The fate of the preoperative osteochondritis dissecans of the lateral femoral condyle concomitant with discoid lateral meniscus following surgical treatment.

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COI Disclosure

Ken Iida

There are no enterprises, etc. with which there is a COI relationship to be disclosed pertaining to the topic presentation.

Introductions

DLM

discoid lateral meniscus

incidence of DLM

European：3－5%
Koreans：15.3%
Japanese：16.5%

higher in Asian populations than in other populations

Kim SJ, Iin Orthop Relat Res. 1998

OCD

osteochondritis dissecans

Lesions of OCD

- medial：85%
- lateral：15%

lower incidence of lateral OCD

Aichroth P J Bone Joint Surg Br 1971

OCD of the lateral femoral condyle with DLM
14.5%

Takigami J KSSTA 2018

Purpose

to evaluate the efficacy of surgical treatment in DLM with OCD of the lateral femoral condyle and DLM without OCD by clinical and radiological evaluations including magnetic resonance imaging (MRI).

Patients

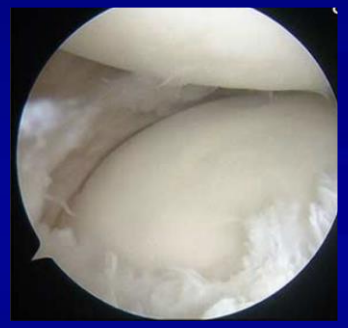
- 2003–2017
- symptomatic DLM; 95 knees
- 15 years and below at surgery
- More than 5 years follow-up

DLM with OCD group 15 knees

DLM group 80 knees

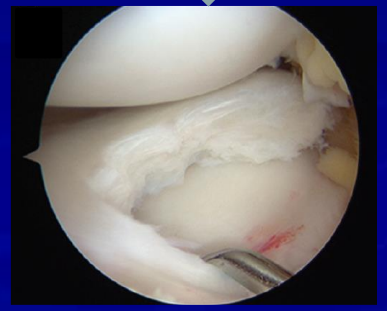
Operative Technique

DLM

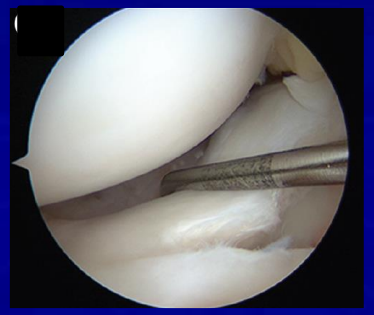


subtotal meniscectomy

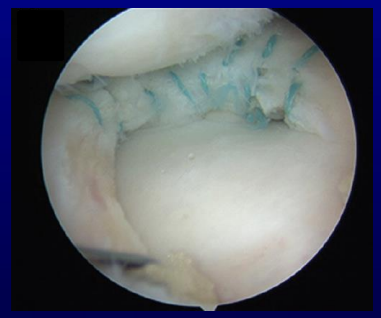
- severe degeneration or complex tears.



saucerization



instability＋



saucerization with repair

DLM with OCD group

Bluckle stage：stage1,2,3

drilling

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Bluckle stage ：stage4, 5

osteochondral autograft transfer

R. Bruckl: Z. Orehcp. 1982

Yamasaki S: AJSM 2017

Hasimoto Y: J Pediatr Orthop 2020

Rehabilitation Protocol

subtotal meniscectomy
saucerization

- POD 1～　FWB
- 2months ～　Jogging
- 3months ～　Return to sport

saucerization with repair

- ～1weeks,　immobilization witha brace
- 1weeks ～　NWB　ROM 0°　–90°
- 2weeks ～　NWB　ROM 0°　–120°
- 3weeks ～　1/3PWB　ROM 0°　–120°
- 6weeks ～　FWB　ROM free
- 3months ～　Jogging
- 6months ～　Return to sport

Clinical Evaluation

- ✓age
- ✓sex
- ✓TAS at preinjury
- ✓TAS at final follow up
- ✓surgical procedures

(subtotal meniscectomy, saucerization, saucerization with repair)

