

## **Endoscopic bone graft harvesting of the distal radius**

Arthroscopic management of scaphoid nonunions or partial wrist arthrodesis has been described with good results. Unfortunately, the bone graft harvesting is still performed from the iliac crest or the distal radius using an open approach. It means that the bone graft harvesting necessitates a wider approach than the intra-articular wrist surgery if performed with arthroscopy.

We developed an endoscopic procedure to perform bone graft harvesting from the distal radius and we evaluated its efficiency and morbidity in a clinical prospective series.

### **MATERIAL & METHOD**

We developed and secured the procedure on 2 wrist cadaveric specimens.

Technique: we used a 1,9mm arthroscope with 35mmHg pump pressure, a 2mm shaver blade ; 2 dorsal portals on the same line separated from 2,5cm, located 5mm proximal to the Lister's tubercle. Under endoscopy, we performed an identification and excision of the periosteal, then we introduced a 2,3mm bone biopsy kit, 7 holes of bone harvesting were performed in the metaphyseal part of the distal radius, proximal to the Lister's.

Prospective clinical series : 16 patients were included: 11 scaphoid nonunions, 2 scaphocapitate arthrodesis (kienbock disease), 3 phalanx nonunions. The endoscopic bone harvesting was performed first then the grafting was performed second.

Evaluation: clinical examinations were performed after 1, 3 and 6 months, we evaluated the tenderness on the harvesting site, tendons or sensitive nerves damages, scare appearance using a VAS scare satisfaction score, X-ray bone healing of the harvesting and grafting site.

### **RESULTS**

The average duration of the endoscopic bone graft harvesting was 13 minutes (8-22).

Clinical outcomes (n=16) :

-Efficiency : none tenderness was observed after 6 months ; VAS scare satisfaction score after 6 months was 9 (8-10) ; 40% of bone holes was still visible on X-ray after 6 months. All bone fixations have achieved consolidation except one former and very proximal scaphoid nonunion.

-Safety : none tendinous or sensitive skin disorders was observed.

### **DISCUSSION**

Improvements of mini-invasive surgery for small bone non-unions have been recently achieved but the originality of our work was focus on the improvement of bone graft harvesting using an endoscopic technique.

### **SUMMARY POINTS**

This study confirmed the feasibility and safety of an endoscopic bone graft harvesting of the distal radius.

This procedure is efficient to obtain enough cancellous bone for nonunions of the hand. It is a safe technique that can be used for intra-articular arthroscopic grafting but also for phalanx or metacarpal nonunions.