



Coimbra University Hospital Centre

Orthopaedic Department

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Wrist Arthrodesis

Clinical and Ultrasonographic Trial



13th EFORT Congress

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DISCLOSURE OF INTEREST

Nothing to Declare



INTRODUCTION

*“Wrist arthrodesis results in a high degree of patient satisfaction and predictable pain relief in most patients. Most patients are able to return to gainful employment, many without impairment. Successful fusion rates have been reported in the vast majority of patients overall. **Activities that require forceful gripping with the hand in a fully pronated or supinated position also may be difficult to accomplish.** The most common indication for a wrist arthrodesis is advanced symptomatic arthritis secondary to a degenerative, post-traumatic, inflammatory, or postinfectious condition. **Various techniques have been described for achieving a successful arthrodesis.** The type of operative technique used depends on the underlying condition, quality of bone, presence of bi-lateral disease, condition of the remaining joints of the involved extremity, and surgeon's preference.”*

OBJECTIVES

Primary endpoint: Evaluate the functional outcomes of wrist arthrodesis in patients with advanced symptomatic inflammatory or degenerative arthritis.



METHODS

Comparative and Retrospective Study Analysis

Level of evidence: III

- ✓ Total Wrist Arthrodesis between 1999 and 2009;
- ✓ Clinical, Radiological and Ultrasonographic evaluation;
- ✓ SPSS Statistics Software Version 17.0 for Windows.
 - Differences were deemed to be significant at $p < 0.05$

Exclusion Criteria :

- Tumor resections (OGCT);
- Open fracture (2nd step)



METHODS

Functional evaluation:

- Visual Analogue Scale (VAS): [1-10]
- The Disabilities of the Arm, Shoulder and Hand Score (DASH)): [0-100]

Am J Ind Med. 1996 Jun;29(6):602-8. Erratum in: Am J Ind Med 1996 Sep;30(3):372.

- Buck-Gramcko and Lohman Score System for Wrist Arthrodesis (BGL)

- ✓ ROM of fingers and forearm;
- ✓ Functional use of the hand;
- ✓ Pain;
- ✓ Grip power;
- ✓ Subjective evaluation

Excellent	9-10
Good	7-8
Satisfactory	5-6
Poor	< 5

BASELINE

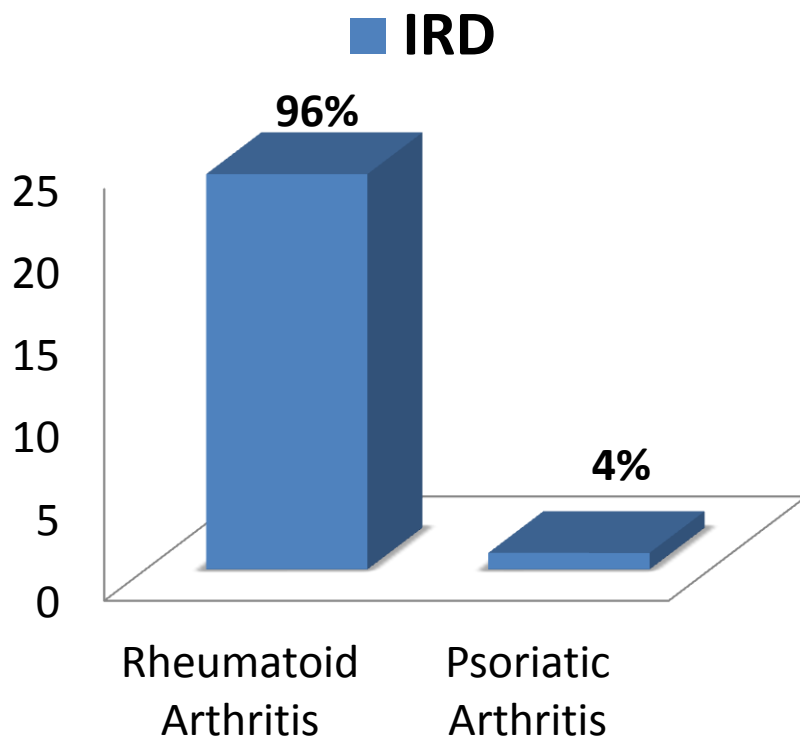
Population : 38 patients (7 bilaterally) → n= 45

