Increased TT-TG Distance and Sulcus Angle are Associated with Patellar Osteochondritis Dissecans

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Disclosures

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Background

- Osteochondritis dissecans (OCD) lesions most commonly found on medial femoral condyle (MFC)
- Limited research on OCD lesions of the patella

Axial view of patellar OCD lesion in a 15-year-old male

Aim

- Role of patellar maltracking and increased patellofemoral contact pressures due to abnormal patellofemoral morphology in development of patellar OCD is suggested

- **Objective**: Evaluate differences in patellofemoral morphology between patients with patellar OCD and classic MFC OCD

- **Hypothesis**: Patellar OCD patients would demonstrate increased trochlear dysplasia and tibial tubercle-trochlear groove (TT-TG) distance compared to MFC OCD patients

Methods

- Patients ≤18 years diagnosed with patellar or MFC OCD lesion between January 2016 to May 2023
  - Excluded: incomplete history, lack of imaging, known cases of prior patellar dislocation

- Measurements assessed on preoperative MRI
  - Caton-Deschamps Index (CDI), cartilaginous bony height (CBH), bony sulcus angle (BSA), TT-TG distance

- Sex- and age- (± 2 years) matched 1:2 patellar OCD (n=40) to MFC OCD (n=80)

Results

Variable	Patellar OCD	MFC OCD	P-value
TT-TG Distance	13.4 ± 4.1 mm	11.6 ± 4.2 mm	**0.03**
Size of Lesion (axial)	16.9 ± 4.9 mm	14.2 ± 3.9 mm	0.08
Size of Lesion (sagittal)	14.4 ± 4.3 mm	22.4 ± 6.3 mm	**<0.001**
CDI	1.4 ± 0.4 mm	1.3 ± 0.3 mm	0.15
Trochlear Depth	4.8 ± 1.6 mm	6.0 ± 2.0 mm	0.18
Patellar Tilt	4.0 ± 5.6°	5.3 ± 4.9°	0.19
Lateral Patellar Displacement	-1.8 ± 3.4 mm	-1.0 ± 4.8 mm	0.43
Cartilaginous Sulcus Angle	150.6 ± 7.2°	128.1 ± 14.1°	**<0.001**
Bony Sulcus Angle	144.7 ± 7.8°	137.4 ± 9.6°	**<0.001**
Cartilaginous Bony Height	5.8 ± 1.7 mm	6.3 ± 2.4 mm	0.24

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Results

- Patients with patellar OCD have 3.7 times greater risk of post-diagnosis patellar dislocation
- In patients with isolated patellar OCD who were originally thought to not have patellar instability, **25% developed patellar dislocation**

	Patellar OCD	**MFC OCD**
Patellar Dislocation	10	0
No Patellar Dislocation	30	80
Chi-Square: P<0.001	10/40 (**25%**)	0/80 (**0%**)

Conclusion

- Increased TT-TG distance and sulcus angle are associated with patellar OCD
- Patients with patellar OCD without a history of patellar dislocation demonstrated nearly four-fold higher dislocation rates compared to patients with MFC OCD
- We speculate subclinical patellofemoral instability may lead to patellar OCD in the developing knee
- Perhaps surgeons should be more aggressive in treating mild patellofemoral instability in patients with isolated patellar OCD

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Thank you!

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