

Les fractures de l'extrémité  
proximale de l'humérus  
Toutes les opérer?

Ludovic Glanz

Fellowship Chirurgie de l'épaule

## Epidémiologie

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5% des fractures

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Surtout après 40 ans (70 ans surtout)

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3 femmes: 1 homme

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En augmentation X 3 en 30 ans

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Pas de réelles études pour guider l'attitude

# Classer les fractures

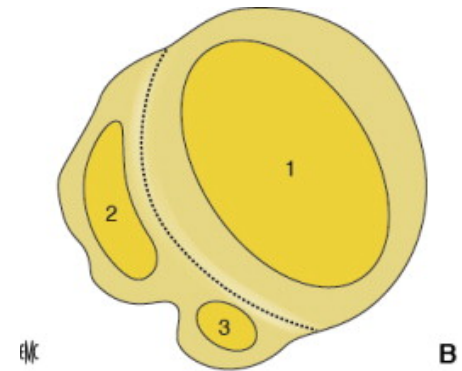
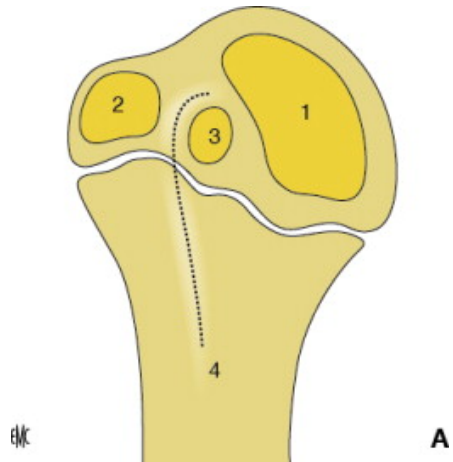
- NEER
- Duparc
- Hertel
- AO
- Resch

	2 part	3 part	4 part
Anatomical neck			
Surgical neck			
Greater tuberosity			
Lesser tuberosity			
Fracture dislocation anterior			
Fracture dislocation posterior			

# A partir d'où?

- 4 fragments de Codman
- Le déplacement, l'angulation (pas les traits)
- Bonnes radiographies avec les bonnes incidences

# Noyaux d'ossification



4 fragments  
distincts
















# Les fragments de Neer

Supérieur à 1 cm du/des fragments

Angulation > 45 degrés

Rediscuté.....

Classifie les fractures déplacées, pas le nombre de traits

	2 part	3 part	4 part
Anatomical neck			
Surgical neck			
Greater tuberosity			
Lesser tuberosity			
Fracture dislocation anterior			
Fracture dislocation posterior			



# Radiographies et incidences



# Profil axillaire

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# Les autres examens

- CT
- IRM

# Alors?

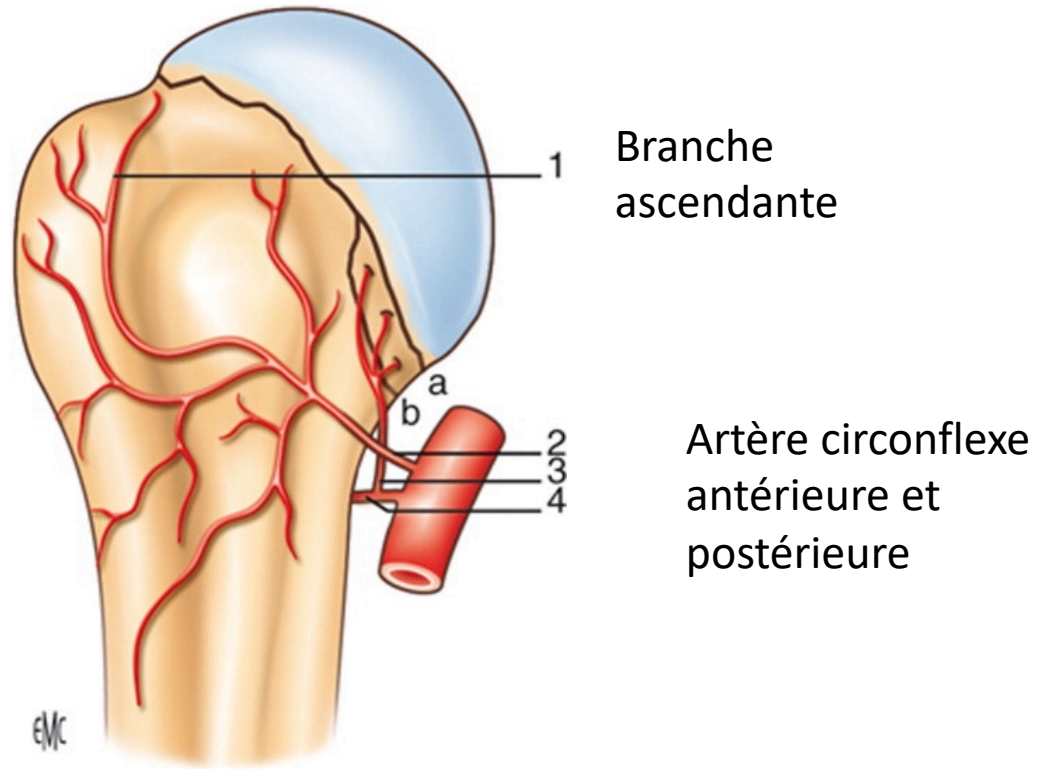
- Les fractures non (peu)-déplacées Neer « 1 »

