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Bone union rate and glenoid defect after arthroscopic bony Bankart repair using the double row technique

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Faculty Disclosure Information

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I have no financial relationships to disclose.

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Background

Traumatic anterior shoulder instability

- Bony Bankart lesion 7.9-50%

Arthroscopic bony Bankart repair : single row

- union rate; chronic 91.7% (1: Porcellini et al., 2007)
  fragment size: small (<7.5%) 60%, large (>7.5%) 91% (2: Nakagawa et al., 2024)
- Fragment union → remodeling (3: Nakagawa et al., 2015)

Double row knotless DAFF technique:

- Union rate : ?
- Extent of remodeling : ?

Purpose

- To determine the bone union rate, reduction in the size of the glenoid defect and postoperative outcome after arthroscopic bony Bankart repair using the double row suture bridge technique for patients with traumatic anterior shoulder instability.

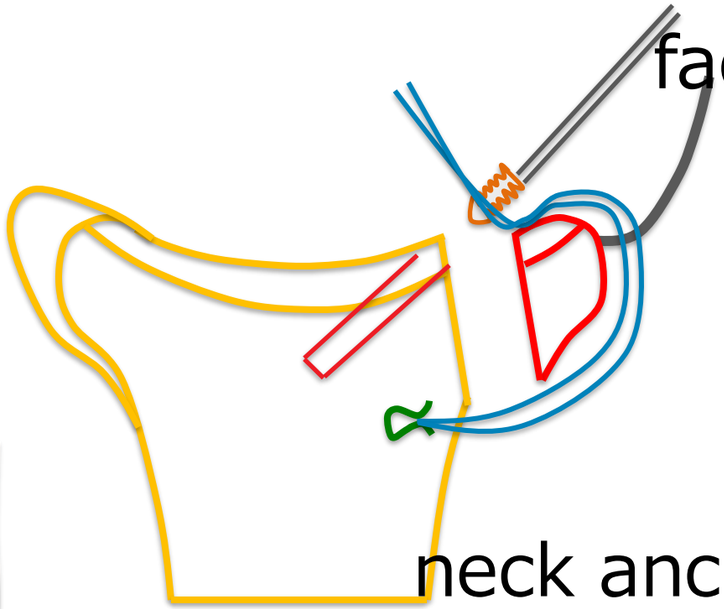
Patients

- August 2014-July 2023
- Arthroscopic Bankart repair using the double row suture bridge technique (4: Yoneda, 2014).
- 135 patients 139 shoulders
- 47 shoulders with bone fragments
- Age at op.; 23 yrs. (14-47): 45 males & 2 females
- Bone union determination by CT 6 months: 36 shoulders
- Postoperative follow-up of more than 24 months: 28 shoulders

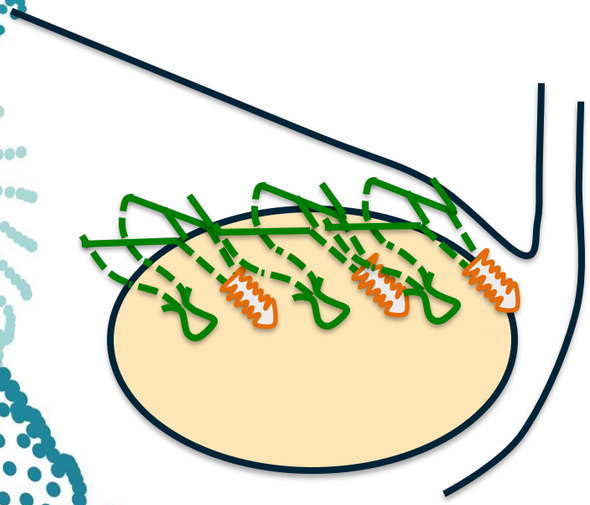
Operative technique: double row suture bridge technique