- n= **25** Inflammatory Rheumatic Disease (**IRD**)
- n= **20** Remaining Cases (**RC**)

	IRD	RC	<i>P-value</i>
Age (Surgery)	49,9± 9,3	50,2± 18,8	0,948
Gender (Female)	n= 24 (96%)	n= 12 (60%)	0,030
Follow-up (Years)	6,1± 2,6	3,2± 1,4	0,000
Laterality (Right)	n=16 (64%)	n= 9 (45%)	0,200
Dominant Arm	n= 15 (60%)	n=13 (65%)	0,731

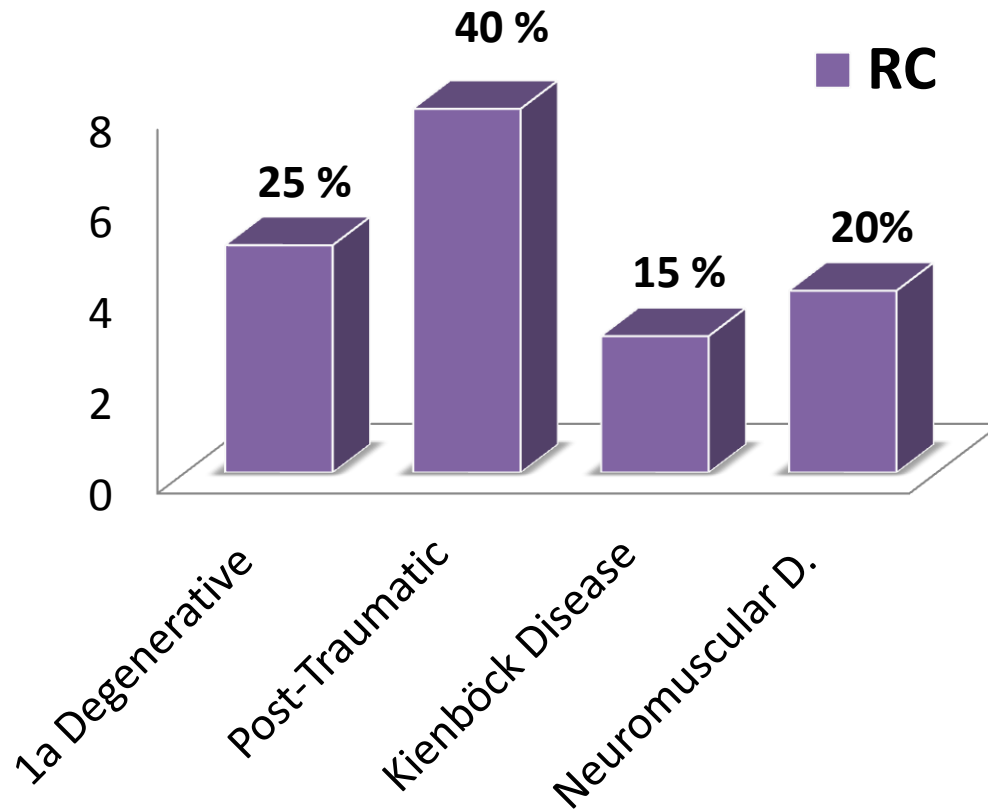
BASELINE

Surgical Indication



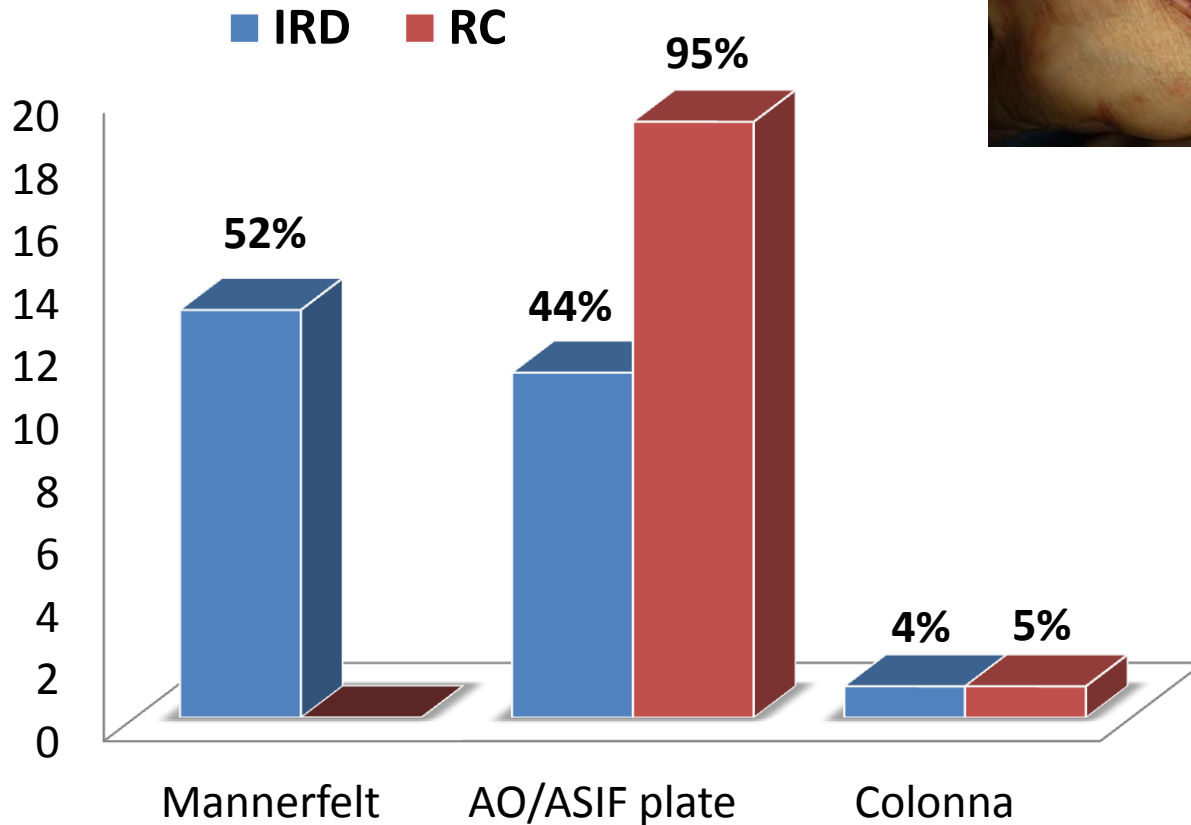
BASELINE

Surgical Indication



BASELINE

Surgical Technique



RESULTS

Post-Op

	IRD	RC	<i>p-value</i>
Bone Union (Months)	3,3± 0,9	2,9± 0,8	0,228
Material Extraction	n=5 (20%)	n= 5 (25%)	0,481
Postoperative complications	n= 3 (12%)	n= 2 (10%)	0,832

- ✓ **Pull Out** : n=1 (RC)
- ✓ **Pseudarthrosis** : n=1 (RC)
- ✓ **Tendon Rupture** : n=2 (IRD)
- ✓ **Tenosynovitis** : n=1 (IRD)



RESULTS

Ultrasonographic Evaluation → IRD Group

- ✓ **Local synovitis** : n=2 (8%)
 - Mannerfelt: n=1
 - Plate: n=1

- ✓ **Extensor Tenosynovitis**: n=2 (8%)
 - Plate: n=2



16% of US alterations → All were of low intensity and without inflammatory activity identified by power-doppler signal

