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Conflicts of Interest statement

- J.Deranlot: Non-financial support
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- B.Marion: Non-financial support
  - SANOFI
- S.Klouche: none
- G.Nourissat: none
- Ph. Hardy: Personal Fees as consultant
  - Arthrex
  - Zimmer

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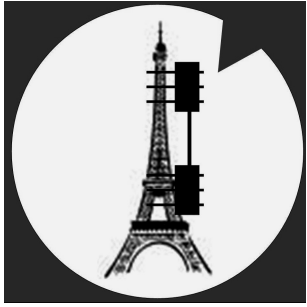

Latarjet Procedure : Comparative Short Term Study of Arthroscopic *vs* Mini-Open Approach

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HOPITAL AMBROISE PARÉ

CLINIQUE DROUOT sport & arthrose

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Background

- Recurrent anterior instability = surgical challenge
- Latarjet procedure first described in 1954 *(Latarjet M. Treatment of recurrent dislocation of the shoulder. Lyon Ch r 1954;49:994-997 in French).*
- Mini-open approach
- New arthroscopic set
- Benefits versus mini open approach ?
- Comparative studies are needed

Objectives - Hypothesis

- Main objective: to assess post-operative pain
- Secondary objective
  - Time of surgery
  - Peri-operative complications
  - Analgesic consumption
  - Positioning of coracoid bone block at the anterior aspect of the glenoid
- Hypothesis: arthroscopic Latarjet procedure is less painful than mini-open procedure

Study design

- Prospective comparative non-randomized study
- 2 centers (one by procedure)
  - Mini-invasive procedure: Ancillair[illegible] Arthrex®, Naples, FL
  - Arthroscopic procedure: Depuy-Mitek®, Raynham, MA
- From January 2012 to December 2012
- Institutional Review Board (CPP IDF VI – Hôpital La Pitié-Salpêtrière)

Selection criteria

- Consecutive patients
- Inclusion criteria:
  - Chronic anterior shoulder instability
  - ISIS (Instability Severity Index Score) > 3
    (*Balg F., Boileau P.; The instability severity index score. A simple pre-operative score to select patients for arthroscopic or open shoulder stabilization. JBJS 2007 Nov;89(11):1470-7.)*
  - Written consent
- Exclusion criteria
  - ISIS score < 3

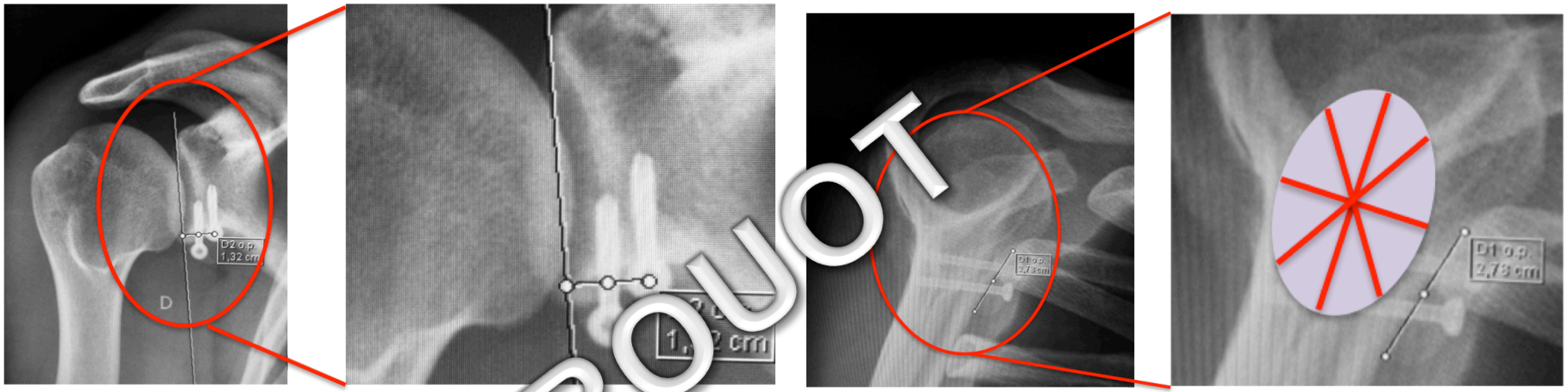
Preoperative and postoperative protocols