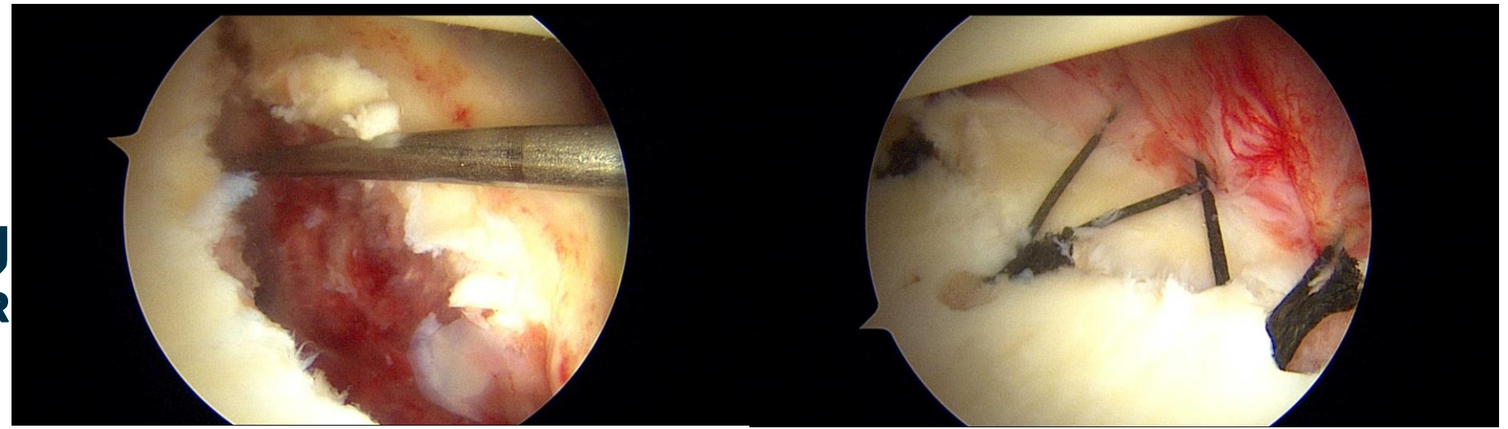
Knotless DAFF(double anchor foot print fixation) procedure (4: Yoneda, 2014)

face anchor; Gryphone™ BR



neck anchor; φ1.4 JuggerKnot™





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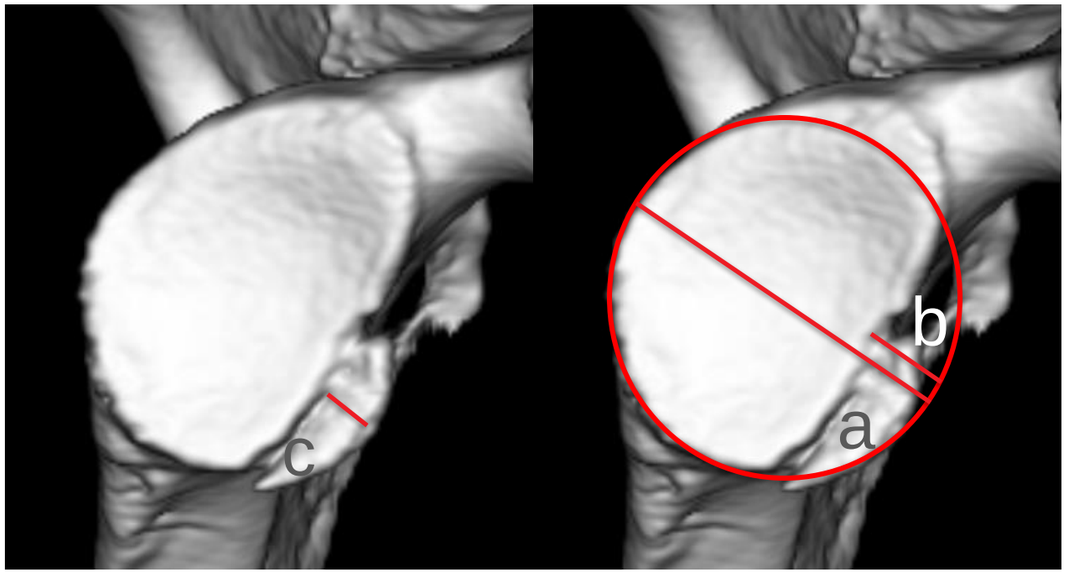
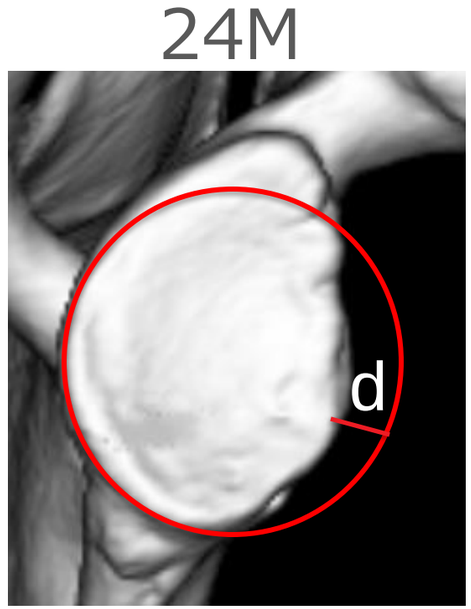
CT evaluation
Pre-op. Post-1w, 6M, 24M





Fragment size = c/a

small < 5%< medium < 10% < large (3: Nakagawa et al., 2015)

Bone defect reduction rate = (b/a – d/a) × 100

Postoperative regimen

- Immobilization : 4ws
- ROM ex. : 3ws ~
- Return to sports : 6ms

Statistical analysis

- Wilcoxon signed-rank sum test
- Kruscal-Wallis test
- $p < 0.05$: significant difference