RESULTS

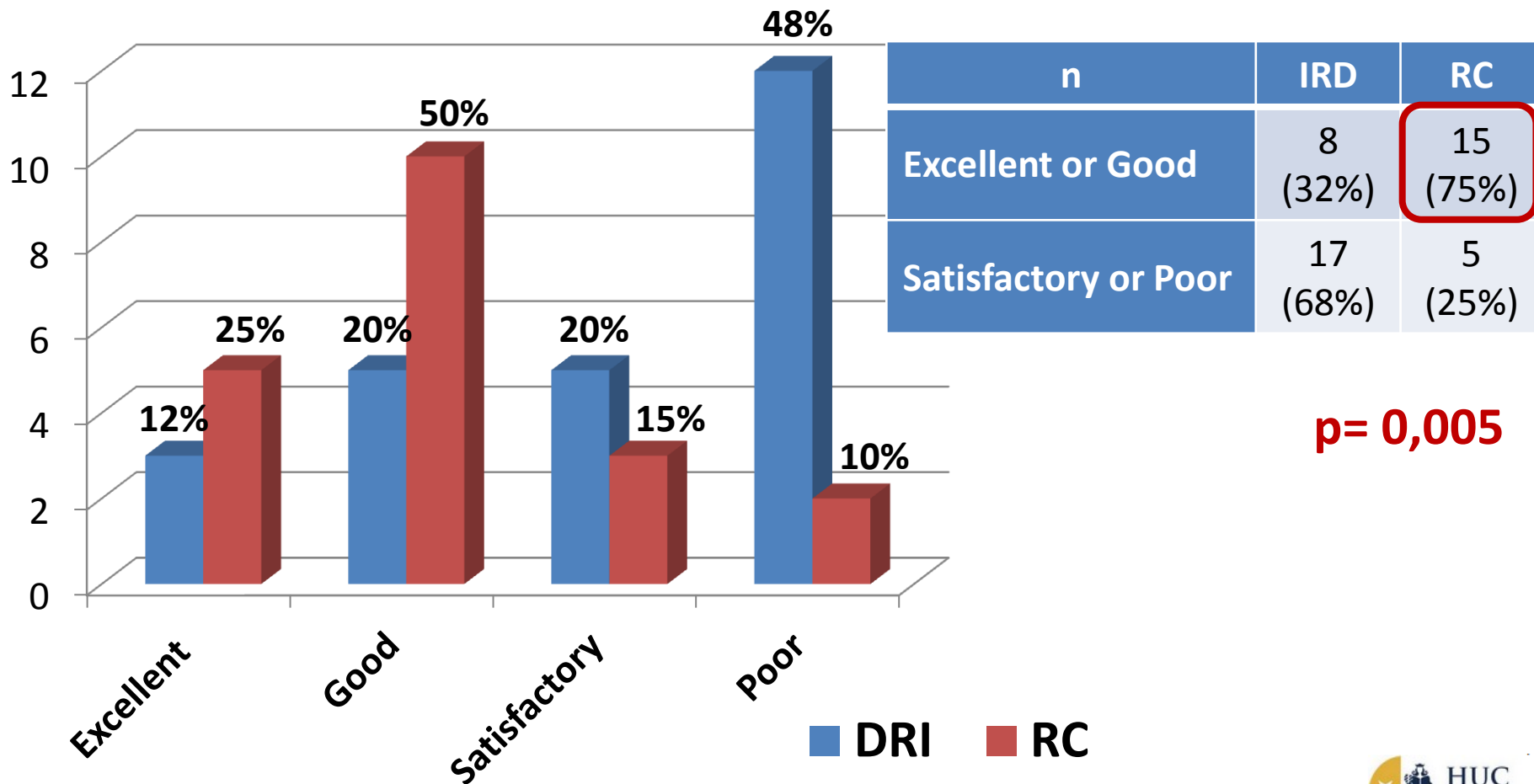
Functional Outcomes

	IRD	RC	<i>p-value</i>
Pronosupination (80-100%)	n=15 (60%)	n= 15 (75%)	0,204
VAS at rest	2,0± 0,3	1,5± 0,7	0,832
VAS in activity	4,0± 0,6	2,5± 0,3	0,072
DASH Score	22,4± 5,6	13,0± 6,2	0,153



