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Clinical Outcomes After Anterior Cruciate Ligament Primary Repair: A 2-Year Minimum Follow-Up Study Of 120 Patients

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Faculty Disclosure Information

- My disclosure(s) is/are: Consultant for Arthrex

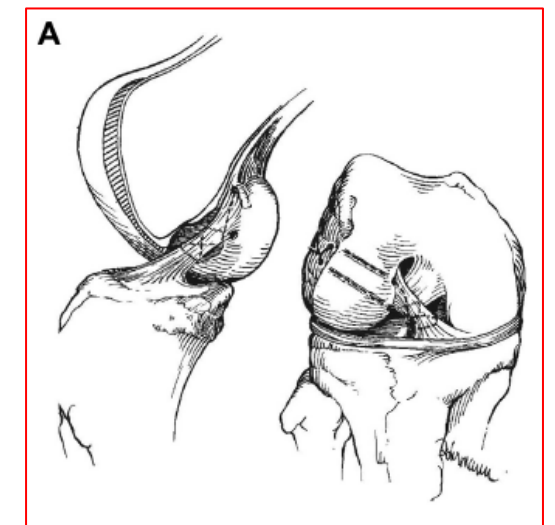


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Mayo Robson described for the first time ACL repair in **1985**.



Dr John FEAGIN

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Background

ACL repair regain attention after several studies that demonstrates the **potential healing of the ligament**

The **proximal 1\3** of the ACL has an **intrinsic healing potential** similar to that of the MCL.

- Higher vascularization
- High presence of myofibroblast (higher expression of alpha-SMA)
- High type 3 collagen presence

Four phases after ACL rupture:

1. Inflammation
2. Epiligamentous repair
3. Proliferation
4. Remodeling



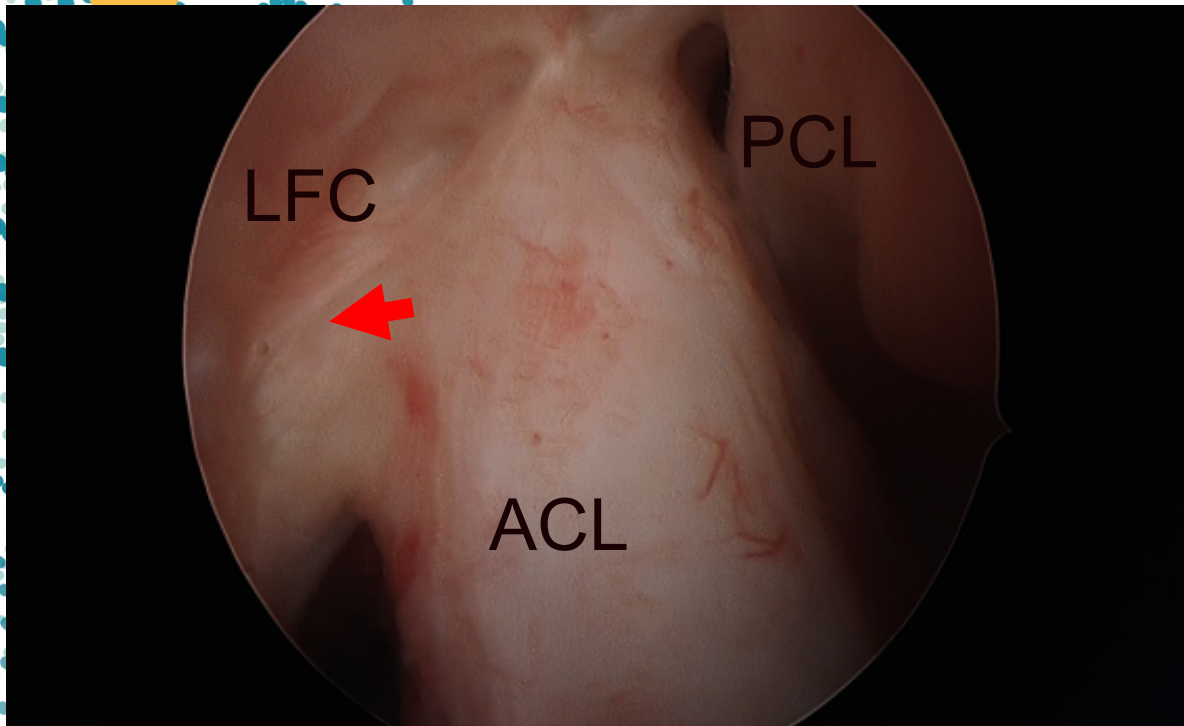
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Nguyen, J Orthop Res 2014
Murray, JBJS 2000
Lin, J Exp Orthop 2022

ACL preservation



- ligament healing rather than replacement
- restoration of anatomy and function of the joint
- preservation of sensory function of the ligament
- avoid harvesting related morbidity

ACL repair goals



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Population

| | |
|--|----------------------------|
| Demographic data | All Patients (N = 120) |
| Age, mean \pm SD, (range), years | 31.8 \pm 12.05 (14 – 62) |
| Gender, n (%) | |
| Male | 72 (60) |
| Female | 48 (40) |
| Follow-up, mean \pm SD (range), months | 47.9 \pm 12.8 (25-82) |
| Tegner activity scale, median (range) | 6 (3-9) |

The final population is **120 patients**.

All of these patients were operated **within two weeks** after the injury

Patients were prospectively enrolled.