- Standardized
- Preoperative workup
  - Clinical examination
  - AP radiographs in 3 rotations
  - Arthro-CT
- Analgesic postoperative protocol (paracetamol, non-steroidal anti-inflammatory, tramadol)
- Follow-up assessment at 1, 3, 6 and 12 months
  - AP and lateral radiographs at 1, 3, 6 and 12 months,
  - CT at 3 months.

Evaluation criteria

- Primary criterion: mean post-operative pain during the first week using Visual Analogic Scale (VAS 0 to 10)
- Secondary criteria
  - Graft placement
    - On lateral X-ray
    - On CT-Scan
  - Postoperative complications
  - Analgesic consumption and side effects of drugs

Secondary criterion: Radiographs Assessment



According to Young et al. (***Coracoid graft dimensions after harvesting for the open Latarjet procedure ,*** *AA. Young,,M. Baba, L. Neyton, A. Godeneche, G. Walch; JSES 2012)*

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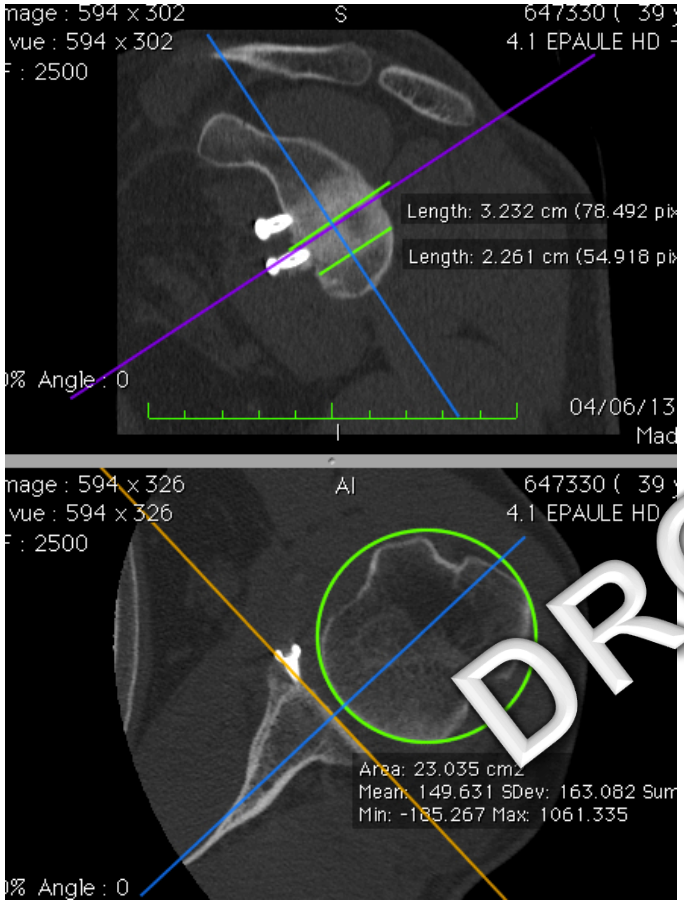
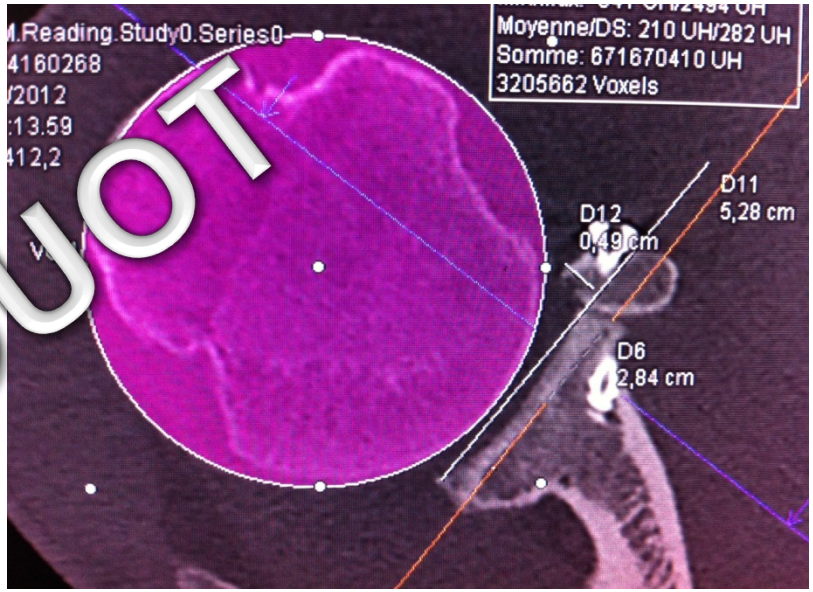
Secondary criterion: CT-scan Assessment