- ✓Pre post Lysholm score
- ✓incidence of OCD

TAS: Tegner activity scale

Result

Table 1 Demographic Characteristics, Clinical Findings Data			
	DLM with OCD group N=15 (SD or %)	DLM group N=80 (SD or %)	p- value
Age	10.2 (2.4)	11.8 (2.2)	0.02
Gender, male/ female	14 (93) /1 (7)	30 (38) /50(62)	0.01
Follow-up, year	7.3 (2.1)	6.2 (1.9)	0.112
Watanabe classification			0.43
Complete	15 (100)	75 (93.8)	
Incomplete	0	5 (6.2)	
Wrisberg-type	0	0	
Surgical procedures, n			0.43
subtotal meniscectomy	2 (33.3)	10 (31.0)	
saucerization	5 (50.0)	24 (37.9)	
saucerization with repair	8 (16.7)	46 (31.0)	
Preoperative Lysholm	66.3 (10.0)	67.8 (12.0)	0.604
Final Lysholm	97.2 (5.7)	98.1 (4.5)	0.515
Preinjury TAS	6.6 (0.9)	6.0 (1.0)	0.05
Final TAS	6.6 (0.9)	5.9 (1.0)	0.01
Frequency of exercise	6.5 (5-7)	4.5(3-7)	0.02
Postoperative OCD	4 (27)	5(6.2)	0.01
SD, standard deviation; TAS, Tegner activity scale; OCD, osteochondritis dissecans; NA, not applicable			

DLM with OCD group；All cases treat OCD lesions.

DLM with OCD group：young , male, high activity, high rate of incidence of OCD

Result

Survivorship Analysis of postoperative OCD

- The group >10 years old had significantly worse survival than the group <10 years old.
- The male had significantly poorer survivorship than female .
- The TAS＞7 had a significantly worse survival than the TAS <7 .
- The DLM with OCD group had a significantly worse survival than the DLM group.

Multivaliate analysis

Characteristic	Crude odds ratio (95% CI)	P value	Adjusted odds ratio(95% CI)	P value
Age	0.50(0.35-0.72)	.001	0.42(0.24-0.73)	.002
Gender, male/ female	0.65(0.42-0.91)	.008	0.71(0.45-1.02)	.076
Preoperative Lysholm	1.04(0.98-1.11)	n.s		
Final Lysholm	0.95(0.84-1.08)	n.s		
Preinjury TAS	1.61 (0.91-2.86)	n.s		
Final TAS	3.14 (1.48-6.68)	.002	2.36(0.83-6.63)	.108
SD, standard deviation; TAS, Tegner activity scale; OCD, osteochondritis dissecans; NA, not applicable				

age significantly increased the risk of a incidence of postoperative OCD.

Discussion

- predictive factors for OCD：Male　young age（5－11 years）
  type C meniscal shift

Takigami J KSSTA 2018

This study

- DLM with OCD group：Male,　young age, high activity

- DLM with OCD undergoing conservative treatment:
  good-prognosis group was only 27.5%.

Nakayama, Knee. 2016

This study

- DLM with OCD group；All cases treat OCD lesions.

Discussion

- Repeated impaction on the immature osteochondral structures after total resection of the DLM might be a predisposing factor in the development of OCD.

  Mizuta Arthroscopy: 2001

- Patients with a TAS ≥ 7 had a higher postoperative OCD diagnosis rate than TAS ≤ 6.

  Hasimoto Y: J Pediatr Orthop 2020

This study

- DLM with OCD group ：higher Final follow up TAS、incidence of OCD

Vulnerability of preoperative OCD lesions and intense mechanical stress may be involved in postoperative OCD development.

Limitation

- The 2 surgeons’ technical expertise could theoretically account some differences in outcomes.
- Post-treatment depends on the surgical procedure.

Conclusion

- OCD lesion of the DLM with OCD group showed healings after meniscal surgery combination with surgical procedures for OCD.
- The incidence of postoperative OCD was significantly higher in DLM with OCD group compared with DLM group.
- Increased risks of postoperative OCD are associated with age.