Results

- CT at 6-month
  bone union in all 36 shoulders
- Glenoid defect rate
  15.2 % (3.5-29.9) → 5.4 % (0-17.7)
  *p<0.01
- Rowe score
  36 pts. (15-50) → 91 pts. (25-100)
  *p<0.01

Bone defect reduction rate

Small; 4.3%

≒

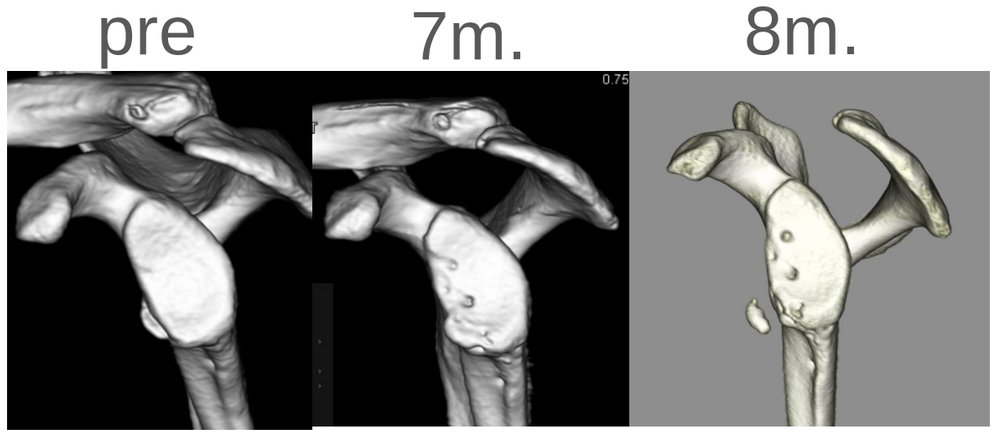
Medium; 7.8%

∧ *p<0.01

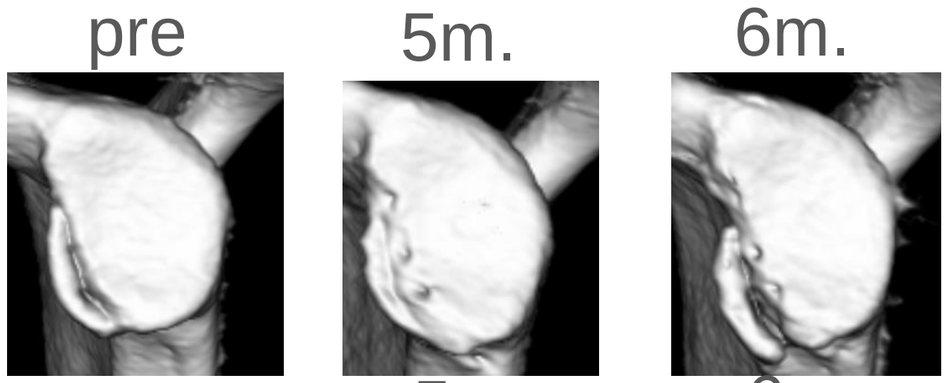
Large; 19.5%

Recurrence;
3 patients 8% : re-injured and re-fractured

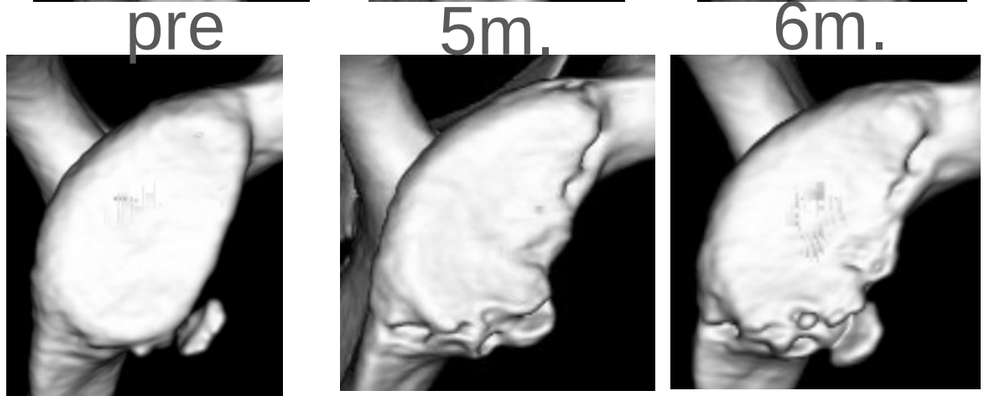
21 yrs. Male Rugby



16 yrs. Male Rugby



16 yrs. Male soccer



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Discussion

Double row suture bridge technique : Knotless DAFF procedure

- The fragment can be fixed by pressing it against the base.

