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EIN UNTERNEHMEN DER VINZENZ GRUPPE

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Additional lesions in a chronic ACL deficient knee

Florian Dirisamer

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Additional lesions in ACL deficiency
Basics

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- OA in ACL deficient Patients 20 years earlier than primary OA
- increased level of cartilage loss in OA-patients with ACL deficiency
  - important role of the menisci
- randomized trial OP (44) vs. conservative (56) in young patients (FU: 15 years)
  - one third of conservative patients got secondary ACL-reconstruction due to instability
  - early ACL-reconstruction can lower the risk for secondary meniscus lesions
  - 66% of patients with meniscectomy showed early onset of OA
  - OA rate at 7 years: ACL-rupture + meniscectomy 66%, isolated ACL-rupture 11%
- higher rates of additional lesions also in partial ACL-tears

Roos, Lohmander et al, Osteoarthritis Cartilage 1995; 3:261-267
Amin et al, Osteoarthritis Cartilage 2008; 16(8):897-902
Meunier at al, Scand J Med Sci Sports 2007; 17:230-237

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Additional lesions in ACL deficiency
Medialisation of Center of Rotation

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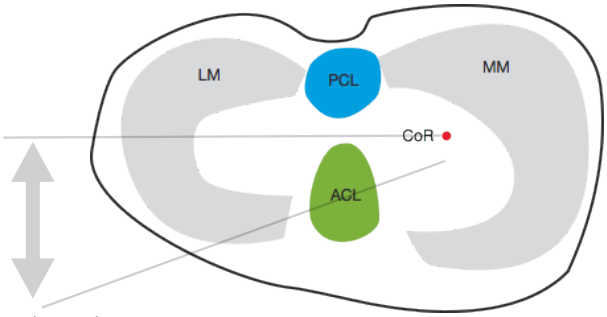

- increased internal rotation
- increased anterior tibial translation

pathologic pattern of movement

increased loads in medial compartment

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Additional lesions in ACL deficiency
biomechanics of meniscus lesions

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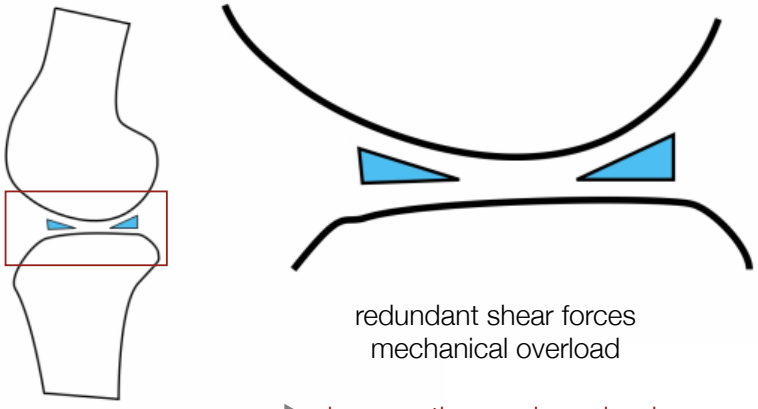

redundant shear forces
mechanical overload

▶ degenerative meniscus leasions

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Additional lesions in ACL deficiency
meniscus lesions

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incidence of meniscus lesions in conservative treated ACL ruptures		
1 year	5 years	10 years
40 %	60 %	80 %

- cartilage itself seems to be rather tolerant against more intraarticular motion
- as long as menisci are intact
- menisci have to act as breaking wedge, which leads to degeneration
- the timepoint of a meniscus lesion influences the prognosis of OA
- patient age is statistically associated with incidence for meniscus lesions

Levy et al; Orthop Clin N Am 2003; 34:149-167

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Additional lesions in ACL deficiency
incidence

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THE BONE & JOINT JOURNAL

■ **KNEE**

The incidence of secondary pathology after anterior cruciate ligament rupture in 5086 patients requiring ligament reconstruction

- increasing incidence of medial meniscus tears/chondral damage with increasing interval between trauma and surgery
- chance for medial meniscus surgery x2 for surgery within 5 months
- chance for medial meniscus surgery x6 for surgery after 12 months
- ideally do not delay ACL Reconstruction more than 5 months, (esp. in younger patients) to lower the risk for secondary lesions

Sri-Ram K et al (2013) Bone Joint J 95-B:59–64

Additional lesions in ACL deficiency
incidence

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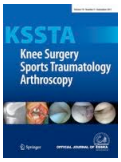

Analysis of meniscal and chondral lesions accompanying anterior cruciate ligament tears: relationship with age, time from injury, and level of sport

Reha N. Tandogan
Ömer Taşer
Asım Kayaalp
Emin Taşkıran
Halit Pınar
Bülent Alparslan
Aziz Alturfan

- retrospective analysis of 764 patients
- patient age statistically associated with
  - chondral grade III+IV lesions, complex (medial) meniscus tears
- no correlation with sports level
- risk for meniscus lesion 5,9x higher after 5 years (compared to the first 12 months)
- risk for chondral lesion 2,7x higher 2-5 years TFI, 4,7x higher >5 years TFI
- patient age + TFI equally important (C+LM), but TFI better predictor for MM