Traitement conservateur

- Les fractures déplacées

Chirurgie? Laquelle?

# La vascularisation de la tête





Le choix du  
traitement

# Traitement conservateur

- Poly-sling, gilet orthopédique, hanging-cast, Sarmiento



# Traitement chirurgical

- Matériel d'ostéosynthèse:

Clou centro-médullaire, plaque vissée verrouillée, PTE, PTEi





Comment choisir quand opérer?  
Et Qui?

# Indications

- Le patient:

Age  $>65$  et  $<85$

Qualité osseuse (Tingart):

C-M plutôt que plaques V

La demande du patient

Son état antérieur (PTEI)

Ses comorbidités

# Indications

- La fracture:

Déplacement

Risque de nécrose (Neer I <IV)

La comminution médiale

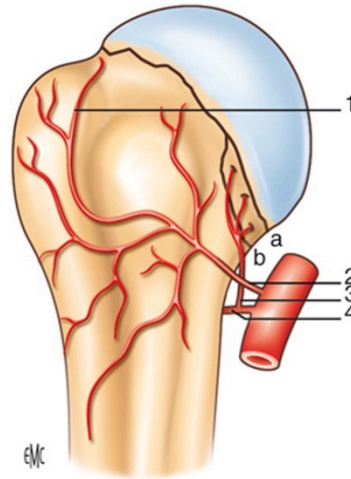
# Déplacement

Critères d'ostéosynthèse:

- Tubercule majeur >10 mm

...Ou 5 mm

- Angulation > 20° , VARUS-Valgus
- Latéralisation des fragments ( éperon et charnière médiale)



Le chirurgien et son expérience





# La pratique

Et la littérature

# PROFHER

## Proximal Fracture of the Humerus Evaluation by Randomization

Publiée dans le JAMA en mars 2015

Research

### Original Investigation

### Surgical vs Nonsurgical Treatment of Adults With Displaced Fractures of the Proximal Humerus: The PROFHER Randomized Clinical Trial

Amar Rangan, FRCS(Tr&Orth), Helen Handoll, DPhil, Stephen Brealey, PhD, Laura Jefferson, PhD, Ada Keding, MSc, Belen Corbacho Martin, MSc, Lorna Goodchild, MSc, Ling-Hsiang Chuang, PhD, Catherine Hewitt, PhD, David Torgerson, PhD, for the PROFHER Trial Collaborators

Supplemental content at [jama.com](http://jama.com)

**IMPORTANCE** The need for surgery for the majority of patients with displaced proximal humeral fractures is unclear, but its use is increasing.

**OBJECTIVE** To evaluate the clinical effectiveness of surgical vs nonsurgical treatment for adults with displaced fractures of the proximal humerus involving the surgical neck.

**DESIGN, SETTING, AND PARTICIPANTS** A pragmatic, multicenter, parallel-group, randomized clinical trial, the Proximal Fracture of the Humerus Evaluation by Randomization (PROFHER) trial, recruited 250 patients aged 16 years or older (mean age, 66 years [range, 24-92 years]; 192 [77%] were female, and 249 [99.6%] were white) who presented at the orthopedic departments of 32 acute UK National Health Service hospitals between September 2008 and April 2011 within 3 weeks after sustaining a displaced fracture of the proximal humerus involving the surgical neck. Patients were followed up for 2 years (up to April 2013) and 215 had complete follow-up data. The data for 231 patients (114 in surgical group and 117 in nonsurgical group) were included in the primary analysis.

**INTERVENTIONS** Fracture fixation or humeral head replacement were performed by surgeons experienced in these techniques. Nonsurgical treatment was sling immobilization. Standardized outpatient and community-based rehabilitation was provided to both groups.

**MAIN OUTCOMES AND MEASURES** Primary outcome was the Oxford Shoulder Score (range, 0-48; higher scores indicate better outcomes) assessed during a 2-year period, with assessment and data collection at 6, 12, and 24 months. Sample size was based on a minimal clinically important difference of 5 points for the Oxford Shoulder Score. Secondary outcomes were the Short-Form 12 (SF-12), complications, subsequent therapy, and mortality.

