MRI Findings of Elbow UCL Injury in Baseball Players after PRP

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COI Disclosure Information

Presenter SHIN YAMADA

I have no financial relationship to disclose

Background

- Reconstruction is considered the most major definitive and standard treatment for elbow ulnar collateral ligament (UCL) tear in baseball players[1].

→ It takes a long time until complete return to play !!

- Platelet-rich plasma (PRP) therapy has recently become a popular element of regenerative medicine due to its potential to augment the healing process and thus accelerate recovery time[2][3].

→ There have been no studies that consider MRI evaluation after PRP therapy.

Method

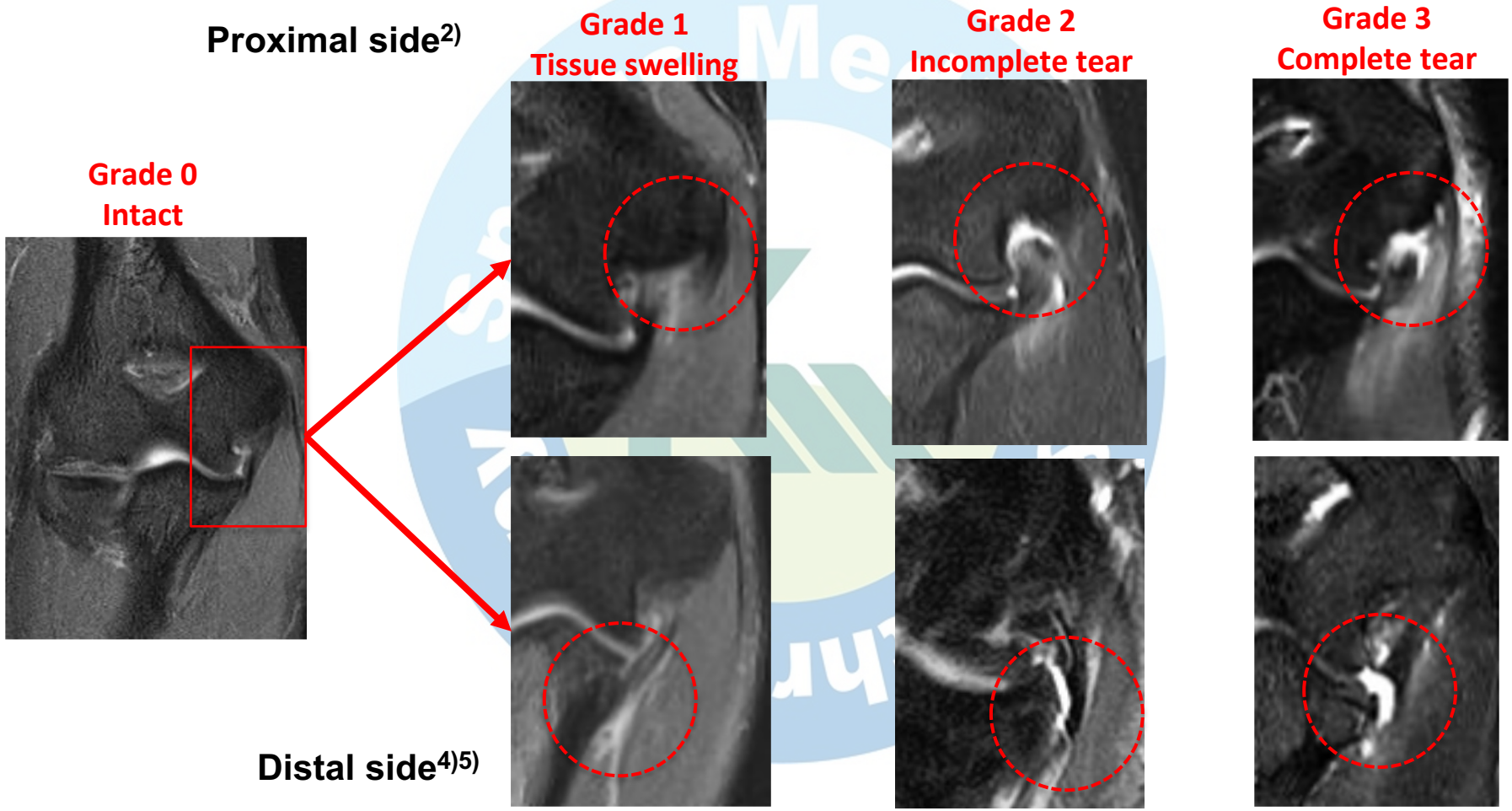
Inclusion Criteria	Exclusion Criteria
• UCL tear positive findings in history, physical exam and confirmed by ultrasound • UCL tear more than grade 1 diagnosed in MRI by musculoskeletal radiologists • Recalcitrant after more than two-months of rest and physical therapy	• Previous history of elbow surgery and trauma • Open epiphysis

- MRI images before PRP and 6 months after PRP (average 8.3 months) were comparable in 53 cases.

Participants' Characteristics

- Gender : male 53, female 0
- Average age : 20.66 ±2.9years (range, 17-30)
- Dominant arm : right 46, left 7
- Level : 12 professional, 7 high school, 25 college, 9 amateur
- Location of tear : proximal 32, distal 21
- MRI Grade : I – 20, II - 26, III - 7

MRI Grading of UCL tear



Criteria of Comparative Reading

- Improve : improvement of the MRI grade
- No change: no change in the MRI grade
- Deterioration : deterioration of the MRI grade

MRI grading is diagnosed by musculoskeletal radiologist

Statistical analysis

In the 53 cases, difference in MRI Grade between Pre-PRP and Post 6 months PRP was statistically analyzed using the Wilcoxon signed rank test.

Result

The change of MRI findings after PRP

Subgroup location of tear

	P value	***Improve (%)***	***No change (%)***	***Deterioration (%)***
Overall	p=0.0005	52.8	36.2	7.5
Proximal	p=0.0013	59.3	38.7	3.0
Distal	p=0.2266	42.9	42.9	14.2

Case

26y.o Infielder

Pre-PRP

Grade3 proximal rupture

Post-PRP 3month

Grade2

6month

Grade1

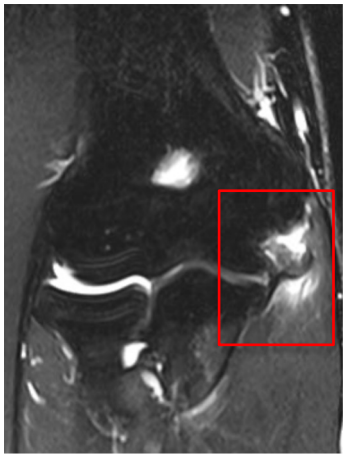
Discussion

1. In this study, MRI grade after PRP showed significant improvement.

Similar to clinical findings,
proximally-located tear had a higher improvement rate after PRP[6].

2. Possibility of MRI reflecting the repair tissue

There is a Level 1 study about patellar tendon harvest site healing after PRP injection[7].



Similarly, it may reflect the tissue repair by PRP after UCL rupture

Limitation

- Small sample size
- No control group
- Anatomical evidence of tissue that appears to improve on MRI after PRP
- No evidence of correlation with clinical symptoms

Conclusion

- Post-PRP MRI showed significant improvement.
- Proximally-located tears had a higher improvement rate than distally-located tears.
- Investigating the correlation between MRI and clinical findings and anatomical proof of repaired tissue are considered to be issues for the next step.

Reference

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