

Shortening of the ulna for  
impingement  
A comparative analysis of two  
techniques

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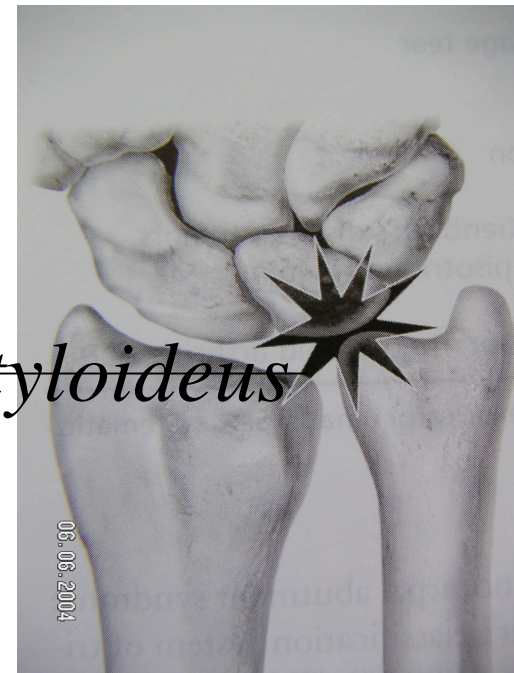
## Shortening of the ulna, a comparative analysis of two techniques

- Ulnar impaction: Etiology
  - Overlong ulna (primary or secondary),
  - TFC tears (pistoning)
  - Rheumatoid arthritis
  - Madelung

*Cave: Impaction processus styloideus*

## Shortening of the ulna, a comparative analysis of two techniques

- Ulnar impaction: excluded from the study
    - Overlong ulna (primary or secondary),
    - TFC tears (pistoning)
    - Rheumatoid arthritis
    - Madelung
- Cave: Impaction processus styloideus*

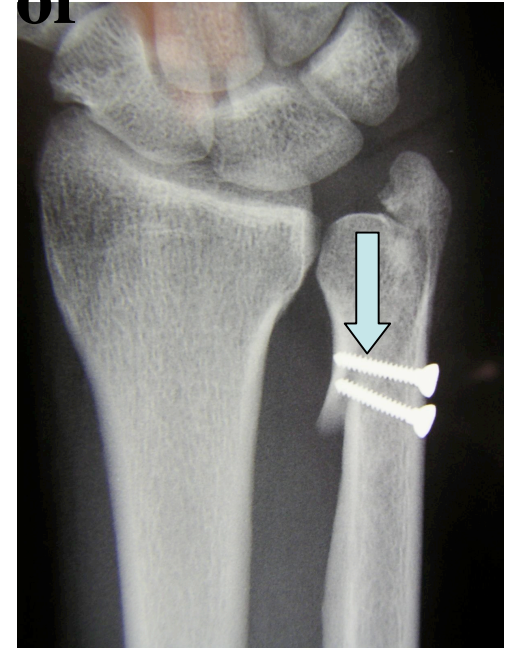


## **Shortening of the ulna, a comparative analysis of two techniques**

- Ulnar impaction: alternative
  - Shortening of the ulna
  - TFC Debridement
  - Section of distal ulna (Wafer).

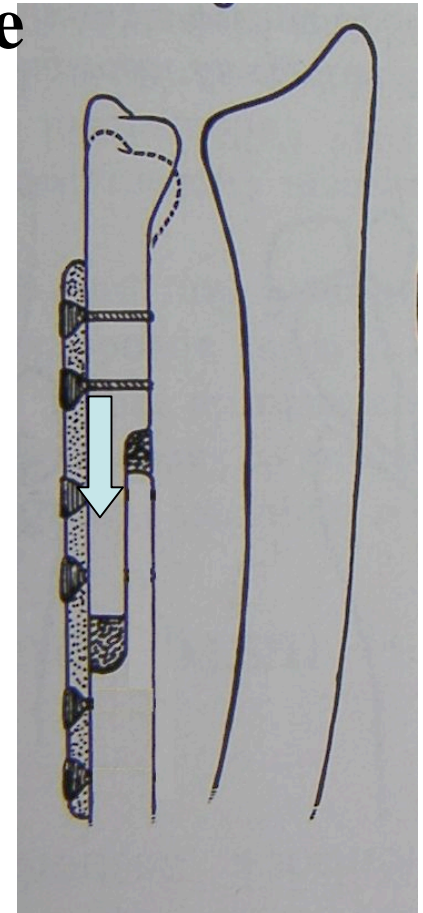
## Shortening of the ulna, a comparative analysis of two techniques

