5

DISCUSSION

The methods for treating DRUJ instability have evolved from nonanatomical methods such as tenodesis to anatomical methods such as reconstruction of the distal radioulnar ligaments. As anatomical reconstruction has been proven as the optimal treatment for instability in other joints such as knee and elbow, this attempt is quite natural. Considering that the reconstruction procedures suggested by Adams *et al.*⁷⁻⁸ using the palmaris longus tendon has been shown to be the most reliable and anatomically acceptable surgical technique. I performed distal radio ulnar ligament reconstruction accordingly. DRUJ instability is difficult to diagnose because it presents with variable and often indistinct symptoms. The diagnostic criteria of DRUJ instability in the current study included repeated subluxation and reduction or dynamic instability observed during the stress test. The satisfactory results cannot be expected only by the joint realignment in patients with obvious subluxation because the dynamic instability would impair the DRUJ function. It is clear that ligament reconstruction is required when functional disability is largely attributable to dynamic instability. Functional results were satisfactory with preservation of joint motion. At the last follow up, no objective symptoms or signs of subluxation were noted. Anatomical reconstruction of the distal radioulnar ligaments is thought to be an effective procedure for treating posttraumatic DRUJ instability.

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