According to Kraus et al. ***(Coracoid graft positioning in the Latarjet procedure Validation of a standardized CT-scan analysis;*** *TM. Kraus, N. Graveleau, Y. Bohu, E. Pansard, S. Klouche, P. Hardy; KSSTA. 2013)*

Statistical Analysis

- STATA.10 software
- Sample size calculation
  - alpha = 0.0500 (two-sided); power = 0.8000
  - m1 = 3 ± 1; m2 = 2 ± 1; n2/n1 = 1.00
  - Estimated required sample sizes: n1 = 16, n2 = 16
- Nonparametric tests
  - Mann-Whitney
  - Fischer exact
  - $p<0.05$

RESULTS

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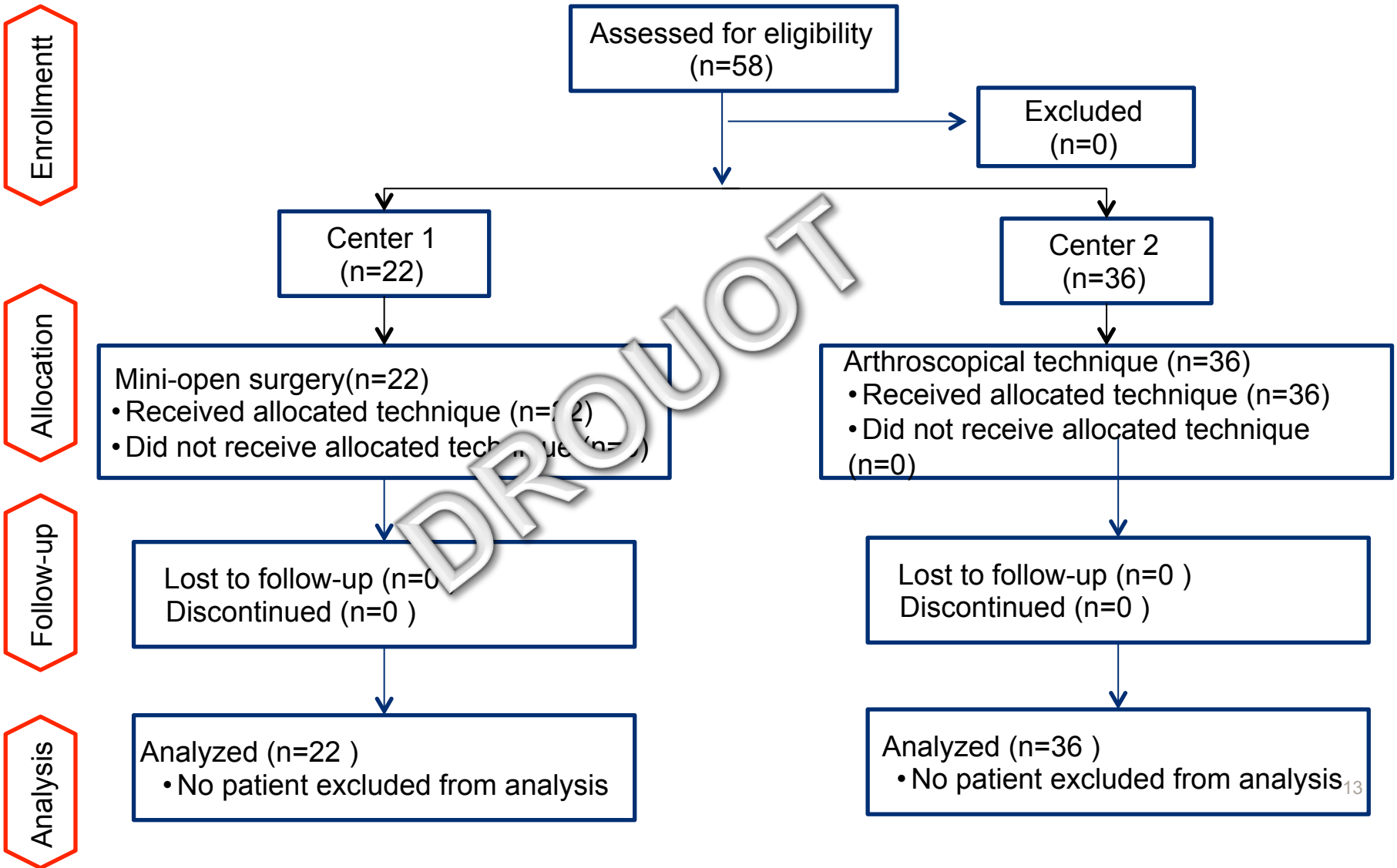
CONSORT Flow-chart