- **Techniques: Comtet's approach for Kienböck (lengthening)**
  - **Intraarticular: at the level of the ulnar head (epiphysis, spongy bone)**
  - **Shaft: at the level of the diaphysis (cortical bone)**



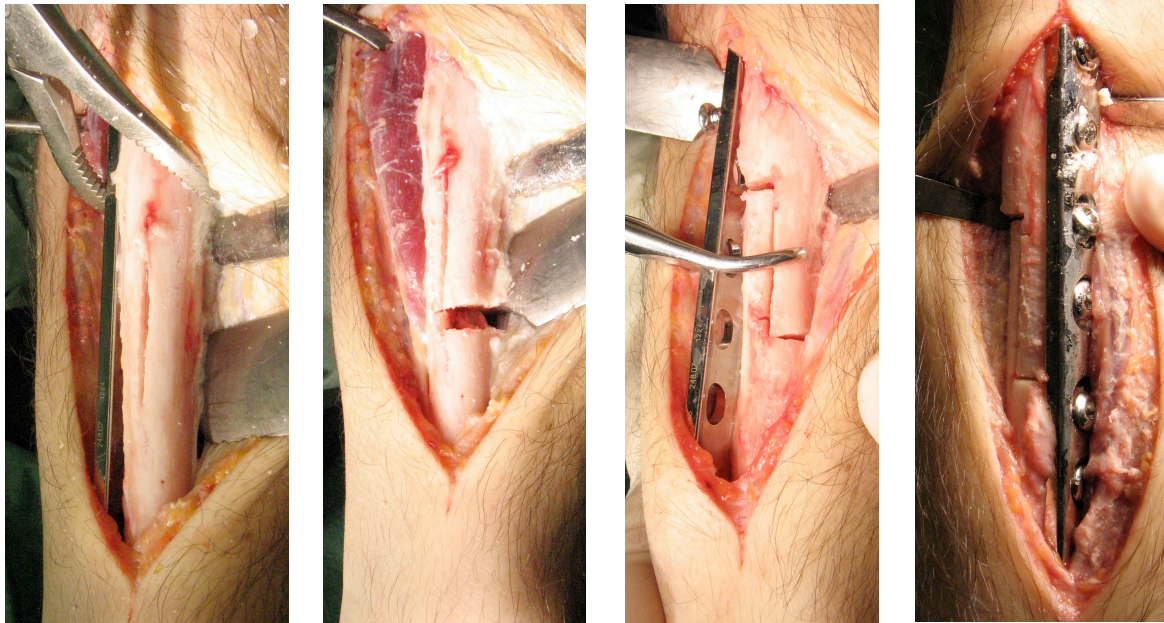
## Shortening of the ulna, a comparative analysis of two techniques

- **Techniques: Desanfans' Technique for ulna lengthening.**
  - **Intraarticular: at the level of the ulnar head (epiphysis, spongy bone)**
  - **Shaft: at the level of the diaphysis (cortical bone)**



