Knee Related Quality of Life, Functional Results and Osteoarthritis at a minimum of 20 Years Follow-up after ACL Reconstruction.

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Purpose


Secondary objective: identify factors associated with poor functional outcomes (symptomatic patients) and OA.
Methods

- Retrospective study, Isolated ACLR
- Same surgical team, One observer

**Variables:**
- Radiographic Evaluation (IKDC)
- Subjective Assessment: KOOS/ IKDC/ Lysholm
- Activity Level (Tegner)
- Meniscal injury
- Late/Early ACLR (3 months)
- Physical exam.: Lachman, Pivot Shift
- Objective Stability (KT-1000 Arthrometer)

**Statistics:**
- Mann-Whitney test, chi-squared test
- Logistic regression analysis, multivariate analyses
- Soft STATA version 13. $P < 0.05$
Surgical Technique

- Two-incision technique with arthroscopic assistance
- Rear entry guide
- Autologous patellar tendon graft
- Fixation method: (AO screw/Interference screw)

1986 -1995: 64 p
1995- 1996: 8p
Results

Flow Diagram:

November 1986 - January 1996 ACLR subjects (n= 435)

Lost to follow-up (n=338)

Excluded (n=21)
  • Associated ligament injury requiring surgery (n=16)
  • Declined to participate (n=5)

Eligible for 20-year follow-up (n = 97)

Included in 20-year follow-up (n = 76)

Underwent quality of life and functional assessment (n=12)

Underwent quality of life, functional and radiographic assessment (n=60)

ACL graft rupture (n=4)

Bilateral radiographic assessment (n=41)

Index knee radiographic assessment (n=60)

72 patients

59 ♂ 13 ♀

Age at surgery: 30 y (IQR 22-36y)

Age at evaluation: 51 y (IQR 48-59y)

Follow up: 22 y (IQR 21-25y)

Late reconstruction: 60%

Meniscal injury: 57%

Knee Laxity: 15%
**Resultados**

**Subjective Assessment (n=72)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Results (median, IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOOS</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>94 (90 - 100)</td>
</tr>
<tr>
<td>Symptoms</td>
<td>93 (86 - 96)</td>
</tr>
<tr>
<td>ADL</td>
<td>100 (99 - 100)</td>
</tr>
<tr>
<td>Sports/Recreation</td>
<td>85 (10 - 95)</td>
</tr>
<tr>
<td>QOL</td>
<td>87 (72 - 94)</td>
</tr>
<tr>
<td>IKDC Subjective</td>
<td>83 (70-95)</td>
</tr>
<tr>
<td>Lysholm</td>
<td>93 (82 - 99)</td>
</tr>
</tbody>
</table>

**Radiographic Evaluation (n=60): IKDC**

According to KOOS score, **22 patients (31%)** were considered **symptomatic**.
Results

Tegner Activity Level

Patients (%)

- Preoperative
- > 20 years follow-up

- 8 - 10: 76
- 6 - 7: 21
- 4 - 5: 11
- 0 - 3: 7
- 0 - 3: 18
- 0 - 3: 6
- 0 - 3: 22
**Results**

**Clinical and radiographical outcome correlation**

<table>
<thead>
<tr>
<th></th>
<th>IKDC A/B</th>
<th>IKDC C/D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=43)</td>
<td>(n=17)</td>
<td></td>
</tr>
</tbody>
</table>

| KOOS           | Pain     | 94       | 92       |
|                | Symptoms | 93       | 89       |
|                | ADL      | 100      | 100      |
|                | Sports/Rec. | 85    | 80       |
|                | QoL      | 87       | 75       |

| IKDC Subjective | 84       | 71       |
| Lysholm Score   | 90       | 83       |


KOOS difference > 8 to 10 pts: CLINICALLY SIGNIFICANT*

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### Discussion

Studies published with ≥ 20 years follow-up:

<table>
<thead>
<tr>
<th>Study</th>
<th>n</th>
<th>Follow up (years)</th>
<th>Graft</th>
<th>OA (IKDC C/D)</th>
<th>IKDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pernin(^1) (2010)</td>
<td>100/400</td>
<td>24.5</td>
<td>Patellar Tendon</td>
<td>54% (n 100)</td>
<td>74.7</td>
</tr>
<tr>
<td>Thompson(^2) (2015)</td>
<td>80/90</td>
<td>20</td>
<td>Patellar Tendon</td>
<td>20% (n 61)</td>
<td>86</td>
</tr>
<tr>
<td>Shelbourne(^3) (2017)</td>
<td>423/1428</td>
<td>22.5</td>
<td>Patellar Tendon</td>
<td>28.6% (n 423)</td>
<td>74.6</td>
</tr>
<tr>
<td>HIBA</td>
<td>72/576</td>
<td>22</td>
<td>Patellar Tendon</td>
<td>28% (n 17)</td>
<td>83</td>
</tr>
</tbody>
</table>
Discussion

WEAKNESS

- High n° of patients unavailable at follow up
- Low Number of patients
- Slight modifications of the graft fixation
- Preoperative ratings not available

STRENGTHS

- Ultra long follow-up
- same surgical team
- one observer
- equal graft (BTB)
- Few articles published with a minimum of 20 years of follow-up
Conclusion

At a median of 22 years follow-up, this study shows that patellar tendon autograft ACL reconstruction provides good clinical outcomes, with clinically objective knee stability and a 28% prevalence of OA. Additionally, we identified that meniscal injury at time of surgery was an independent predictor of OA.
