

Morphological analysis of discoid lateral meniscus on magnetic resonance imaging comparing pre- and post operative images.

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## **Disclosures :**

- I have no actual or potential conflict of interest in relation to this program/presentation**

# Discoid lateral meniscus: DLM

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▶ Discoid lateral meniscus(DLM) is congenital anatomical anomalies first reported by Young in 1889.

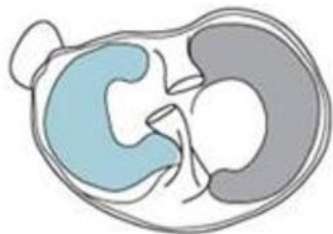
▶ Prevalence

Westerners: **3-5%** *Monnlau JC et al. Rev Chir Orthop 1986*

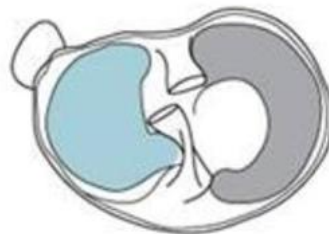
Asian : **10-13%** *Kim SJ. et al. Clin Orthop Relat Res 1998*



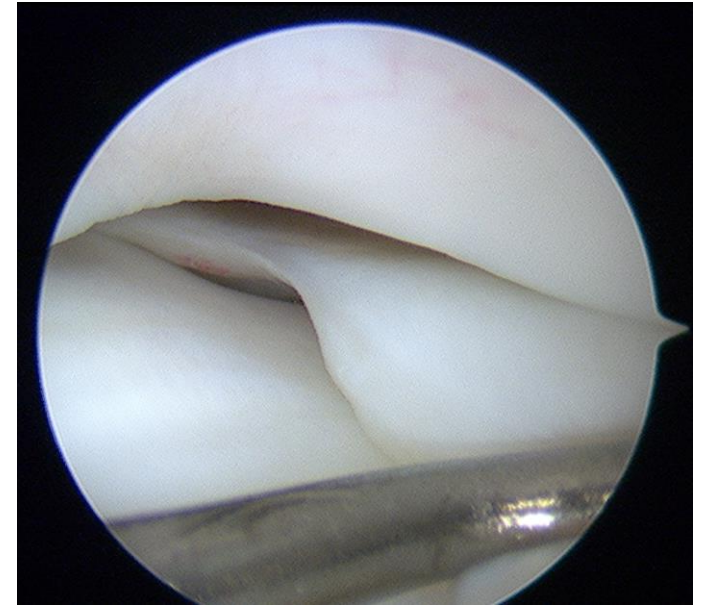
Normal



Incomplete



Complete



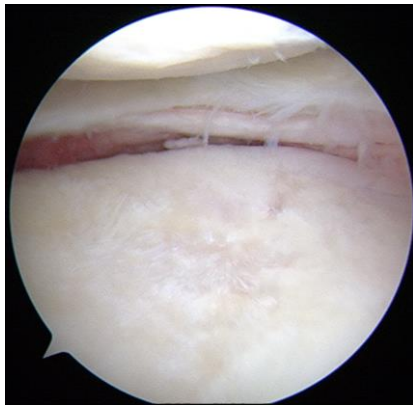
# Treatment for DLM

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- ▶ Past  
Total Meniscectomy  
Subtotal Meniscectomy

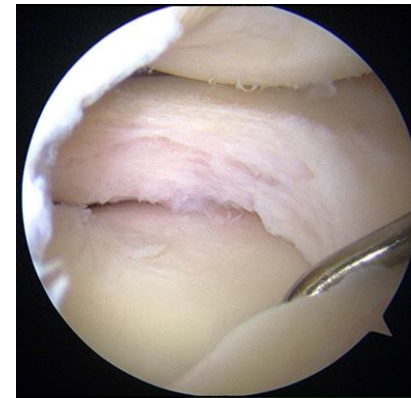
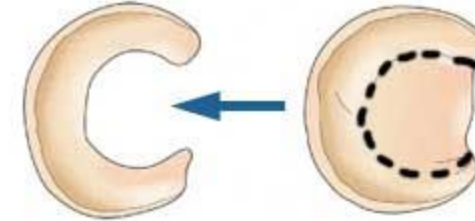
Good short-term results

