Title:
“The influence of femoral tunnel length on graft rupture after ACL reconstruction”

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Disclosures:
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INTRODUCTION

• Transportal technique for ACL reconstruction creates short femoral tunnel.
  
  (Lubowitz; Arthroscopy 2009)

• The amount of graft within the tunnel for proper integration has not been defined yet.
  

• Studies on this subject have been performed in animal models.
  
  (Yuan F et al; Orthopedics 2013)

• **Objective:** retrospectively compare the incidence of new ruptures and the clinical outcomes (objective and subjective) of surgical patients with a short graft length within the femoral tunnel to those of patients with a longer graft length within this tunnel.
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METHODS

• Observational study
• Cohort of 80 patients ➔ 9 dropouts ➔ 71 patients
• Graft: semitendinosus and gracilis
• Inclusion criteria:
  - unilateral ACL injury;
  - closed physis;
  - age < 40 years;
  - < 1 year since injury;
  - no previous surgery (except arthroscopic meniscectomy);
  - no severe degenerative changes;
  - no morbid obesity;
• Clinical evaluation: Lachman; pivot shift; anterior drawer; KT1000; Objective and subjective IKDC; Lysholm. Follow up: 2 years
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METHODS

• Surgical technique:
  Transtibial technique and transportal technique, femoral fixation with ETD®, tibial fixation with interference screw.

• The length of the femoral tunnel was measured during the surgery, and the remaining amount of graft within the tunnel was calculated by subtracting the length of the ETD.

• The patients were categorized according to this measure as follows in order to compare clinical outcomes and the incidence of reruptures: patients with \( \leq 1.5 \) cm of graft within the tunnel versus patients with \( > 1.5 \) cm; \( \leq 2 \) versus \( > 2 \) cm; \( \leq 2.5 \) versus \( > 2.5 \) cm; and \( \leq 1.5 \) versus \( > 2.5 \) cm.
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RESULTS

N: 71 patients (37 transportal technique and 34 transtibial technique).

Mean length of the femoral tunnels:
• transtibial: 4.98 cm $p<0.001$
• transportal: 3.99 cm

Mean length of the graft within the femoral tunnel:
• transtibial: 2.91 cm $p<0.001$
• transportal: 2.27 cm
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RESULTS

Comparisons:

• Patients with $\leq 1.5$ cm of graft within the tunnel $\times$ patients with $> 1.5$ cm;
• Patients with $\leq 2$ cm $\times$ $> 2$ cm;
• Patients with $\leq 2.5$ cm $\times$ $> 2.5$ cm;
• Patients with $\leq 1.5$ cm $\times$ $> 2.5$ cm.

For total N: 71 and for transportal group: 37
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RESULTS

Comparisons for total N: 71

- Patients with ≤ 1,5 cm of graft within the tunnel X patients with > 1,5 cm;
- Patients with ≤ 2 cm X > 2 cm;
- Patients with ≤ 2,5 cm X > 2,5 cm;
- Patients with ≤ 1,5 cm X > 2,5 cm.

Outcomes: rerupture, lachman anterior draw, pivot shift, KT-1000, Objective and Subjective IKDC and Lysholm: no significant difference

Except for patients with ≤ 2 cm X > 2 cm, lachman test (p = 0.025, Fisher Test)
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RESULTS

Comparisons for transportal group: 37

- Patients with ≤ 1,5 cm of graft within the tunnel vs patients with > 1,5 cm;
- Patients with ≤ 2 cm vs > 2 cm;
- Patients with ≤ 2,5 cm vs > 2,5 cm;
- Patients with ≤ 1,5 cm vs > 2,5 cm.

Outcomes: rerupture, lachman anterior draw, pivot shift, KT-1000, Objective and Subjective IKDC and Lysholm: no significant difference
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**DISCUSSION**

- The amount of graft within the tunnel was arbitrarily divided into groups for comparison.

- Small N:71, but few studies in literature, thus, an alternative approach was a retrospective analysis

- Few studies in humans with similar methodology
  
  Mariscalco et al; Eur Orthop Traumatol 2015
  Guglielmetti et al; J Orthopaed Traumatol 2017

- Animal models do not answer this question
  
  Yamazaki et al; Knee Surgery, Sport Traumatology, Arthroscopy: A 2006
  Hidalgo et al; Revista Española de Cirugía Ortopédica y Traumatología 2012
  Yuan et al; Orthopedics 2013
The amount of graft within the femoral tunnel was not a risk factor for knee instability or graft rerupture.

Limitations:

- Retrospective analysis
- N: small
- Few patients had a short graft length within the tunnel
- Two different ACL reconstruction techniques used

CONCLUSION
References


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References