## Shortening of the ulna, a comparative analysis of two techniques

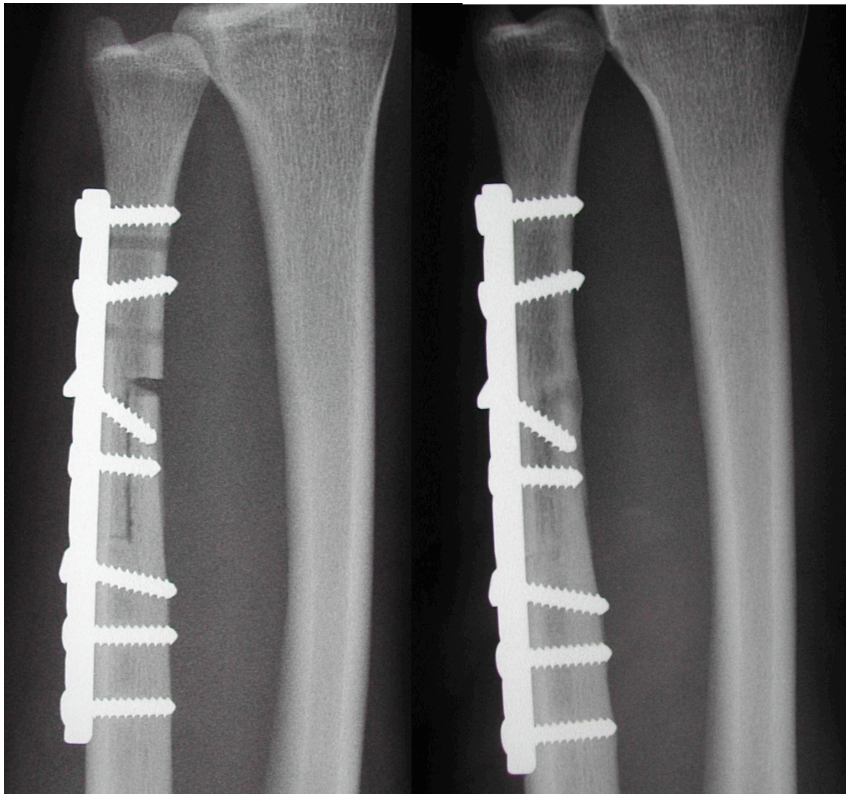
- **Techniques: Desanfans' Technique for ulna lengthening.**





## Shortening of the ulna, a comparative analysis of two techniques

- **Techniques: Desanfans' Technique for ulna lengthening.**



Healing at 6 months



## Shortening of the ulna, a comparative analysis of two techniques

- Patients:

Retrospective study		
Observation period	1.1.1982	31.12.98
Follow-up (month)	55 (median)	(15 – 144)
Delay to Osteotomy (month)	21 (median)	(1 – 198)

Both groups similar

## Shortening of the ulna, a comparative analysis of two techniques

- Patients (n: 36):

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<b>Etiology</b>	All but two, traumatic Radius malunion 12
<b>Pain</b>	<b>All</b> , at the distal RU
<b>Instability/Laxity RU</b>	obvious 21 / Absent: 15

## Shortening of the ulna, a comparative analysis of two techniques

- Patients & methods (n: 36):

### Statistics for comparison

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Chi-square

Cross tabulation

Mann-Whitney

Two samples nonparametric

Manova

Influencial variables

## Shortening of the ulna, a comparative analysis of two techniques

- Patients & Methods, scoring (max 110)

<p><b>Pain:</b> none (20) / occasional (15) / moderate (10) / severe (5)</p> <p><b>Function:</b> back to all (20), discomfort (15), limitation (10), day living (05)</p> <p><b>Motion:</b> equal (20), reduced (15) day living (5), insufficient (2.5)</p> <p><b>Objective score:</b> redundant</p>	<p><b>Strength:</b> equal (20), 75% (7.5), 50% (5), less (2.5)</p> <p><b>Union:</b> healed (10), delay &gt; 6 month (5); non union (2.5)</p> <p><b>Ulnar variance:</b> 0 to -2mm (10); + 1mm or &lt; -2 (5); &gt;+2 or &lt; 3mm (2.5)</p> <p><b>Complication:</b> none (10) one or more (5)</p>
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## Shortening of the ulna, a comparative analysis of two techniques

- Patients:

	N	Women	Men
Both groups	36	14	22
<i>Head</i>	19	<i>6</i>	<i>13</i>
Shaft	17	8	9
Age	Median		
Both groups	43.9	52.8	37.6
<i>Head</i>	36.8	<i>44.5</i>	<i>36.1</i>
Shaft	45.3	56.1	43.5

No statistical differences

## Shortening of the ulna, a comparative analysis of two techniques

- Results: a. occupation = similar

Occupation	Head	Shaft	total
Light	9	10	19
medium	6	3	9
heavy	4	4	8
Total	19	17	36