Arthropathic changes progress in the long term



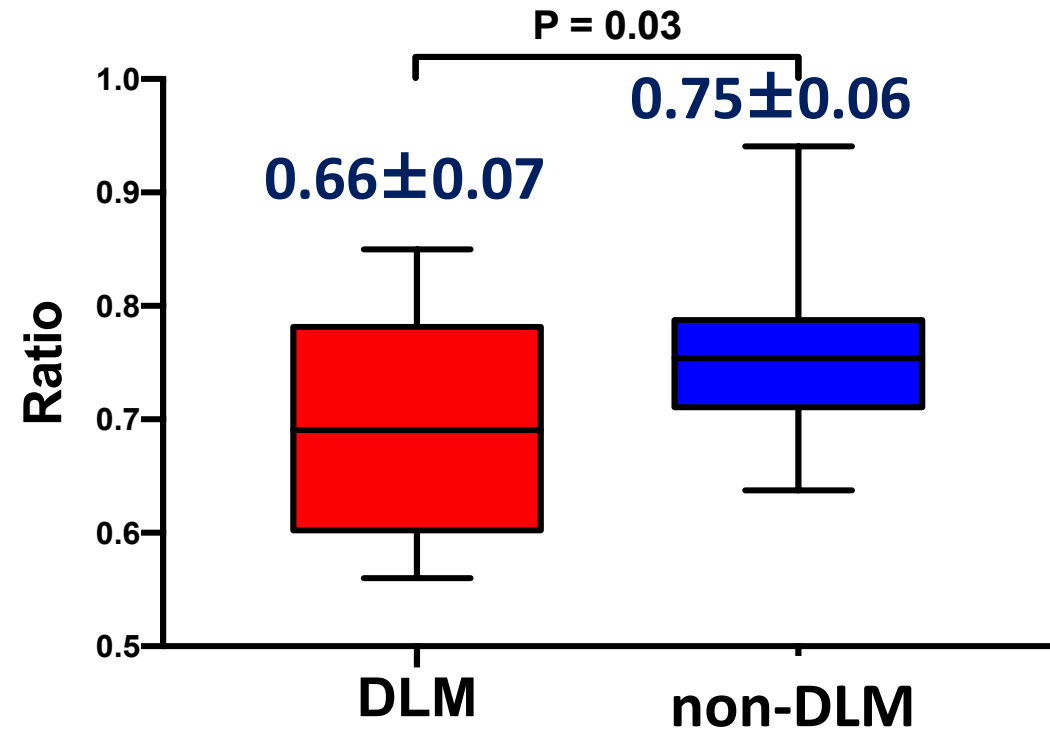
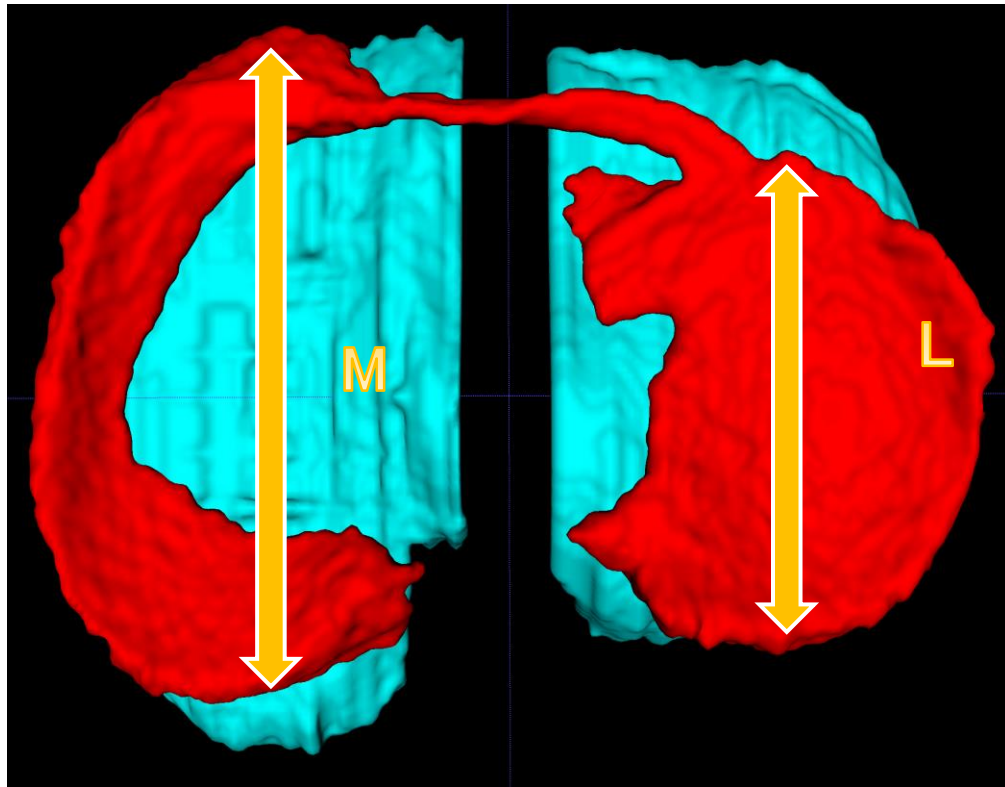
*Aichroth PM et al. JBJS 1991*

