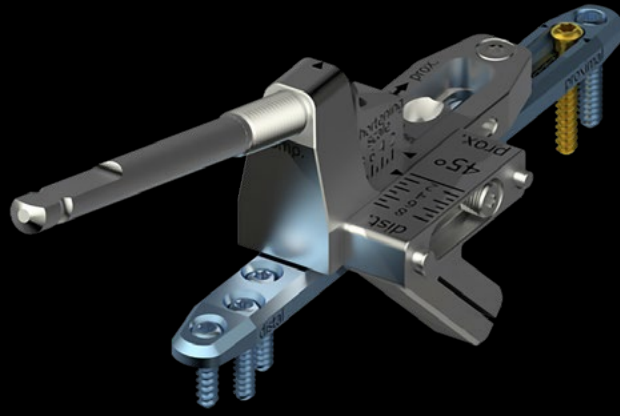


CASE REPORT



Ulnar shortening osteotomy for ulnar impaction syndrome.

The Surgeon

Dr. Axel Braumüller

Handzentrum Graz

Dr. Axel Braumüller is a specialist in surgery, trauma surgery and hand surgery. He has specialized in hand surgery for over 20 years and headed the hand surgery team at the AUVA Trauma Hospital in Graz for some years. Dr. Braumüller has been the Director of the Graz Private Hand Surgery Center in Austria for the past 8 years.

Introduction

In an ulnar impaction syndrome, an excessively long ulna constantly rubs up against the disc in the wrist joint, causing the disc to wear down and elicit pain during rotational movements or weight-bearing. As a result of prior degenerative damage to the disc, even minor trauma can cause it to rupture. This also impairs stability in the distal radioulnar joint (DRUJ).

In case of a pronounced positive ulnar variance, an ulnar shortening osteotomy is indicated to reduce the load on the disc. If wrist arthroscopy is performed at the same time, it is possible to treat the tear in the disc arthroscopically and thereby also regain stability in the DRUJ.

This combination of wrist arthroscopy and ulnar shortening can thus restore stability and pain-free movement in the affected patients.

The Case



Patient Profile

A 57-year-old male patient had been complaining of pain in his right wrist for years. Additionally, he had experienced a fall while skiing about 3 years before the medical consultation. Clinical examination revealed a clearly painful swelling around the DRUJ or on the ulnocarpal aspect of the right wrist. Compared to the contralateral side, the DRUJ was unstable. The patient complained of pain during normal movement of the wrist, particularly during pronation and supination and weight-bearing on his hands or extension.



Preoperative Clinical Findings

An MRI (magnetic resonance imaging) scan of the right wrist showed a positive ulnar variance of approx. 3 mm. A cartilage defect and edema was clearly visible at the point of contact with the lunate. The triangular fibrocartilage complex (TFCC) showed signs of both degenerative and traumatic rupture. Another notable finding in the axial view was a slight subluxation of the extensor carpi ulnaris tendon (ECU tendon) as evidence of prolonged instability in the DRUJ.



Figure 1: Preoperative MRI: **A, B:** STIR and T1 image highlighting the lesion of the lunate.
C: subluxation of the ECU tendon

These MRI findings were discussed in detail with the patient based on the images. The surgical plan for the right wrist involved a wrist arthroscopy with treatment of the TFCC, open ECU tendon refixation and simultaneous ulnar shortening with the Ulna Shortening System from Medartis.



Surgical Treatment

The surgical procedure began with a small dorsoulnar skin incision over the 6th extensor tendon compartment of the right wrist. Fixation/repositioning of the ECU tendon was performed via this incision. This was followed by dry wrist arthroscopy with the right wrist in vertical extension on the Trimano system with the Weinberger hand traction device.

Diagnostic exploration revealed a central degenerative disc rupture and a traumatic dorsoulnar / foveal disc tear. A degenerative rupture was visible at the point of contact with the ulnar head.

At this point of contact, there was also a highly circumscribed cartilage defect with partial rupture of the lunotriquetral ligament (LT).