**RESULTS** There was no significant mean treatment group difference in the Oxford Shoulder Score averaged over 2 years (39.07 points for the surgical group vs 38.32 points for the nonsurgical group; difference of 0.75 points [95% CI, -1.33 to 2.84 points];  $P = .48$ ) or at individual time points. There were also no significant between-group differences over 2 years in the mean SF-12 physical component score (surgical group: 1.77 points higher [95% CI, -0.84 to 4.39 points];  $P = .38$ ), the mean SF-12 mental component score (surgical group: 1.28 points lower [95% CI, -3.80 to 1.23 points];  $P = .32$ ), complications related to surgery or shoulder fracture (30 patients in surgical group vs 23 patients in nonsurgical group;  $P = .28$ ), requiring secondary surgery to the shoulder (11 patients in both groups), and increased or new shoulder-related therapy (7 patients vs 4 patients, respectively;  $P = .58$ ), and mortality (9 patients vs 5 patients;  $P = .27$ ). Ten medical complications (2 cardiovascular events, 2 respiratory events, 2 gastrointestinal events, and 4 others) occurred in the surgical group during the postoperative hospital stay.

**CONCLUSIONS AND RELEVANCE** Among patients with displaced proximal humeral fractures involving the surgical neck, there was no significant difference between surgical treatment compared with nonsurgical treatment in patient-reported clinical outcomes over 2 years following fracture occurrence. These results do not support the trend of increased surgery for patients with displaced fractures of the proximal humerus.

**TRIAL REGISTRATION** [isrctn.com](http://isrctn.com) Identifier: ISRCTN50850043

JAMA. 2015;313(10):1037-1047. doi:10.1001/jama.2015.1629

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**Group Information:** The Proximal Fracture of the Humerus Evaluation by Randomization (PROFHER) Trial Collaborators are listed at the end of this article.

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# PROFHER

## Matériel et méthode

- Randomisée Chirurgie / Conservateur
- Multicentrique
- Supériorité
- Prospective
- 24 mois
- Oxford Shoulder Score et SF-12



# PROFHER

## Objectifs

- Principal:

Meilleur outcome d'un traitement par rapport à l'autre.

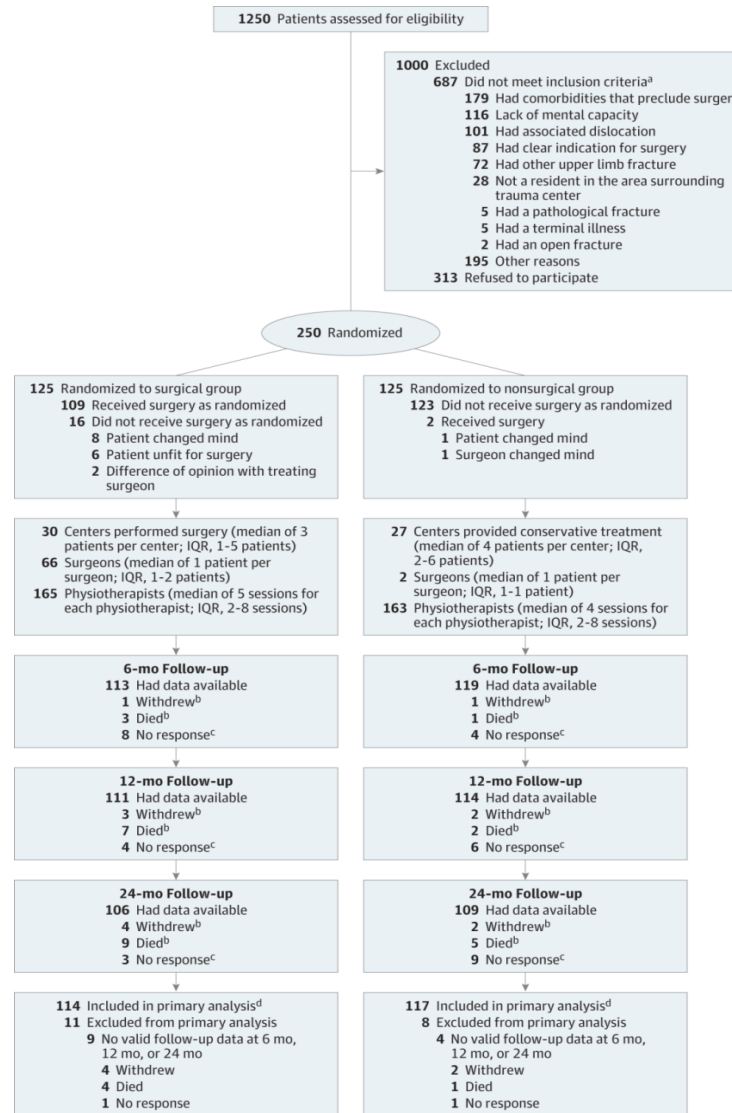
Score OSS

- Secondaire

Score SF-12

Complications

# PROFHER Flow chart



# PROFHER

## Conclusions

- Aucune différence significative à 6, 12 et 24 mois basée sur le OSS
- Comprend les fractures incluant la col chirurgical
- Score fonctionnel pas de RX, auto-évaluation

Double aveugle impossible mais équivalence des groupes évitant ce biais.