- ▶ Present  
Saucerization  
Saucerization and repair



*Adachi N et al. Arthroscopy 2004*  
*Ahn JH et al. Arthroscopy 2008*

# Our Report



Ratio of anteroposterior to posterior diameters of medial and lateral menisci  
(Anterior-Posterior L/M Ratio: ap-LMR)

Nekomoto A et al. ORS 2020

$$\text{ap-LMR}(\%) = \frac{L}{M} \times 100$$

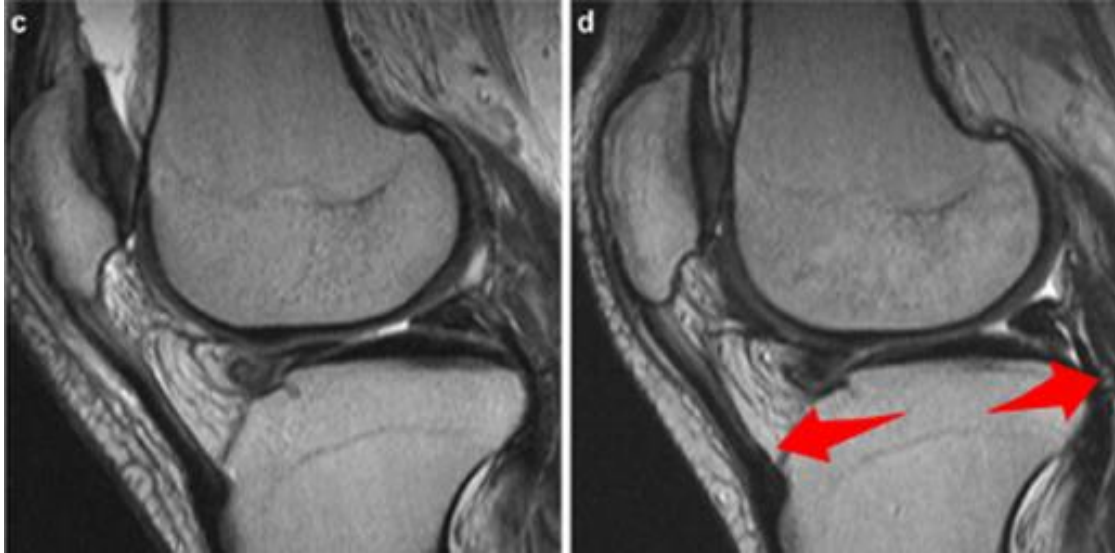


Significantly smaller ap-LMR in the DLM group compared to the non-DLM group

# After sauserization

After surgery

After 6months

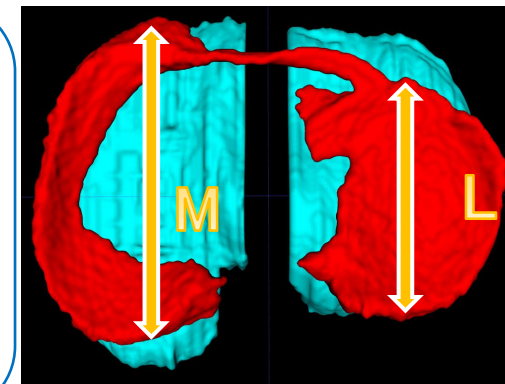


**Increase anterior-posterior diameter after surgery**

*Matsuo T et al. KSSTA 2016*

**Purpose**

Is ap-LMR increase after surgery for DLM ?