## Shortening of the ulna, a comparative analysis of two techniques

- Results: b. sex = similar

Occupation	women	men	total
Light	9	10	19
medium	3	6	9
heavy	2	6	8
Total	14	22	36



## Shortening of the ulna, a comparative analysis of two techniques

- Results: c1. motion = Flex-Ext, similar

rom	head	shaft	total
$\leq 70$	5	2	7
70 - 139	11	11	22
140 - 180	3	4	7
Total	19	17	36

## Shortening of the ulna, a comparative analysis of two techniques

- Results: c2. motion = Ab-Ad, similar

rom	head	shaft	total
$\leq 60^\circ$	13	10	23
Over $60^\circ$	6	7	13
Total	19	17	36

**Shortening of the ulna, a comparative analysis of two techniques**

- Results: c3. motion = Pro-Supination

rom	head	shaft	total
< 120°	1	1	2
120 – 149°	5	4	9
Over 150	10	7	17
Total	16	12	36

## Shortening of the ulna, a comparative analysis of two techniques

- Results: d. strength = similar

Kg	head	shaft	total
Up to 30	10	12	22
30 to 60	7	5	12
Over 60	2	0	2
Total	19	17	36

## Shortening of the ulna, a comparative analysis of two techniques

- Results: e. painscale, similar

Painscale	Head	Shaft	Total
Up to 3	11	9	20
3 to 6	5	5	10
Over 6	3	3	6
Total	19	17	36

## Shortening of the ulna, a comparative analysis of two techniques

- Results: e. painscale, without salvage op

Painscale	Head	Shaft	Total
Up to 3	11	8	19
3 to 6	5	2	7
Over 6	0	2	2
Total	16	12	28

## Shortening of the ulna, a comparative analysis of two techniques

- Results: scoring (max 110)

score	Head	Shaft	Total (36)
Over 85	5	5	10
70 to 85	11	6	17
55 to 70	0	3	3
Up to 55	3	3	6

Chi-square between both groups: ns



## Shortening of the ulna, a comparative analysis of two techniques

- Results: f. score (without salvage, *significantly better:  $p = 0.01$* )

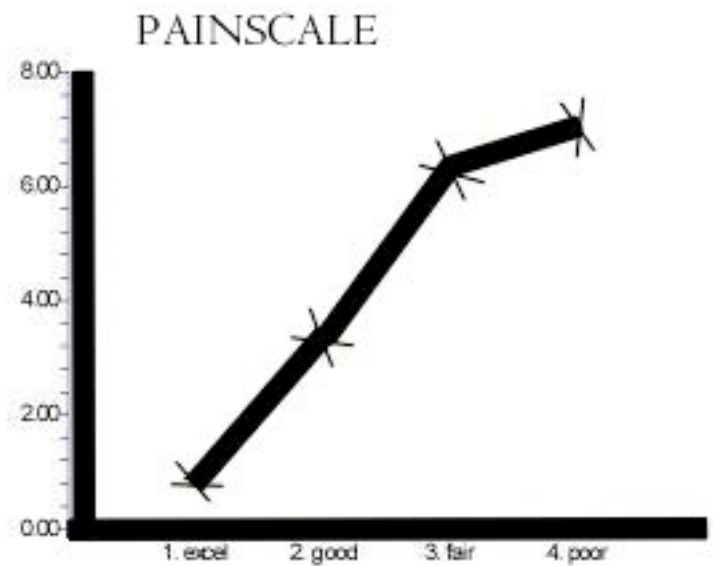
score	Head (16)	Shaft (12)	Total (28)
Over 85	5	5	10
70 to 85	11	3	14
55 to 70	0	3	3
Up to 55	0	1	1

