

mm. CaseStudy

Fixation of
osteochondral
fragments in the
knee joint using
mm.CS resorbable
compression screws



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medical
magnesium

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Dr. Daniel Günther is a consultant orthopaedic surgeon who has specialized in knee surgery at Cologne-Merheim Medical Center, Germany.

Dr. Günther graduated from the University of Münster, where he received his MD, and was trained at the Trauma Department, Hannover Medical School (MHH), Germany. He performed two one-year fellowships at the Helios ENDO-Klinik Hamburg, Germany and at the Department of Orthopaedic Surgery, University of Pittsburgh, Pennsylvania, USA. In addition, he was a fellow of the Schulthess Clinic, Zurich, Switzerland and the Methodist Hospital - The Michael E. DeBakey Department of Surgery, Houston, Texas, USA.

Dr. Günther is a member of ISAKOS, ESSKA, ESSKA-ESMA, ESSKA-EKA, AANA, ACS, AGA, DKG, AO Trauma, GOTS, DGSP, DGOU, DGOOC, and DGU. He serves on the Scientific Committee of ISAKOS, the Research Committee of AGA, the Ligament Committee of DKG, the German clinical tissue regeneration study group of DGU, and the Pivot Study Group.

He is a certified arthroscopist of the AGA, certified Knee Surgeon of the DKG, and a provider of Advanced Trauma Life Support (ATLS).

Dr. Günther was granted his "Venia legendi" in Orthopaedic and Trauma Surgery in 2017. He received multiple awards for his research and peer review work worldwide and was placed in the top 1% of reviewers in Clinical Medicine according to the Publons Peer Review Awards 2018.

The Case

Introduction

The incidence of osteochondral loose bodies has been reported in 31% to 58% after a first-time patella dislocation in the human knee.^{1, 2, 3} Those lesions can lead to devastating and debilitating situations of the joint, if not treated timely and accurately, especially in young patients. An arthroscopic approach is preferred to ensure fast mobilization. In the past the refixation of osteochondral flakes was either performed using non-resorbable screws, which had to be removed during a second procedure before the patient starts full weight-bearing or using resorbable screws causing potentially osteo- and chondral lysis as a side effect.

Patient Profile

A 14-year-old patient with a traumatic first time left patella dislocation during a soccer game in high-school presents with a swollen painful left knee to the emergency department.

Clinical Findings

The clinical examination revealed a left knee with limited range of motion (Extension/Flexion 0/0/60°) and intra-articular effusion. The collaterals were stable, - Lachman, - Pivot Shift, -medial meniscus, - lateral meniscus. Moving the patella was painful. Palpation was painful on the medial patella-facete and the lateral femoral condyle. The patello-femoral joint of the contra-lateral knee was unstable between 0-50° knee flexion without any history of patella-dislocation. The patient had no neuro-sensoric deficits and lower extremity pulses were present.

MRI examination and x-ray imaging revealed an osteochondral flake of the lateral femoral condyle. No Trochlea-Dysplasia was present, and the Tuberositas Tibiae-Trochlea Groove-(TT-TG)-Distance was within the physiological range (14 mm). The patient had a patella alta with an Insall-Salvati-ratio of 1,5 and a Caton-Deschamps-ratio of 1,6. The Patella-Tilt was 15°. Growth plates were still open. The patient had a slight valgus malalignment (2°). Femoral and tibial torsion were within physiological ranges. The patient was scheduled for same-day surgery to prevent further cartilage damage due to the loose body.