$$\text{ap-LMR}(\%) = L/M \times 100$$



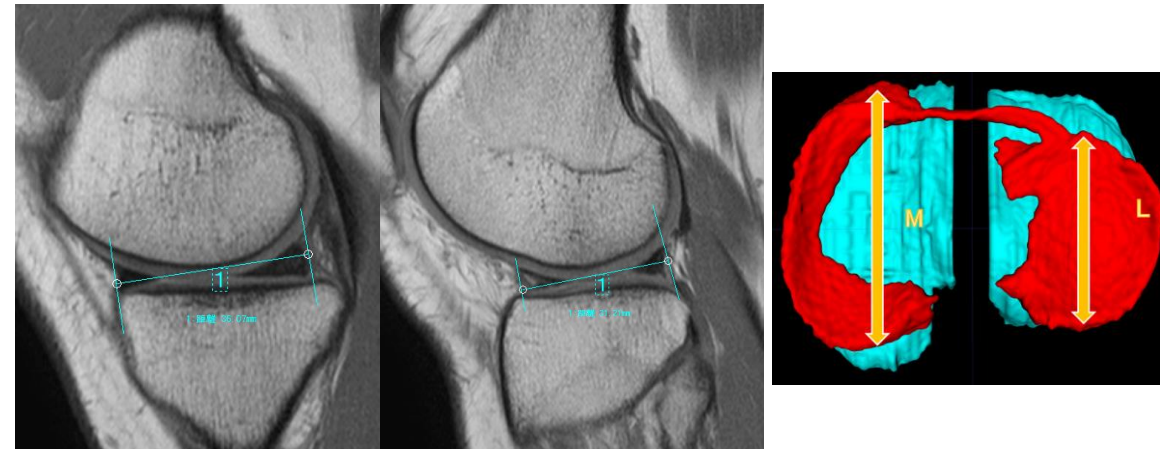
# Material&Method

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**2011-2020**

Patients who underwent MRI imaging before and after 6 months postoperatively in cases of arthroscopic saucerization or saucerization and repair for DLM.

number of cases : 57 patients 64 knees  
male/female : 32 knees/32 knees  
Mean age :  $17.3 \pm 11.2$  y.o. (6-52)  
Observational period :  $20.2 \pm 14.4$  months

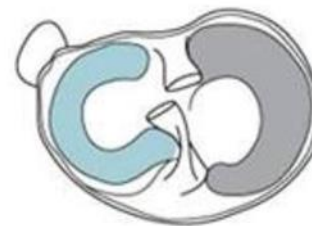


$$\text{ap-LMR(\%)} = \frac{L}{M} \times 100$$

# Material&Method

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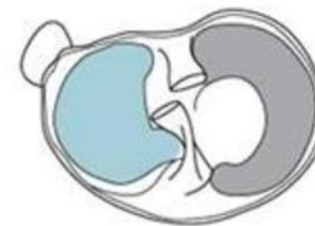
- ① Pre- vs. post-operative ap-LMR for all cases
- ② Complete DLM (26 cases) vs. incomplete DLM (37 cases)
- ③ With meniscus tear (23 cases) vs. without tear (41 cases)
- ④ Saucerization(46 cases) vs. Saucerization+ repair (18 cases)