Chi-square between both groups: 0.04

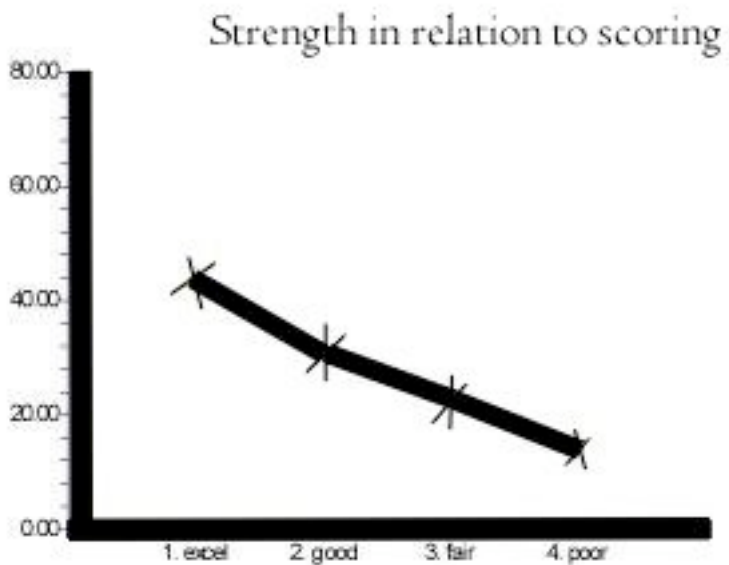
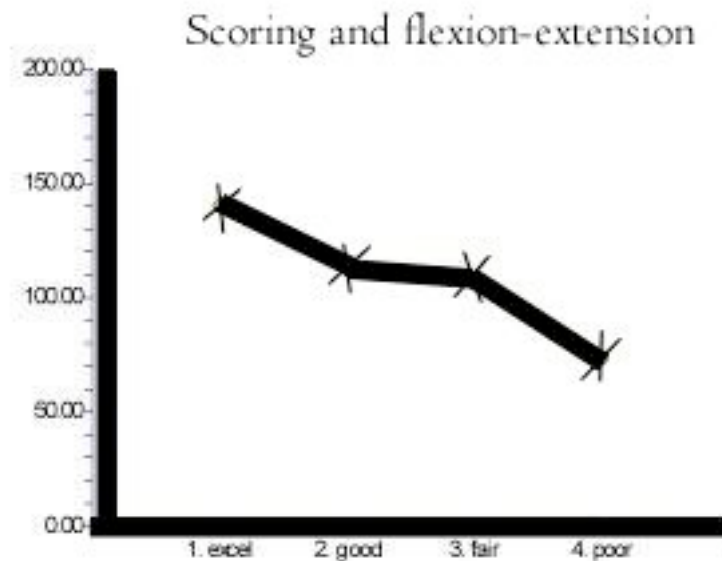
## Shortening of the ulna

**Both groups** (*excellent, good, fair, poor*)

Rank	N	Age	Pain	FE	AB-D	Pr_Sup	Strength
1	10	40.2	0	145	67.5	160	40.5
2	17	45.	3	115	50	150	28
3	3	45.7	6	100	45	155	24
4	6	47.4	7	80	50	145	14.5



## Shortening of the ulna



- Manova (factors):
- FE,  $p > 0.002$
- Strength,  $p > 0.004$
- Pain,  $p > 0.001$

# Manova

## Shortening of the ulna

Osteotomy	All	Head	Shaft
FE	<i>P &lt; 0.002</i>	<i>P &lt; 0.006</i>	<b>P &gt; 0.08</b>
Strength	<i>P &gt; 0.004</i>	<b>P &gt; 0.06</b>	<i>P &lt; 0.008</i>
Pain	<i>P &lt; 0.001</i>	<i>P &lt; 0.002</i>	<i>P &lt; 0.001</i>

## Shortening of the ulna, a comparative analysis of two techniques

- Patients own evaluation correlated well with the scoring system.

$$\text{Gamma} = 0.97$$

## Shortening of the ulna, a comparative analysis of two techniques

### *CONCLUSIONS*

- *Both techniques give similar results,*
- *head OT might be better*
- *Ranking depends on*
  - Mainly on pain in both groups &
    - on flexion extension after osteotomy at the level of the head
    - on strength after shaft osteotomy

## Shortening of the ulna, a comparative analysis of two techniques

- Both techniques
  - *are debatable as salvage procedures*
  - *need exact pre-operative diagnostic*
  - allow primary bone healing (no pseudarthrosis)
  - **No proof that shaft shortening stabilizes the distal radio-ulnar joint**



## Shortening of the ulna, a comparative analysis of two techniques

- Both techniques

**Thank you for  
your attention**

*as a large procedures*  
(2011)

– allow primary

insertion

– of the shaft OT stabilizes the  
distal radio-ulnar joint