The only **inclusion criteria** was a **proximal ACL lesion** (Type 1 and 2 according to Sherman)

Results

Clinical results

| | |
|----------------------------|---------------------|
| Failure rate, n (%) | 12/120 (10%) |
| Return to sport, n (%) | 103/108 (95,4%) |
| Return to same TAS, n (%) | 86/108 (79,6%) |
| Lachmeter, mm \pm SD | 1.6 \pm 1.2 |

| Patients (n = 79) | Mean \pm SD | PASS, n (%) |
|-------------------------------|---------------------------------|--------------------|
| KOOS score, mean \pm SD | 94.1 \pm 9.3 | |
| Activities of Daily Living | 90.0 \pm 11.9 | 51 (64.6) |
| Sport and Recreation Function | 74.6 \pm 22.4 | 51 (64.6) |
| KOOS total | 82.5 \pm 16.0 | |
| Subjective IKDC | 81.2 \pm 12.2 | 55 (69.6) |
| FJS-12 | 77.5 \pm 23.6 | 55 (69.6) |
| ACL-RSI | 66.8 \pm 23.7 | 67 (84.8) |
| TAS, median | 6 | |

| Variable | Did not return to preoperative TAS | Successful return to preoperative TAS | p-value |
|---|---|--|----------------|
| Age, mean \pm SD | 27.3 \pm 9.9 | 33.2 \pm 12.3 | 0.047 |
| Pre-operative Tegner Activity Scale, mean \pm SD | 6.14 \pm 1.49 | 5.86 \pm 1.99 | 0.540 |
| Post-operative Tegner Activity Scale, mean \pm SD | 4.55 \pm 1.10 | 5.90 \pm 1.99 | 0.003 |
| KT 1000 (mm), mean \pm SD | 2.31 \pm 1.40 | 1.53 \pm 1.11 | 0.020 |
| IKDC, mean \pm SD | 76.1 \pm 13.1 | 82.4 \pm 11.8 | 0.074 |
| ACL-RSI, mean \pm SD | 56.3 \pm 25.6 | 71.8 \pm 22.4 | 0.021 |
| FJS-12, mean \pm SD | 67.1 \pm 27.6 | 80.0 \pm 22.1 | 0.057 |
| KOOS Sport, mean \pm SD | 62.5 \pm 25.0 | 77.5 \pm 20.8 | 0.018 |
| KOOS total, mean \pm SD | 75.5 \pm 17.4 | 84.1 \pm 15.3 | 0.061 |

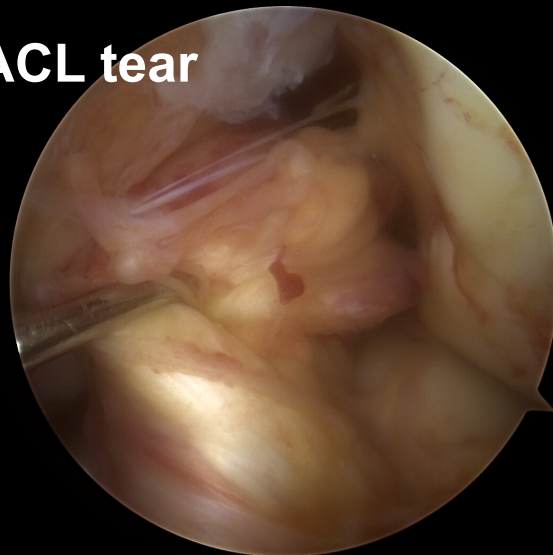
The mean age of patients who experienced ACL repair failure was significantly lower than the patients who not experienced failure (22.3 \pm 5.2 vs 32.9 \pm 12.1 years, p=0.003).

A significant correlation was found for higher preoperative (r=0.370, p<0.001) and higher postoperative (r=0.275, p=0.003) Tegner Activity Scale scores

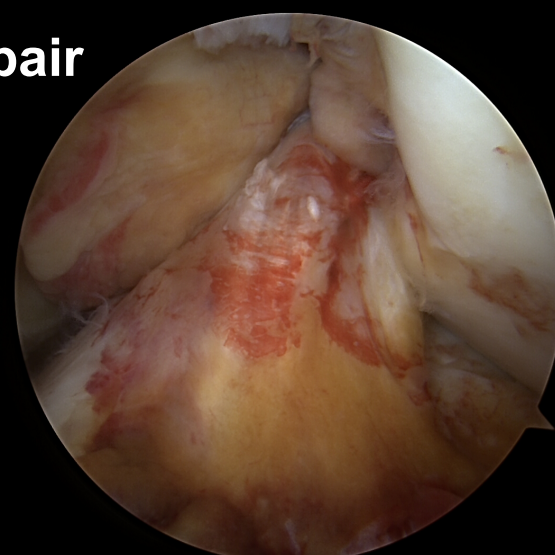
Conclusions

- Patients selection is crucial for the success of the ACL repair. Acute injuries and proximal tears with a good tissue quality are the most important inclusion criteria
- Age and higher level of activity are risk factor for the ACL repair failure.
- Patients who successfully regained their preoperative TAS were significantly older, had higher postoperative TAS, and had less side-to-side laxity.

Type 1 ACL tear



ACL repair





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**AZIENDA OSPEDALIERO-UNIVERSITARIA
SANT'ANDREA**

Thank You!



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