Traitement chirurgical avec implants courants mais pas tous  
( ostéosynthèse et héli-arthroplastie)

2 ans....

• Et après ?



## ■ TRAUMA

# Five-year follow-up results of the PROFHER trial comparing operative and non-operative treatment of adults with a displaced fracture of the proximal humerus

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November 2016

### Aims

The PROximal Fracture of the Humerus Evaluation by Randomisation (PROFHER) randomised clinical trial compared the operative and non-operative treatment of adults with a displaced fracture of the proximal humerus involving the surgical neck. The aim of this study was to determine the long-term treatment effects beyond the two-year follow-up.

### Patients and Methods

Of the original 250 trial participants, 176 consented to extended follow-up and were sent postal questionnaires at three, four and five years after recruitment to the trial. The Oxford Shoulder Score (OSS; the primary outcome), EuroQoL 5D-3L (EQ-5D-3L), and any recent shoulder operations and fracture data were collected. Statistical and economic analyses, consistent with those of the main trial were applied.

### Results

OSS data were available for 164, 155 and 149 participants at three, four and five years, respectively. There were no statistically or clinically significant differences between operative and non-operative treatment at each follow-up point. No participant had secondary shoulder surgery for a new complication. Analyses of EQ-5D-3L data showed no significant between-group differences in quality of life over time.

### Conclusion

These results confirm that the main findings of the PROFHER trial over two years are unchanged at five years.

Cite this article: *Bone Joint J* 2017;99-B:383-92.

We report the five-year follow-up of the PROximal Fracture of the Humerus Evaluation by Randomisation (PROFHER) trial (trial registration identifier: ISRCTN50850043).

PROFHER was a pragmatic, multi-centre randomised controlled trial (RCT), funded by the United Kingdom National Institute for Health Research (NIHR), which compared operative and non-operative treatment of adults with a displaced fracture of the proximal humerus involving the surgical neck.<sup>1</sup>

Between September 2008 and April 2011, 250 adults were recruited into the trial. At two-year follow-up, the primary outcome and the Oxford Shoulder Score (OSS)<sup>2,3</sup> were available for 215 participants.<sup>4</sup> The results showed no significant difference between operative and non-operative treatment by OSS over two years ( $p = 0.479$ ) or other patient-reported clinical outcomes in the two years following fracture;<sup>4,5</sup> and the cost of surgery was considerably greater.<sup>6</sup>

The initial choice of a two-year follow-up for PROFHER was a pragmatic one which balanced feasibility and the expectation that any differences in the OSS between the two treatment groups at two years would represent a true and enduring effect. However, there is insufficient evidence from other RCTs to confirm this assumption.<sup>7</sup> Recovery from serious injuries such as a fracture of the proximal humerus is a long and often incomplete process that can be hindered by complications. A substantial proportion (15/74, 20%) of participants in a trial with less severe ('minimally displaced two-part') fractures than in PROFHER had continuing 'severe' disability after two years, although less than that at one year (30/84, 37%).<sup>8</sup>

We reasoned that a five-year follow-up would allow for delays in recovery, potential functional deterioration, and subsequent operations resulting from complications, such as avascular necrosis and complications of surgical fixation or humeral head replacement,

# Et le patient ?

Quality of Life

Meilleure après chirurgie

# Review



8 études: Pas de  
différence à 1 et 2  
ans  
MAIS

Locking plates et  
hémi-prothèse  
seulement

## Interventions for treating proximal humeral fractures in adults (Review)

Handoll HHG, Brorson S

Handoll HHG, Brorson S.  
Interventions for treating proximal humeral fractures in adults.  
*Cochrane Database of Systematic Reviews* 2015, Issue 11. Art. No.: CD000434.  
DOI: 10.1002/14651858.CD000434.pub4.

[www.cochranelibrary.com](http://www.cochranelibrary.com)

Interventions for treating proximal humeral fractures in adults (Review)  
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WILEY

# AU FINAL



Nombreux traitements

Nombreuses classifications

Peu d'études de haut niveau ( I, II)

Pas de lien démontré entre une classification et le traitement

Traitements comparés sont ceux utilisés par le centre ( pas forcément ceux utilisés)

Des critères à disposition