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Patients

	Complete group (n=58)	Mini-Open (n=22)	Arthroscopic (n=36)	p
Age at Surgery	26.9 ± 7.7	27.3 ± 7.5	26.7 ± 7.8	0.70
Gender	13 F / 45 M	6 F / 16 M	7 F / 29 M	0.53
BMI	23.8 ± 3.2	23 ± 3	24.3 ± 2.7	0.08
ISIS	4.4 ± 1.4	4.6 ± 1.8	4.3 ± 1.2	0.82
Sports	84.5%	9[illegible]%	77.8%	0.13
Recreational	67.2%	81.8%	58.3%	0.21
Competiton	[illegible]%	13.7%	16.7%	

2 Groups were comparable at inclusion

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Operative Time

	Mini-open group	Arthroscopic group	p
Mean Operative Time	61.6±13.2 mn	76.8±14 mn	0.00001

- The mean operative time was significantly higher in the arthroscopic group
- No peri-operative complications

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Pain Evaluation

	Complete Group	Mini-Open	Arthroscopic	p
Mean Pain level during 1st week	1.7 ± 1.5	2.5 ± 1.4	1.2 ± 1.2	**0.0026**
Mean Pain level D1	2.9 ± 1.8	4.3 ± 1.7	2.1 ± 1.3	**0.0001**
Mean Pain level D2	2.6 ± 1.8	3.8 ± 1 .9	1.8 ± 1.4	**0.0018**
Mean Pain level D3	2.[illegible] ± 1.9	3.2 ± 1.6	1.3 ± 1.8	**0.0006**
Mean Pain level D4	1.5 ± 1.8	2.3 ± 1.8	1 ± 1.6	**0.001**
Mean Pain level D5	1.2 ± 1.8	1.7 ± 2	0.9 ± 1.6	0.11
Mean Pain level D6	1 ± 1.6	1.3 ± 1.9	0.8 ± 1.4	0.39
Mean Pain level D7	0.8 ± 1.4	1.2 ± 1.8	0.5 ± 0.9	0.31