Normal



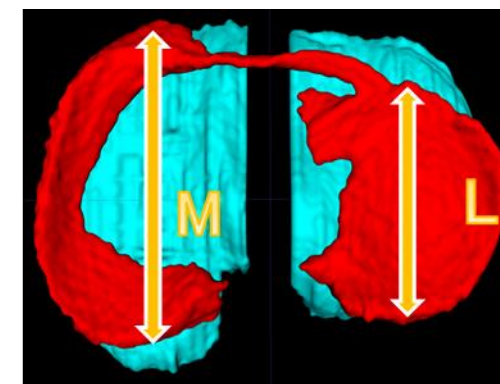
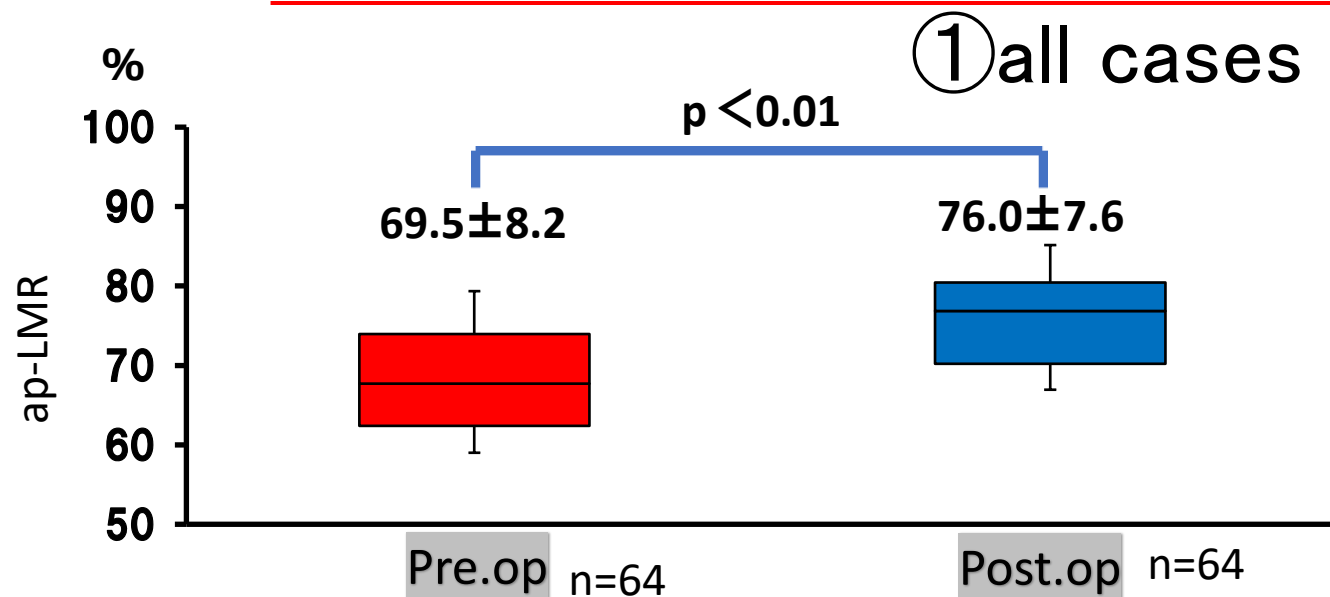
Incomplete