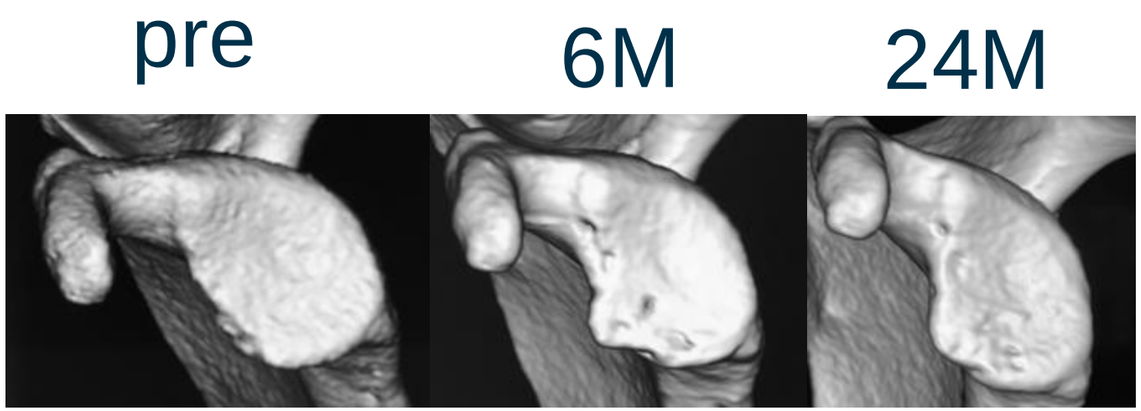
→ good fragment union rate, even small fragment.

- IGHL pulled into the hole with the GRYPHONE BR.

→ Good re-tension of IGHL.

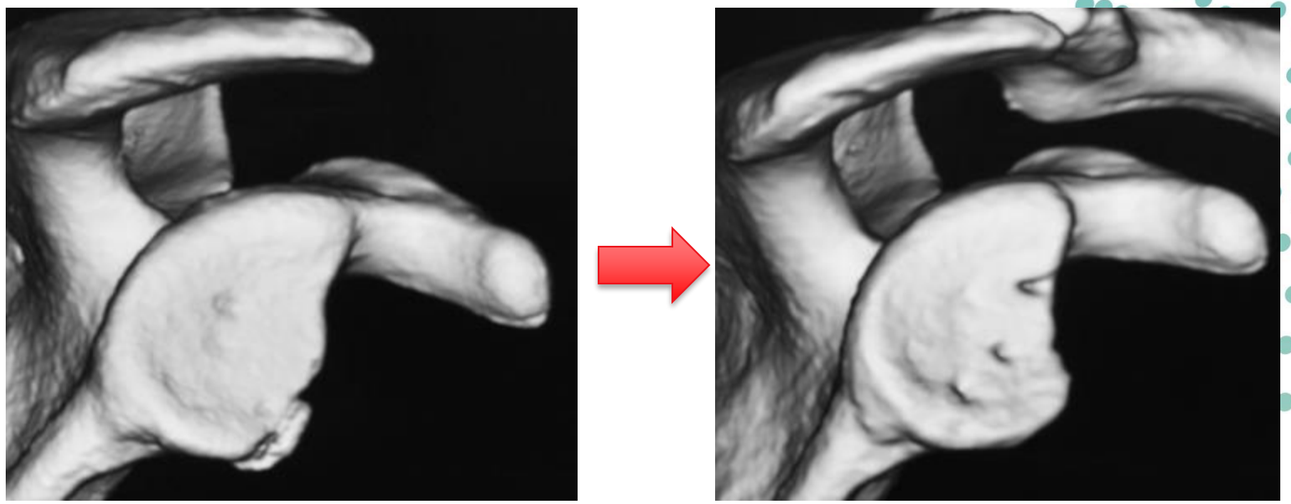
- Good remodeling

→ dependent on fragment size



Conclusions

- Arthroscopic Bankart repair using the double row technique can be expected to ensure bony union and good remodeling depending on fragment size.
- However, the bone fragments are not strong enough for a 6-month return to collision sports and there might be a risk of recurrence.
- The most important thing is that the bone fragment should union in a good position where IGHL has been re-tensioned.



References

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2) Nakagawa S, Hirose T, Ohori T et al. The process of bone union after arthroscopic bony Bankart repair in younger athletes with subcritical glenoid defect: An advantage of remained large bone fragment. J Orthop. Sci. 2024; 29: 115-21.
3) Nakagawa S, Ozaki R, Take Y, et al. Bone fragment union and remodeling after arthroscopic bony Bankart repair for traumatic anterior shoulder instability with a glenoid defect. Am J Sports Med. 2015; 43: 1438-47.
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