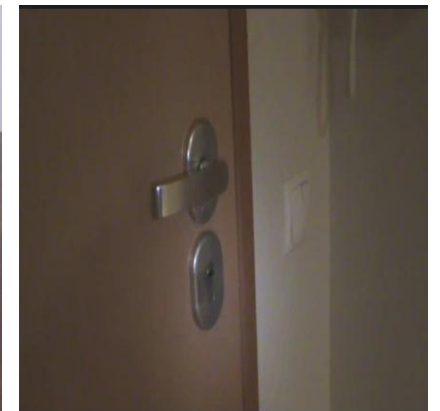
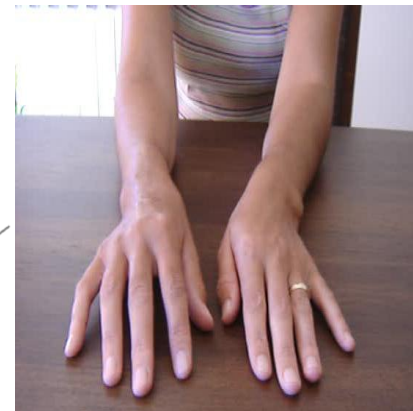
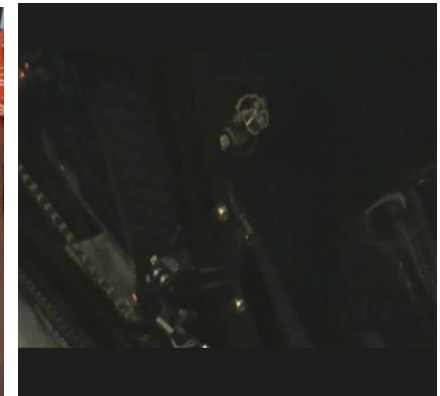
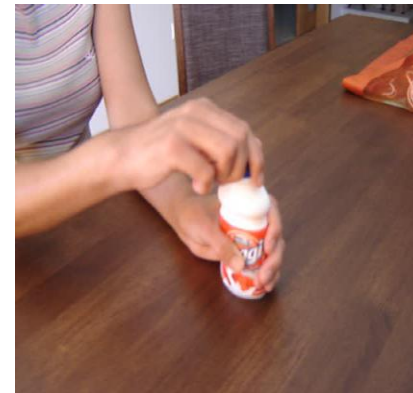
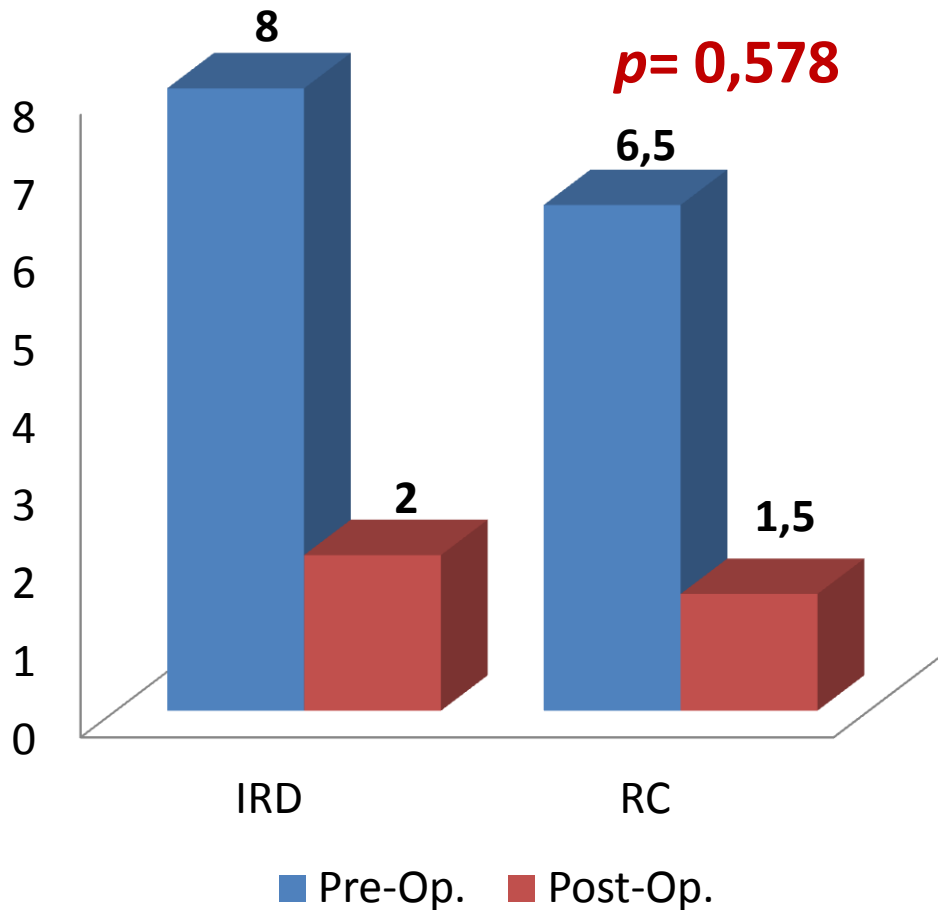
RESULTS

