

19-21
DÉCEMBRE
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PALAIS DES CONGRÈS
PORTE MAILLOT - PARIS

55ème congrès
SOCIÉTÉ FRANÇAISE
DE CHIRURGIE DE LA MAIN

35ème congrès SFRM GEMMSOR

Président du congrès du GEM : Philippe Liverneaux

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The contribution of MRI in Kienböck's disease Lichtman stage III B in the indications radius shortening osteotomy unicorticale.



Mahdi RAHEM

Department of orthopedic surgery "B"

Dr. MOHAMED SEGHIR NEKACHE

Central Hospital of the Army

Algiers ALGERIA



INTRODUCTION

The idiopathic avascular necrosis of the lunatum described by Kienböck in 1910, whose natural history evolves towards carpal collapse with a secondary degenerative evolution.

The objective of this work is to study the contribution of MRI in preoperative planning for a osteotomy of shortening of the unicortical radius stage 3B of Lichtman of a prospective monocentric series.

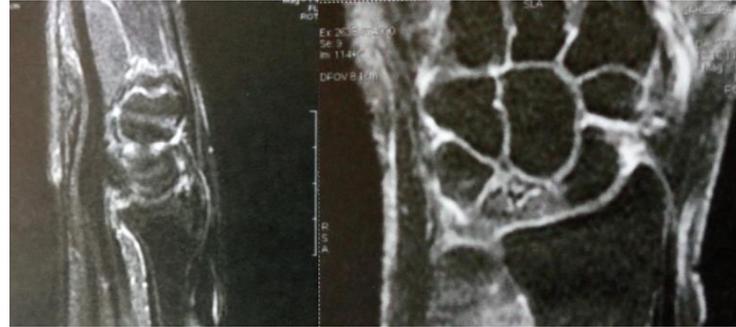


MATERIALS AND METHODS

- Between March 2014 and June 2017, 20 patients (09 men and 11 women) with stage IIIb of the Lichtman classification.
- Average age 35.02 years (20 to 55 years).
- Preoperative MRI showing vitality of lunate fragments
- A shortening osteotomy of the unicortical radius in the anterior metaphyseal zone of Henry.
- Average decline of 43 months.
- The average shortening was 2 mm.



MATERIALS AND METHODS



SURGICAL TECHNIQUE



RESULTS



| CLINICAL | PREOP | POSTOP | PS |
|------------------------|--------------|--------------|---------------|
| Pain | 8,351 | 1,666 | 0,0001 |
| Mobility AEXT | 40,25 | 42,82 | 0,5 |
| Mobility PEXT | 49,23 | 55,43 | 0,562 |
| Mobility A Flex | 48,46 | 51,74 | 0,345 |
| Mobility P Flex | 58,71 | 65,18 | 0,058 |
| Strenght | 24,33 | 28,20 | 0,210 |
| QUICK DASH | BAD | GOOD | 0,0001 |

| RADIOLOGY | PREOP | POSTOP | PS |
|------------------------|--------|--------|---------------|
| IR | 21,567 | 21,769 | 0,0023 |
| HC | 0,485 | 0,794 | 0,001 |
| ITC | 0,275 | 0,289 | 0,111 |
| INDICE DE STAHL | 0,431 | 0,411 | 0,0005 |
| LICHTMAN | / | / | |

DISCUSSION

- MRI remains an examination of choice in the therapeutic indication especially in stage III B of Lichtman is often difficult, knowing that there is, as in many other pathologies, no correlation between the lesions observed and the repercussions clinical.
- This technique makes it possible to stop the natural evolution of this arthritis degeneration which is inevitable.
- It allows to confirm the diagnosis of Kienböck's disease, but also to better assess the extent of the necrosis, provided that cuts are made in two separate planes: frontal and sagittal or frontal and transverse(**AIHONNOU**).
- AND especially the intravenous injection of gadolinium makes it possible to better distinguish the areas still vascularized from the areas which are no longer(**AKIO**)

***AIHONNOU.T** Résultats du raccourcissement du radius pour maladie de Kienböck : à propos de 33 poignets revus au recul moyen de 12 ans

***AKIO.M** Limited wrist fusions .The Journal of Hand Surgery, Volume 13, Issue 5, September 1988, Pages 660-667

DISCUSSION

- It is difficult to judge the viability of a bone structure from a histological point of view.
- Indeed, necrosis is rarely complete **Herbert, Cerezal** and homogeneous.
- **Singh** et al. also recall that the intravenous injection of contrast medium makes it possible to detect the presence of vascular tissue, which is not synonymous with vascularization effective or viable but could correspond to a vascularized “scar” fibrous tissue

*Herbert TJ, Fisher WE. Management of the fractured scaphoid using a new bone screw. J Bone Joint Surg Br 1984;66(1):114–23.

*Cerezal L, Abascal F, Canga A, García-Valtuille R, Bustamante M, delPiñal F. Usefulness of gadolinium-enhanced MR imaging in the evaluation of the vascularity of scaphoid nonunions. AJR Am J Roentgenol 2000;174(1):141–9.

*Singh AK, Davis TR, Dawson JS, Oni JA, Downing ND. Gadolinium-enhanced MR assessment of proximal fragment vascularity in nonunions after scaphoid fracture: does it predict the outcome of reconstructive surgery? J Hand Surg Br 2004;29(5):444–8.

DISCUSSION

- **Singh** et al. recall that 50% of non-union with necrotic proximal fragment consolidate, which would put into perspective the importance given by Green to this prognostic factor.
- **Lee** et al. use short and repeated acquisitions after intravenous injection of contrast medium (dynamic MRI) to calculate several perfusion parameters. It highlights, in bone edema linked to osteonecrosis, an early decrease in the clearance of contrast agent suggesting venous engorgement.
- This highlights the tremendous potential of the perfusion MRI technique in the approach of the pathophysiology of bone disorders.

*Singh AK, Davis TR, Dawson JS, Oni JA, Downing ND. Gadoliniumenhanced MR assessment of proximal fragment vascularity in nonunions after scaphoid fracture: does it predict the outcome of reconstructive surgery? J Hand Surg Br 2004;29(5):444–8.

* LEE.ML The intraosseus arterial pattern of the carpal lunate bone and its relation to avascular necrosis. Acta Orthop Scand. 1963; 33:43-55.

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CONCLUSION

In Kienböck's disease, the radiographic and computed tomography workup is usefully supplemented by MRI to confirm the diagnosis and specify the extent of the necrosis.

It is in stages 1 and 3 of Lichtman that MRI is most useful for operative decisions.

- In short, MRI, in addition to its diagnostic power on the morphological level, supplements X-ray imaging with a more "functional" approach to bone ischemia.
- Doubts remain, however, about what it really allows to

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