Analgesic consumption - Side effects

	Mini-Open	Arthroscopic	p
Acetaminophen 500mg	2 .5 ± 1.8	1.8 ± 1.4	0.13
Tramadol 100mg	0.2 ± 0.4	0.7 ± 1.2	0.07
Naproxen 75mg	0.9 ± 0.6	0.8 ± 0.5	0.20

No Difference

	Mini-Open	Arthroscopic	p
Nausea	3 (17.6%)	2 (7.7%)	0.36
Vomiting	2 (11.8%)	3 (11.5%)	1
Anxiety	3 (17.6%)	4 (15.4%)	1
Vertigo	4 (23.5%)	4 (15.4%)	0.69

No Difference

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Medio-lateral Bone Block Positioning

Mini-Open group	Arthroscopy group	P
6.6 ± 5.5 mm	3.7 ± 3.3 mm	0.036

Significant

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Equatorial Bone Block Positioning

Mini-Open group	Arthroscopy group	p
44.4%	94.1%	0.002

DROUOT

Significant

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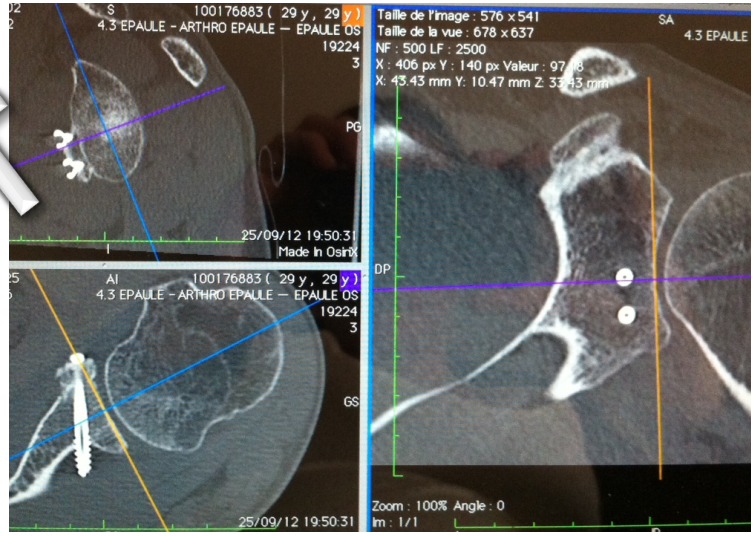
CT-scan Assessment

	Mini-open	Arthroscopic
Equatorial positionning	4h : 50%	4h : 9 (40.9%)
	5h : 50%	5h : 13 (59.1%)
Bone Block Length	21.4 ± 2.1mm	20.6 ± 2.8mm
Healing	5 (62.5%)	6 (27.3%)
Tangential Line 25%	1.2 ± 2.8mm	± 2.[illegible]mm
Tangential Line 50%	1.7 ± 3.7mm	2 [illegible]omm
Circle 25%	Contact 1 (12[illegible])	Contact 2 (9.1%)
	Médial 7 (87.[illegible]%)	Médial 20 (90.9%)
Circle 50%	Contact 1 (1[illegible].5%)	Contact 2 (9.1%)
	Médial 7 (87.5%)	Médial 20 (90.9%)
Distance Circle 25%	4.9 ± 2.6	5.1 ± 3.5mm
Distance Circle 50%	5.2 ± 3	4 ± 2.9mm



No Difference

Conclusion

- Less postoperative pain during the first week with arthroscopic procedure
- With no difference regarding analgesic consumption
- No difference regarding postoperative complications

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Conclusion

- X-Ray Positioning with arthroscopic procedure
  - More Lateral
  - Significantly more sub-equatorial
- But no significant difference on CT-scan assessment

Summary

- Arthroscopic procedure: reliable and reproducible
- No difference compared to mini-open procedure regarding the postoperative complications
- Good bone block positioning

Merci..

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