A comparison of quadriceps tendon (QTB) versus hamstring tendon for anterior cruciate ligament reconstruction

A prospective and randomized study.

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Conflict of interest

• Martin Lind

• I have no conflicts of interest to disclose
Graft choice for ACL reconstruction

- Potential advantages of quadriceps tendon (QTB) graft
  - Reduced anterior knee pain
  - Less postoperative instability due to a thicker tendon
  - Reduced nerve injuries at harvest
Purpose

• To compare QTB and Hamstring autografts for ACL reconstruction regarding
  – Donorsite morbidity
  – Subjective outcome
  – Objective knee stability

• We hypothesized reduced donorsite morbidity and equal subjective clinical outcome and knee stability when using QTB grafts compared to hamstring grafts
Div. Sportstraumatology

Design RCT

• QTB
  • 10 x 5 mm width/thickness with bone block
  
  N = 50

Versus

• STG
  • 4 strand semi-T/gracilis
  
  N = 50
Methods

Follow-up at 1 year: By independent observer

Outcome evaluations:

Donor site Morbidity
Donor-site related problems following ACL reconstruction questionnaire

Objective Knee stability
KT-1000 side to side sagittal laxity

Subjective scores
IKDC, KOOS, Tegner Activity scale

Strength
Extensor/flexor Isokinetic strength measurements
CONSORT Diagram

**Enrollment**
- Assessed for eligibility n=153
  - Excluded (n=53)
    - Declined to participate (n=48)
    - Other ligament injury (n=2)
    - BMI>35 (n=1)
    - Other reasons (n=2)

**Randomized (n=100)**

**Allocation**
- Allocated to Hamstring graft (n=50)
  - Received allocated intervention (n=49)
  - Small patella (n=1)
- Allocated to Quadriceps tendon graft (n=50)
  - Received allocated intervention (n=50)

**Follow-Up 1 year**
- Lost to follow-up (n=1)
  - New ACL injury (n=1)
- Lost to follow-up (n=3)
  - Not appear for FU (n=2)
  - New ACL injury (n=1)
# Randomization

<table>
<thead>
<tr>
<th></th>
<th>Quadripceps tendon group</th>
<th>Hamstring tendon group</th>
</tr>
</thead>
<tbody>
<tr>
<td>N randomized</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Age</td>
<td>27.3</td>
<td>27.1</td>
</tr>
<tr>
<td>Males</td>
<td>60%</td>
<td>55%</td>
</tr>
<tr>
<td>BMI</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Injury to surgery (months)</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Meniscus resection</td>
<td>34%</td>
<td>36%</td>
</tr>
<tr>
<td>Cartilage injury ICRS &gt; 2</td>
<td>12%</td>
<td>4%</td>
</tr>
</tbody>
</table>

No difference between groups
Results

Donor site morbidity score
100 = no morbidity

P = 0.03
Results

KOOS subjective scores

![Graph showing KOOS subjective scores for Symptoms, Pain, ADL, Sports, and QOL. The graph compares QTB and STG.](image-url)
Results

IKDC subjective scores

Subjective IKDC

QTB

STG
Results

KT-1000 knee stability (mm difference side to side)
Conclusion

• The use of the QTB graft results in less donor site morbidity than hamstring grafts but has otherwise similar subjective and knee stability outcome

• QTB preserve flexor strength, whereas hamstring graft usage affect both flexor and extensor strength

• The QTB graft could be a better graft alternative than hamstring grafts for ACL reconstruction