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Delaying ACL reconstruction increases the rate and severity of medial compartment chondral injury

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Abstract #21272

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Lyon 1

ORTHOPÉDIE Lyon Croix Rousse

FIFA MEDICAL CENTRE OF EXCELLENCE

LYON KNEE SCHOOL of SURGERY

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No conflict of interest.

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Introduction

Am J Sports Med. 2016 Jun;44(6):1502-7. doi: 10.1177/0363546516629944. Epub 2016 Feb 26.

Incidence of Anterior Cruciate Ligament Tears and Reconstruction: A 21-Year Population-Based Study

Thomas L Sanders [1], Hilal Maradit Kremers [2], Andrew J Bryan [3], Dirk R Larson [4], Diane L Dahm [3], Bruce A Levy [3], Michael J Stuart [3], Aaron J Krych [3]

- **Incidence : 68/100.000 (241 if 19-24yo men)[1]**
- **WHEN proceed reconstruction ?[2]**
- **Effect of delaying surgery?**

  (cartilage, meniscus)

3 months ?[2,3]

6 months ?

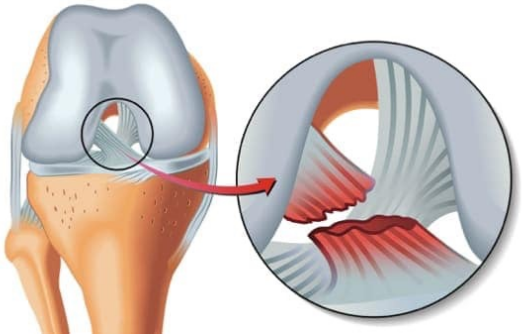
12 months ?[4]

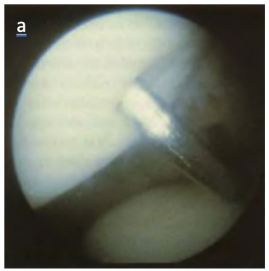
Aims

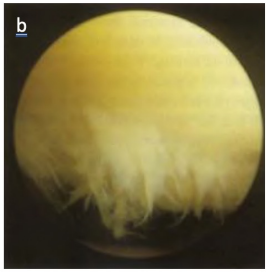
⇒ 1. Evaluate relationship between the **rate** and **severity** of chondral injury and **timing before ACL reconstruction**

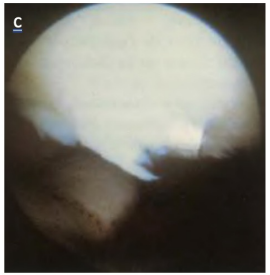
⇒ 2. Evaluate the relationship between chondral injury and

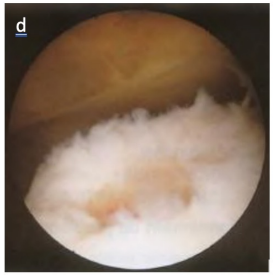
- ⇒ **Pre-injury Tegner level of activity score** (TAS)[5,6],
- ⇒ **Age**,
- ⇒ **BMI**,
- ⇒ **Meniscal tears**











Methods

Monocentric, retrospective cohort

1840 ACL reconstruction
01.01.2012 – 13.01.2022

1370 ACL reconstruction
without exclusion criteria

1317 ACL reconstruction
included in final analysis

RLCA excluded	(n= 470)
- Past knee surgery	(n= 352)
- Age < 16 or > 60 years old	(n= 38)
- Multiligament knee injury	(n= 28)
- Concomitant HTO	(n= 20)
- Partial ACL tear	(n= 18)
- Concomitant UKA	(n= 12)
- ACL agenesis	(n=2)

No date of injury
(n= 53)

Methods

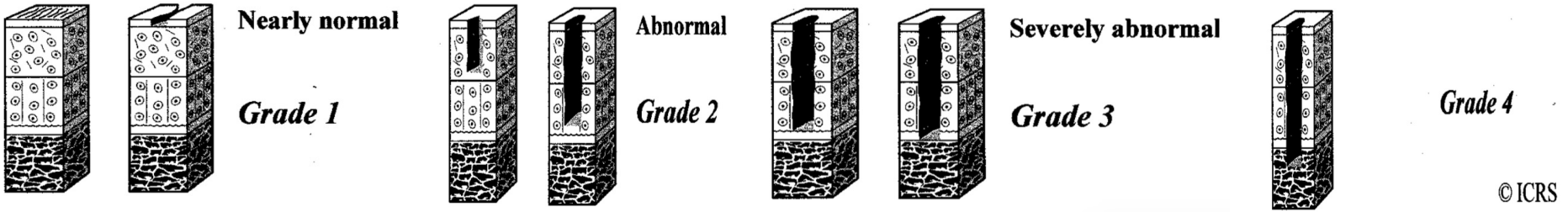
1317 ACL reconstruction

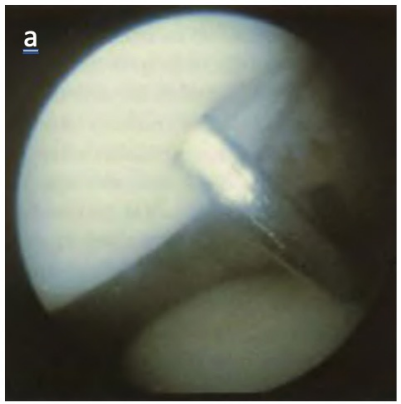
Delay before surgery

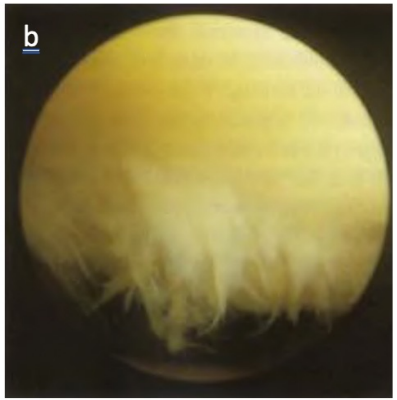
< 3 months	3 - 6 months	6 - 12 months	> 12 months
n=427	n=388	n=248	n=254
Ref.			