Functional Outcomes: BGL Score System



RESULTS

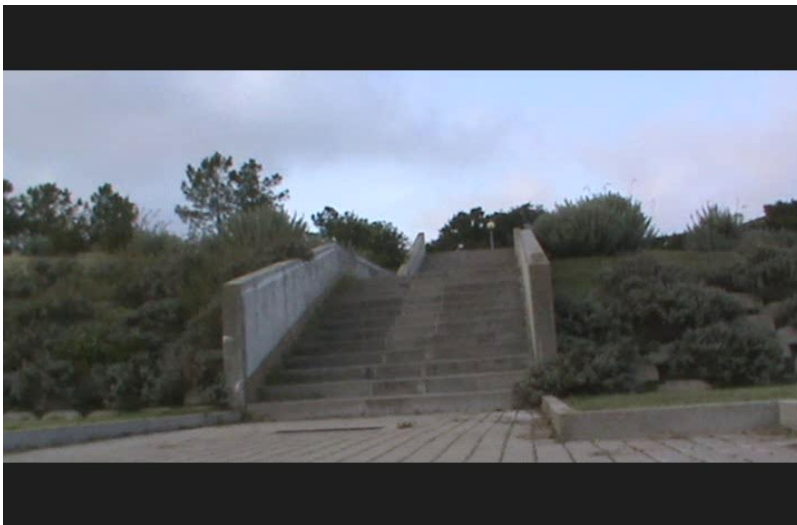
Functional Outcomes: VAS Pre and Post-operatively



RESULTS

Return to Work

	YES
IRD	n=14 (56%)
RC	n=18 (90%)
p= 0,013	



DISCUSSION (1)

“Old Techniques” – Good Outcomes

- ✓ Colonna
- ✓ Mannerfelt



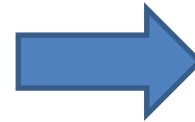
*Is there a
place for this
procedures ?*



DISCUSSION (2)

Postoperative – Cross Match

- ✓ n= 5/5 complications
- ✓ n= 3/4 US alterations



Plate



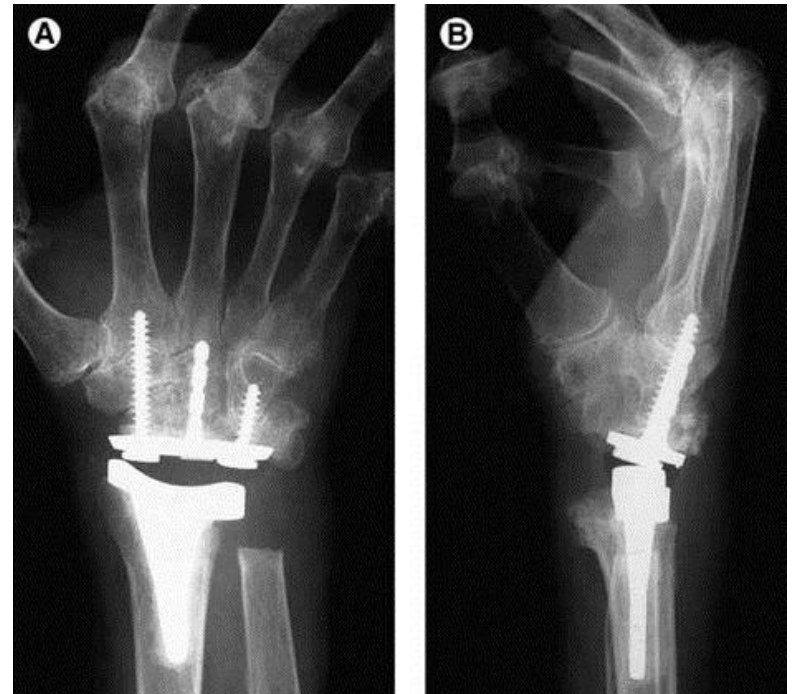
*The
Importance
of the Plate
Design!*



DISCUSSION (3)

