

Spontaneous Healing of Complete ACL Ruptures

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Introduction: Although almost all other ligaments in the human body heal spontaneously, it is generally accepted, in the current literature, that a complete rupture of the anterior cruciate ligament (ACL) is incapable of healing. This case series examines a series of 21 subjects who displayed clinical instability and complete ACL rupture on MRI examination that proceed to demonstrate clinical healing of their ACL.

Methods: Inclusion criteria for this study involved:

- Presentation between July 2007 to April 2010 within 6 weeks of injury
- Clinical laxity (positive Lachman & pivot shift)
- MRI confirmed complete ACL rupture
- Demonstrate clinical knee stability at 8-12 weeks
- Consent to participate in a prospective review
- No previous ACL injury or RC to either knee.
- Not seeking compensation for their injury.

21 patients were included in this prospective study. After 8-12 weeks from injury, the knees were clinically stable defined as a Lachman test < 3mm with a firm end point and a negative pivot shift test. All subjects were advised to complete an extensive rehabilitation program similar to that instituted after ACL reconstruction.

Prospective data collection with

- MRI at presentation
- MRI at 12 months
- IKDC clinical and subjective, KT1000 instrumental laxity testing, and Lysholm Knee Score, at 12 & 24 months

Repeat MRI scan was performed at 12 months from injury using a 3.0T magnet, T1 and T2 sag and coronal 2mm slices oblique sagittal T2 through ACL. Acute and 12 month MRI reviewed by musculoskeletal radiologist (JL)

Results:

- 21 subjects included in the study
- 1491 ACL rc performed during this period
- The mean age of the subjects was 36 years (17-55)
- 12 of the 21 subjects were male (57%)

Soccer and skiing sports accounted for 57% of subjects. On acute MRI complete ACL rupture was noted in all subjects, translational bone bruising was seen in 89%, chondral damage in 53%, medial meniscal injury in 32% and lateral meniscal injury in 42%.

Results:

| Concurrent MCL Injury | % of patients |
|-------------------------|---------------|
| Radiological MCL Injury | 89% |
| Grade 1 | 5% |
| Grade 2 | 58% |
| Grade 3 | 26% |
| Clinical MCL injury | 84% |
| Grade 1 | 16% |
| Grade 2 | 58% |
| Grade 3 | 10% |

2 of 21 patients failed within 2 years (14%), with recurrent laxity and instability noted at 14 and 16 months post injury. Both proceeded to ACL reconstruction.

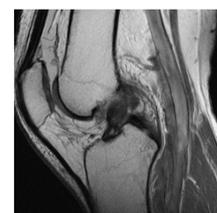
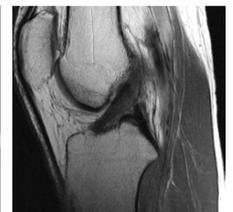
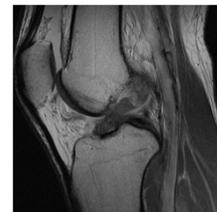
Of the 19 remaining patients all exhibited normal trajectory of continuous ACL fibres on MRI at 12 months as shown in samples.

At 2 years post injury the mean IKDC was 92, the mean Lysholm was 97, the mean KT1000 was 1.95mm and 60% reported regular participation in strenuous sports.

Acute Injury



12 months post injury



Conclusion:

We identified 19 cases of spontaneous healing of the ACL after acute disruption. It should be noted that those who demonstrate ACL healing represent a very small percentage of ACL injuries as evidenced by the fact that during the same period 1491 primary ACL reconstructions were performed. The spontaneous healing of the ACL, although infrequent, is possible. It is recommended that reassessment of knee stability should be performed in the non acute phase after an appropriate prehabilitation program prior to ACL reconstruction.



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