Natural history after PCL rupture

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Introduction

- The treatment of the PCL-injured knee is a controversial issue
- The literature on PCL injuries is confusing and contradictory
- The treatment should be based on the natural history of the PCL-deficient knee because this sets the baseline from which any interventions may be compared in terms of outcome
- However, there are very few true natural history studies on the PCL-injured knee, with most of the literature being retrospective and including a mixture of patients and injuries

Retrospective studies: issues

- Mixed bag of subjects assessed together.
- Both subjects with acute and with chronic injuries,
- Isolated PCL tears and combined ligament injuries
- Various follow-up times, variable assessment criteria, small patient groups, and even different PCL injury types compared
- So the literature is unclear!

Prospective studies

- 13 isolated PCL injuries in athletes treated conservatively.
- Seven injuries were complete PCL tears, and 5 were partial PCL tears. The mean follow-up was 2.6 years.
- Subjectively and functionally, all patients had a good result. Objectively, however, there were 3 good and 10 fair results. All patients returned to their preinjury activities without limitations. The subject’s posterior laxity did not increase with time. MRI scans performed of 3 patients with a complete tear showed a healed PCL

Prospective studies

- 34 patients with isolated PCL injury who underwent conservative treatment and performed follow-up evaluations at a mean of 8.6 years.
- They found that 75% of patients had experienced knee pain and had felt "insecure feelings" in their knees. They reported that gastrocnemius strength and degenerative changes of the medial and patellofemoral compartments affected prognosis.


Prospective studies

- 133 athletes with acute, isolated, nonoperatively treated PCL injuries. All patients were treated nonoperatively and prescribed a home rehabilitation program to decrease knee effusion and increase knee motion. Patients completed a subjective questionnaire each year for an average of 5.4 years (2.3 to 11.4 years). Sixty-eight patients returned for subjective evaluation, physical examination, KT-1000 arthrometer laxity testing, isokinetic strength, single-legged hop test, leg press torque measurements, and radiographic assessment including stress radiography.

- Regardless of the amount of laxity, the investigators found that half the patients returned to the same sport at the same or higher level, one third to the same sport at a lower level, and one sixth did not return to the same sport.

- Overall, the investigators thought that athletically active individuals with acute, isolated PCL injuries treated nonoperatively achieved a level of objective and subjective knee function that was independent of the grade of laxity.


In a follow-up in 2005, they assessed 271 subjects and reported that 76% of patients were able to return to sport or activity at a similar level.

Literature

- Several series have described intrinsic healing potential of the PCL, return to competitive sport, lack of symptomatic instability, and good outcomes at midterm follow-up.

- More recently, however, biomechanical studies have identified alterations in contact area and loads after PCL injury, particularly with flexion beyond 70 degrees.

- These effects occur in the medial and patello-femoral compartments and some clinical series also suggest progressive disability and degenerative joint disease with chronic PCL deficiency.


- In 1988, Dejour et al summarized the suspected natural history of isolated PCL deficiency as occurring in 3 phases:
  
  (1) functional adaptation lasting 3 to 18 months,
  
  (2) functional tolerance continuing for 15 to 20 years,
  
  (3) osteoarthritic deterioration that does not become disabling until after 25 years.


Conclusion

- After an isolated PCL rupture, the return to the sport is possible in the majority of the cases.

- But osteoarthritis happens after long term FU.

- The factors that predict which patients are most likely to quickly progress to degenerative joint disease have yet to be elucidated...

How to avoid this osteoarthritis evolution?