Complete

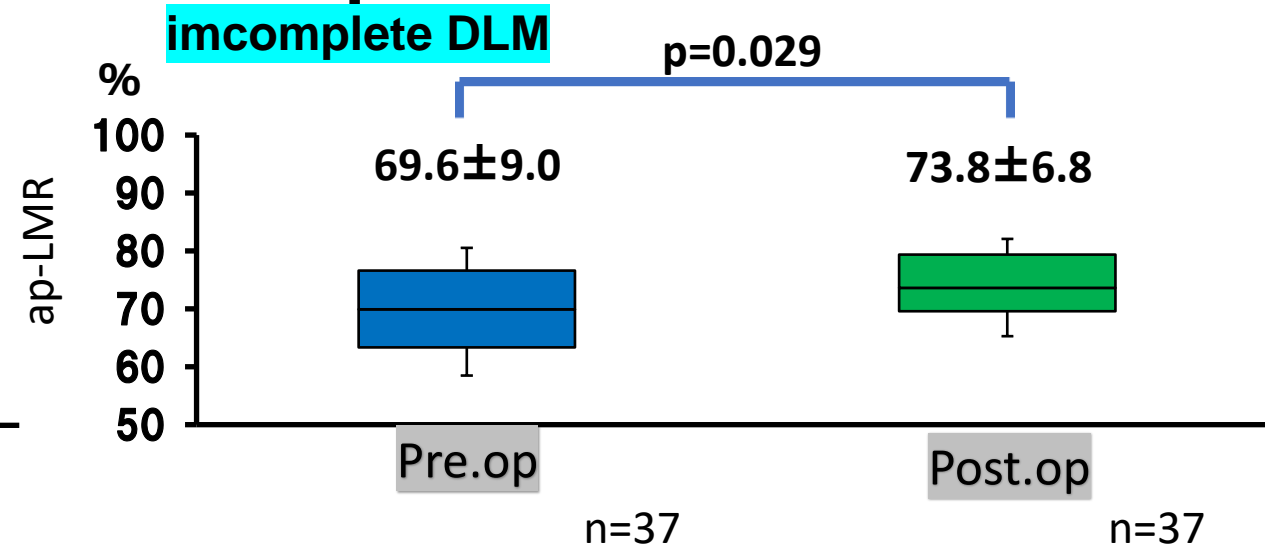
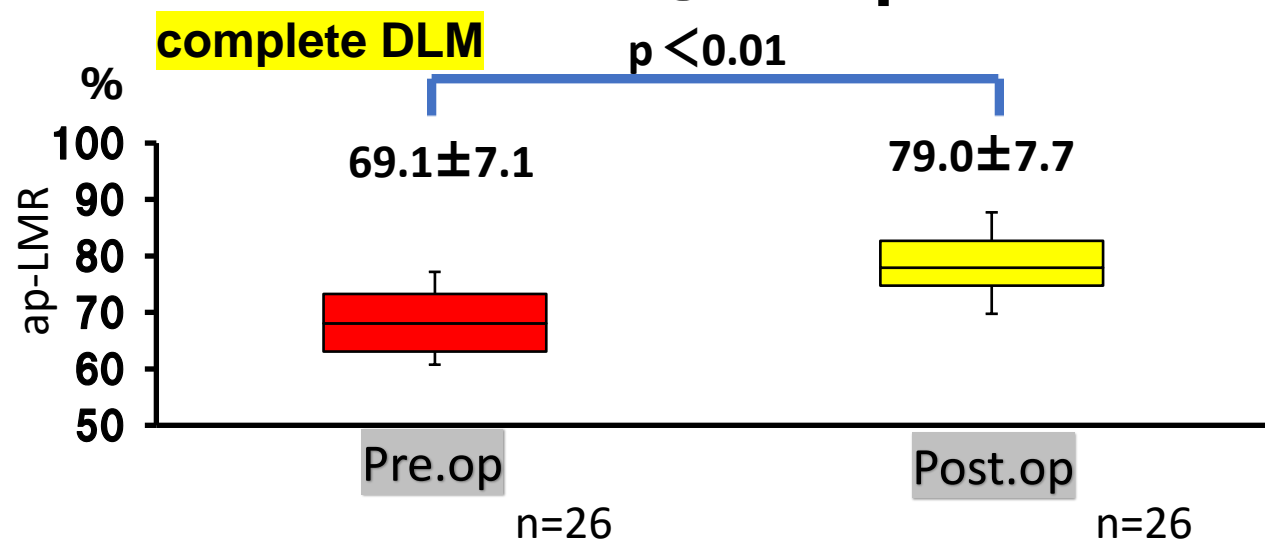