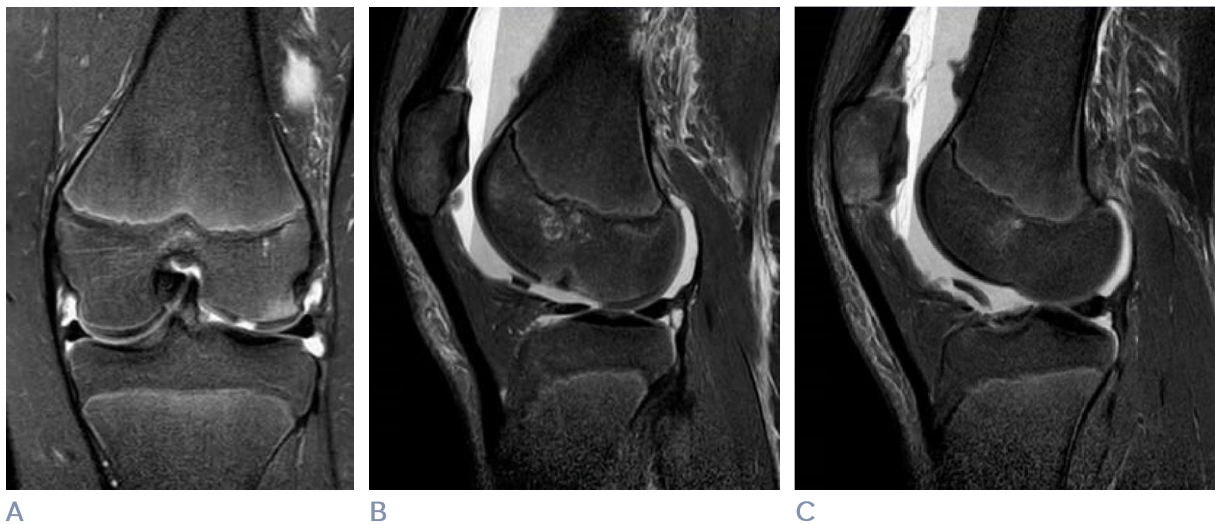


Figure 1: ePDW SPIR MRI sequences showing the osteochondral defect on the lateral femoral condyle (A, B) and the loose osteochondral body located in the notch (C).

Surgical Treatment

The examination of the left knee under anesthesia revealed a patello-femoral instability from 0 to 50° knee flexion. The refixation of the osteochondrale flake was performed arthroscopically using three mm.CS 2.8 mm canulated compression screws. The decision was made to treat the medial patella-femoral ligament (MPFL) non-operatively, since only minor risk factors (patella alta, 2° valgus alignment, open growth plates) were present and the injury was a first-time traumatic dislocation.



Figure 2: Postoperative (A, B) and 3 months follow-up (C, D) x-rays showing the refixed osteochondral flap using mm.CS 2.8 mm canulated compression screws.

Postoperative Treatment

The patient had to wear a patella control brace for 6 weeks with limited range of motion (Extension/Flexion 0/0/90°) and partial weight-bearing.

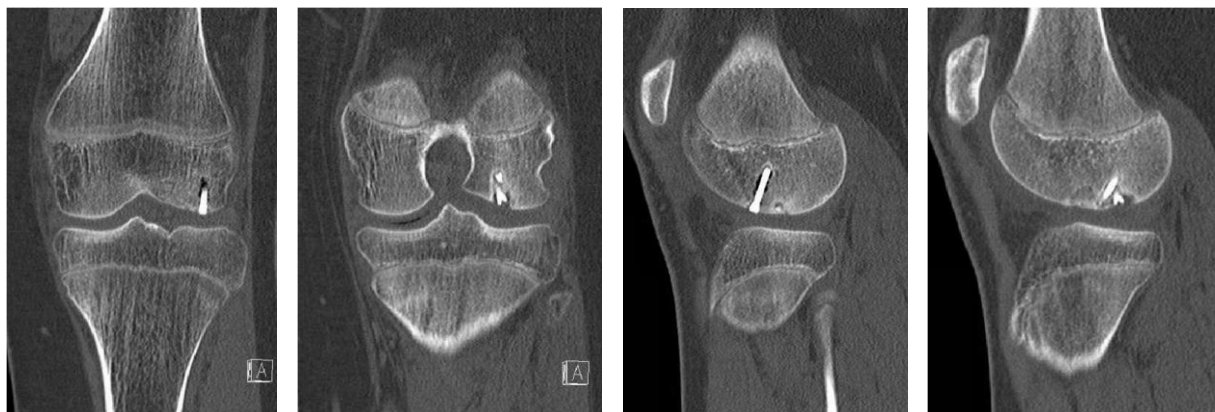


Figure 3: CT scan 6 month post operative presenting a healed osteochondral flap with minor gas formation surrounding the resorbable screws.

Conclusion

The refixation technique for osteochondral lesions using mm.CS 2.8 mm canulated compression screws can be performed arthroscopically. The patient is doing well at 6 months post OP without restricting side-effects. The resorption of the screws must be monitored long-term. So far, minor gas formation, but no larger osteolysis is detectable in CT scan.

References

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