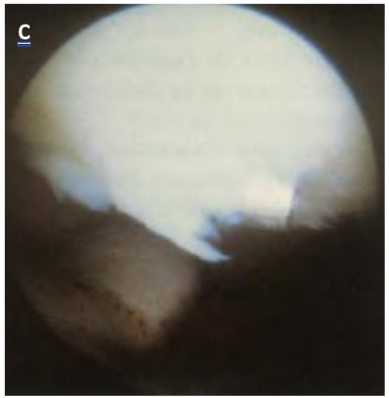
Classification

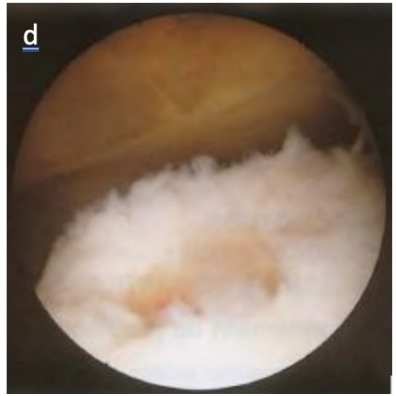
Chondral injury: ICRS classification[7]











Results

1. Demographic data

⇒ **Mean delay before surgery :** 11.3months

⇒ **Median delay before surgery :** **4.5months**

⇒ **Tegner median: 6** [6-7]

⇒ Recreational sports

Median age: 29 // Median BMI: 23.7

	ACLR 1317
Age (years), median (IQR))	29 (23-38)
Age category, n (%)	
< 25	445 (34%)
25 - 40	580 (44%)
40 – 50	211 (16%)
> 50	81 (6.2%)
Sex Male, n (%)	840 (64%)
BMI (kg/m2), median (IQR)	23.7 (21.7-25.9)
< 18	10 (0.8%)
18-25	827 (63%)
25-30	344 (26%)
> 30	98 (7.4%)
Missing	38 (2.9%)
TAS, median (IQR)	6 (6-7)
Tegner category, n, (%)	
1	3 (0.2%)
2	16 (1.2%)
3	50 (3.8%)
4	98 (7.4%)
5	138 (10%)
6	427 (32%)
7	483 (37%)
8	32 (2.4%)
9	59 (4.5%)
10	11 (0.8%)
Missing	33 (2.5%)
Medial chondral injury, n (%)	224 (17%)
Lateral chondral injury, n (%)	115 (9%)
Medial meniscal tear, n (%)	506 (38%)
Lateral meniscal tear, n (%)	348 (26%)

Results

2. Chondral injury

Lateral chondral injury

n=115 (9%)

Medial chondral injury

n=224 (17%)

Lateral cartilage injury	ICRS stage	Medial cartilage injury
1202 (91%)	**0: No lesion**	1093 (83%)
56 (4%)	**1: Superficial lesion**	81 (6%)
38 (3%)	**2: < 50% of cartilage depth**	75 (6%)
9 (1%)	**3: > 50% of cartilage depth**	40 (3%)
9 (1%)	**4: Full thickness cartilage defect to bone**	28 (2%)

Results

3. Primary outcome

Delaying ACLR

Medial compartment

- ↗ **Rate** of chondral injury if delaying **>12months** (OR=1.93; **p= 0.002**)
- ↗ **Severity** of chondral injury if delaying **>12months** (OR=1.23; **p=0.002**)
- ∅ Rate / Severity if delaying reconstruction 3-6 or 6-12months (n.s.)
- ↗ **Rate** of chondral injury if delay ↗ with a "dose-effect" (**P*trend*=0.015**)
- ↗ **Severity** of chondral injury if delay ↗ with a "dose-effect" (**P*trend*=0.026**)

- ↗ **Effect in young population**

Lateral compartment

- ∅ Rate / Severity if delaying reconstruction (n.s.)

Results

3. Secondary outcomes

↗ Tegner score	↘	**Rate** of medial chondral injury (OR=0.88; **p= 0.036**)
	↘	**Severity** of medial chondral injury (OR=0.96; **p= 0.017**)
↗ Age	↗	**Rate** of medial and lateral chondral injury (**p<0.001**)
	↗	**Severity** of medial and lateral chondral injury (**p<0.001**)
	↗	**Rate** and **severity** of chondral injury with a **dose-effect**
↗ IMC	∅	Rate / Severity in both compartment (n.s.)
Male Sex	↗	**Rate** of medial chondral injury (OR=1.60; **p=0.009**)

Conclusion

Injury – Reconstruction delay

- **>12months ↗ both rate and severity of chondral medial injury**
- « ***Dose-effect*** » of delaying on rate and severity of medial injury

  mostly in young population

- **High pre-injury TAS decreases** medial chondral injury

Timing of ACLR should be optimally reduced

mostly in young population

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