# Results

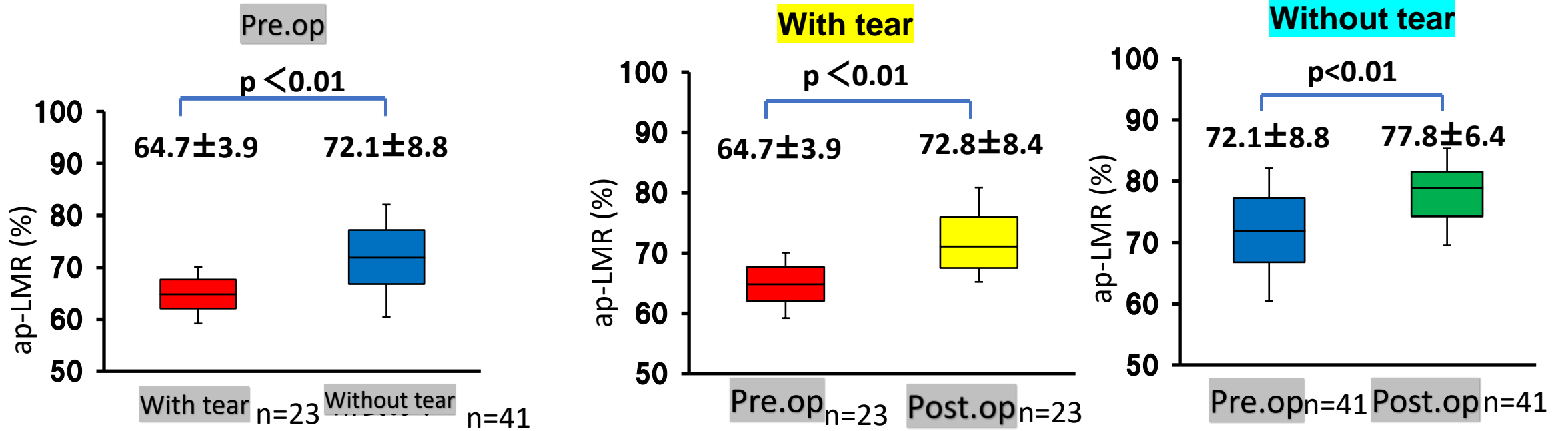


$$\text{ap-LMR}(\%) = \frac{L}{M} \times 100$$

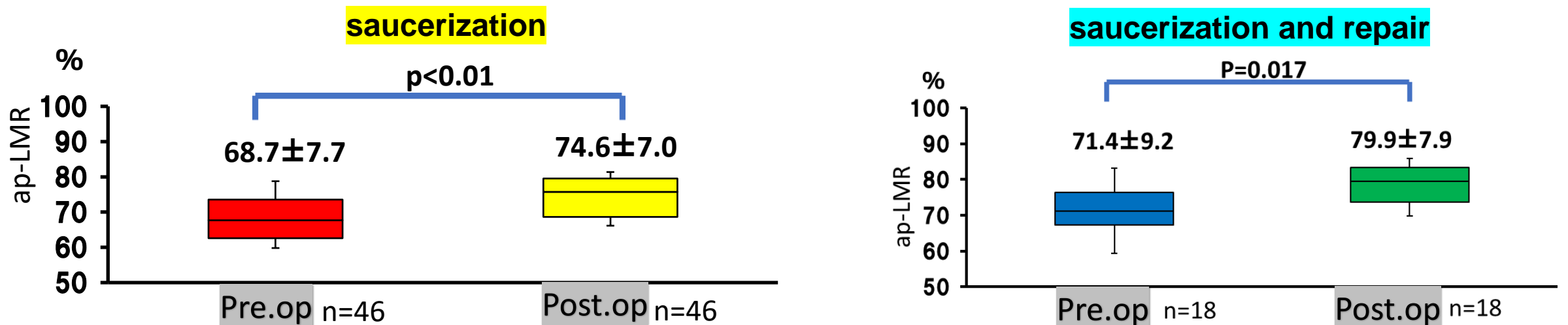
## ② complete DLM vs. incomplete DLM



### ③ with tear vs. without tear



### ④ saucerization vs. saucerization and repair



# Discussion

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## Structure of DLM

▶ DLM demonstrated a decrease in the number of collagen fibers compared with the control group

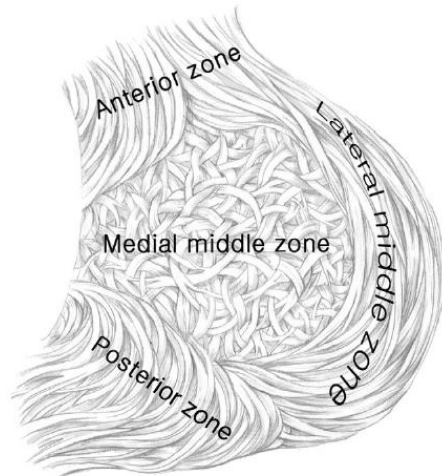
*Atay OA et al Am J Sports Med 2007*

▶ In the lateral middle zone of discoid meniscus, the collagen fibrils run parallel to the periphery of the meniscus.

*Cui JH and Min BH Arthroscopy 2007*

▶ discontinuity and inhomogeneity of the circumferential collagen network in the DLM

*Papadopoulos A et al Arthroscopy 2009*



**DLM after saucerization**



**May not be able to withstand hoop stresses generated by weight loading**

# Conclusion

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- Postoperative ap-LMR was increased in DLM.
- The ap-LMR changes more significantly in the complete type DLM than in the incomplete type DLM.
- Preoperative ap-LMR is greater in cases with tear than in cases without tear.

# Reference

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