The diagnosis established by the MRI scan was accordingly confirmed during the arthroscopy.

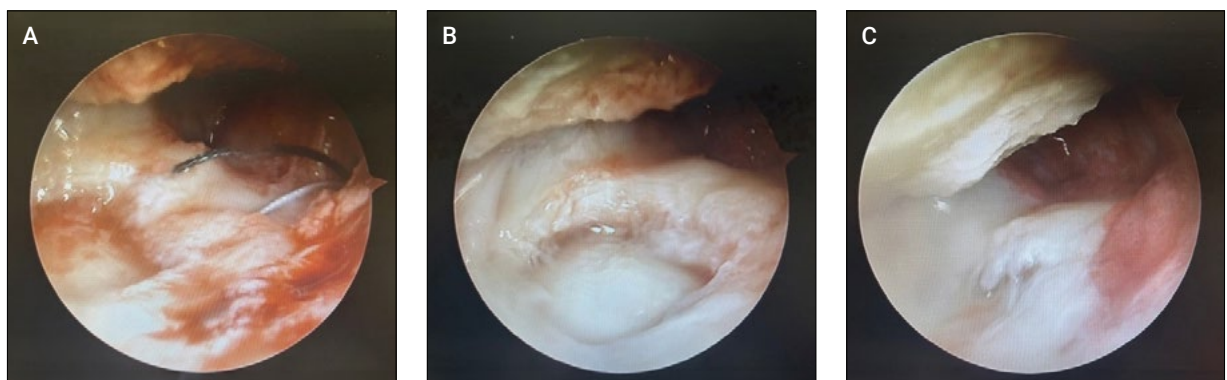


Figure 2: Image capture from the wrist arthroscopy, demonstrating the damage to the disc and ligaments

During the wrist arthroscopy, a central disc resection was performed, and the TFCC in the foveal area was also refixed transosseously with a 2-0 FiberStick. This procedure produced a stable configuration in the DRUJ. The wrist arthroscopy was completed and the forearm was placed on the hand table.

The ulna was then shortened in a stepwise protocol using the Medartis Ulna Shortening System via an ulnar approach on the right forearm (Figure 3). The ulnar shortening was achieved through a 45 degree osteotomy. After the osteotomy was compressed, an interfragmentary lag screw was inserted through the plate to stabilize the osteotomy.