Would be **wrist arthroplasty** a better solution?

- ✓ Case selection
- ✓ Economy
- ✓ Long Term Results
- ✓ Function





CONCLUSION

✓ **IRD-US:** Low intensity and without inflammatory activity

✓ Time for bone union and post-op. complications

✓ VAS / DASH / Pronosupination

} **p>0,05**

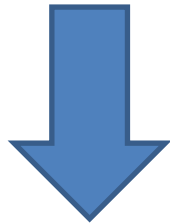
✓ **RC group**- Excellent or good BGL outcomes, **p<0,05**

- Higher number return to their work, **p<0,05**

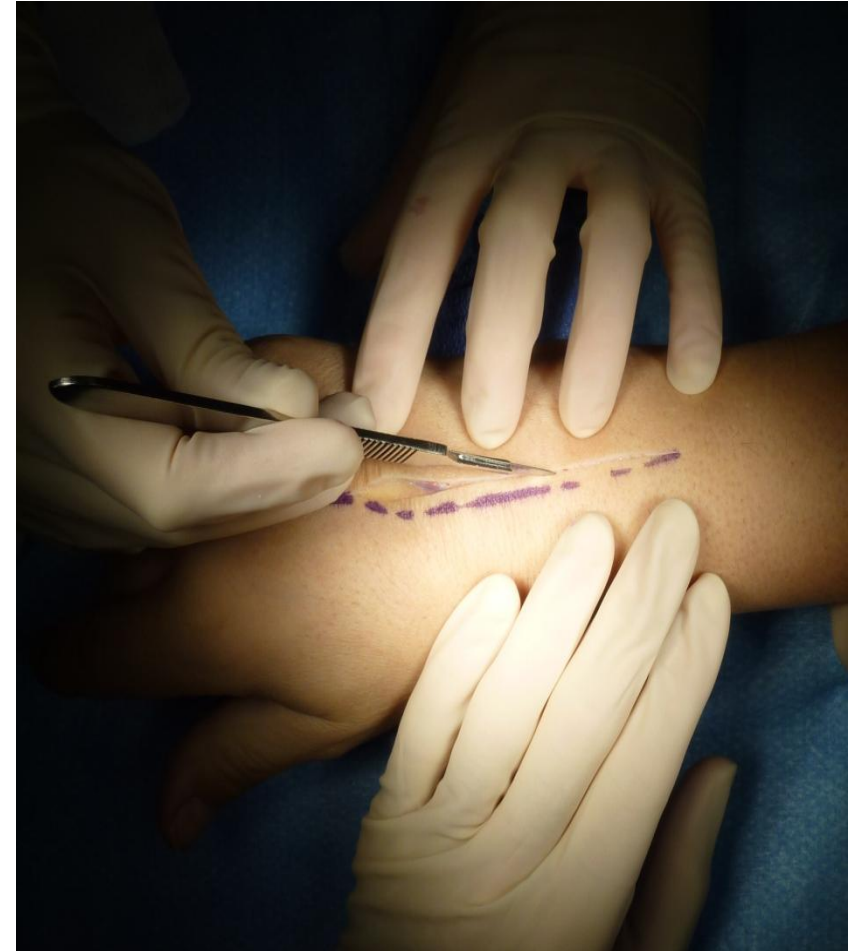
OUR MESSAGE

Wrist arthrodesis:

- ***Very effective***
- ***Encouraging functional outcomes and pain relief levels***



Patients with and without inflammatory rheumatic disease.





Thank you...



Save the Date

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