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Additional lesions in ACL deficiency
chondral lesions

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Knee Surg Sports Traumatol Arthrosc (2006) 14:1139–1147
DOI 10.1007/s00167-006-0170-2

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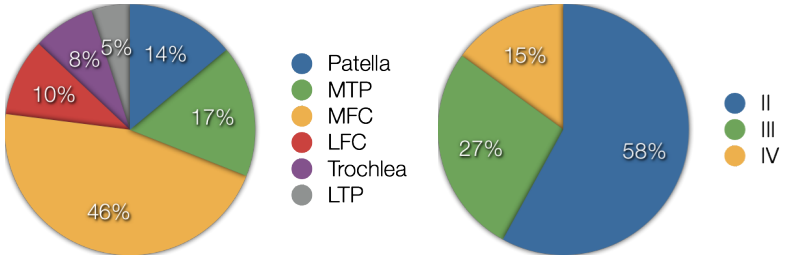
The evaluation of intraarticular lesions accompanying ACL ruptures in military personnel who elected not to restrict their daily activities: the effect of age and time from injury



30 months post injury

30 months post injury n=374

Yüksel HY, Erkan S, Uzun M (2006) Knee Surg Sports Traumatol Arthr 14:1139–1147

Additional lesions in ACL deficiency
chondral lesions

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KNEE

The evaluation of intraarticular lesions accompanying ACL ruptures in military personnel who elected not to restrict their daily activities: the effect of age and time from injury

- 21.2 % showed chondral lesions within the first 12 months
- 69,9% during chronic period
- relative risk for chondral damage 23,77 times higher in chronic group
- only 5,4% of lesions not associated with meniscus lesion
- 2 thirds of chondral lesions in medial compartment
- risk for chondral damage seems to be correlated to patient´s age

Yüksel HY, Erkan S, Uzun M (2006) Knee Surg Sports Traumatol Arthr 14:1139–1147

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Additional lesions in ACL deficiency
motion pattern altered

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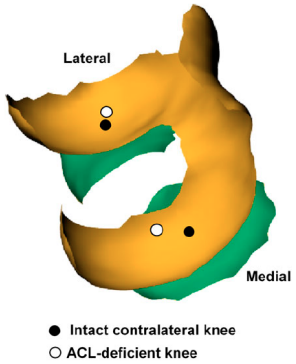
Anterior Cruciate Ligament Deficiency Alters the In Vivo Motion of the Tibiofemoral Cartilage Contact Points in Both the Anteroposterior and Mediolateral Directions



- cartilage contact points shift posteriorly and laterally on the tibial plateau
- medial: shift toward the medial tibial spine, a known region of cartilage wear in ACL deficient knees
- more displacement found in the medial compartment

Li G, Moses JM, Papannagari R, Pathare NP, DeFrate LE, Gill TJ (2006) J Bone Joint Surg Am 88:1826–1834

Additional lesions in ACL deficiency
risk factors

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clinical relevant instability

▶ for secondary ACL-R

sportsmen

▶ for secondary ACL-R

pathologic one leg hop test

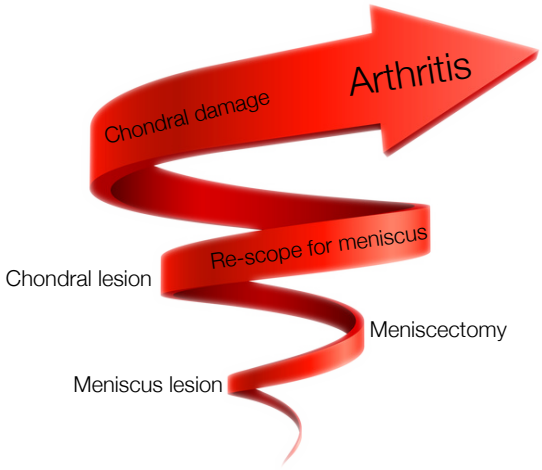
young

▶ for secondary ACL-R

primary cartilage or meniscus injury

secondary lesions

Additional lesions in ACL deficiency
the young patient with an old knee



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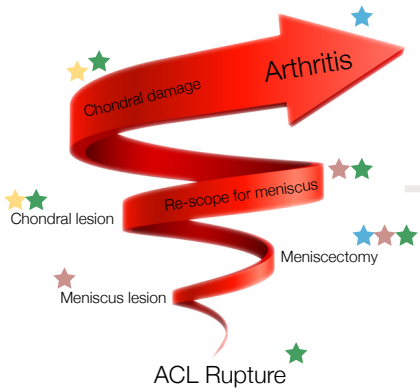
Additional lesions in ACL deficiency
reconstructive knee surgery

Alignement

Stabilität

Meniskus

Knorpel



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Additional lesions in ACL deficiency
conclusion

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- ACL deficiency creates massive biomechanical disorder
- can be compensated as long as menisci intact
- secondary meniscus and cartilage damage
- end stage: osteoarthritis

- prevent patients from secondary lesions or
- brake the spiral
- create alignement, create stability, reconstruct menisci and cartilage

thanks for your attention

KRANKENHAUS BARMHERZIGE SCHWESTERN Linz