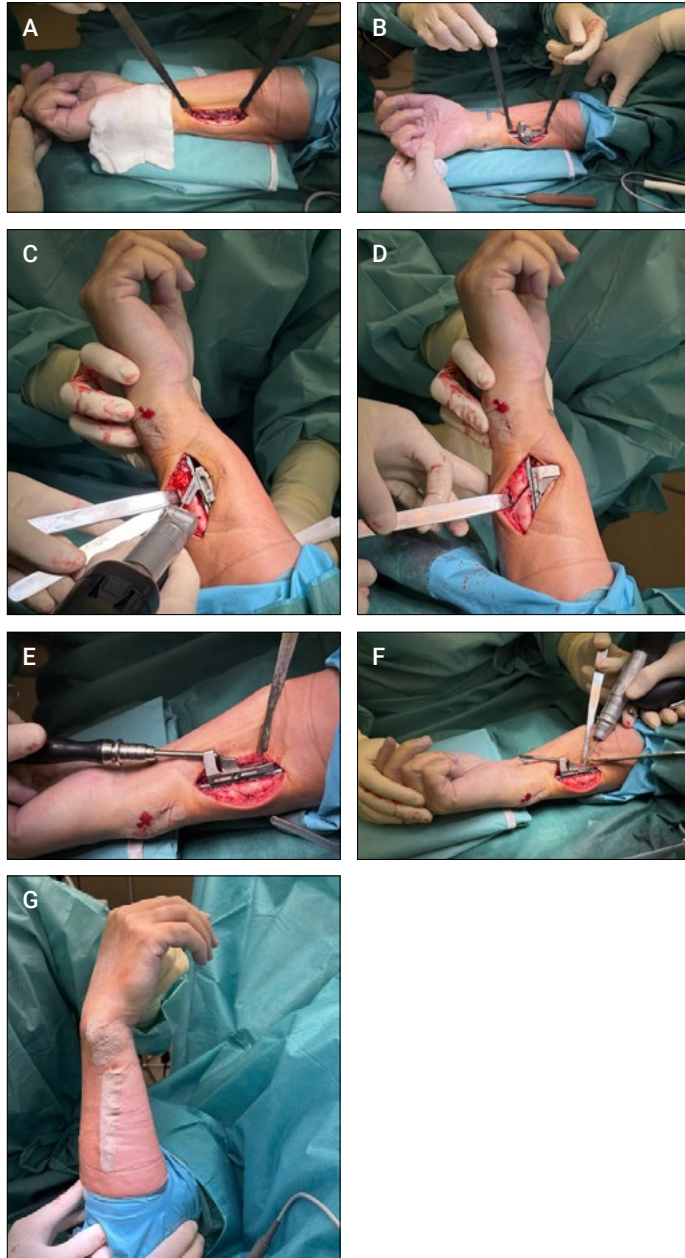


Figure 3: Stepwise protocol for the ulna shortening osteotomy:

- | | |
|--------------------------------------|---|
| A: preparation of the ulna | E: closing the gap using the compression spindle |
| B: placement of the saw guide | F: preparing the 45° lag screw |
| C: performing the osteotomy | G: after closure |
| D: the 4mm gap | |

This patient's ulna was shortened by 4 mm, which made it possible to compensate for the disparity between the ulna and radius in the wrist and achieve a slight negative ulnar variance.



Postoperative Treatment

Because of the simultaneous arthroscopic TFCC refixation, a special removable plastic splint was fitted for this patient. This splint helps prevent undirected, uncontrolled movements in the wrist during the first 6 weeks after the operation. Hand therapy was routinely carried out from the 1st postoperative week.

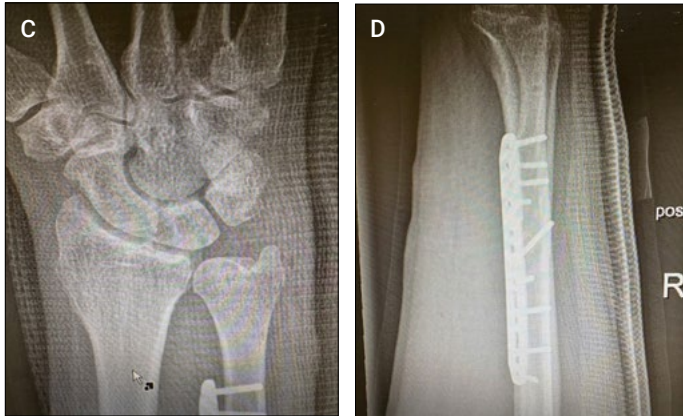


Figure 4: Postoperative X-rays



Conclusion

This 57-year-old male patient presented with clear ulnar impaction symptoms supplemented by a traumatic TFCC rupture caused by a fall while skiing.

Given the clear clinical symptoms, the preoperative MRI scan demonstrated a TFCC rupture with evidence of pre-existing ulnar impaction. Subsequently an ulnar shortening osteotomy was performed using instruments from Medartis, in combination with a wrist arthroscopy to treat the TFCC. Postoperatively, the wrist was immobilized with a removable splint because of the simultaneous TFCC fixation.

The hand therapy initiated at an early stage enabled the patient to achieve free movement of the wrist as early as 6 weeks postoperatively. At the postoperative check-up 3 months after the operation, the patient was symptom-free. The wrist and DRUJ were pain-free and could be moved freely.

The Ulna Shortening System from Medartis has been used routinely at the Graz Hand Center for many years and is a tried and tested surgical instrument set that is easy to use.

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