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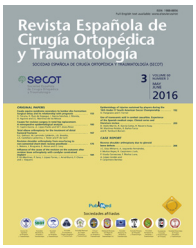

ORIGINAL ARTICLE

Tibial tunnel widening associated with anterior cruciate ligament reconstruction using autogenous hamstrings: A comparison between antero-medial portal and transtibial techniques☆

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KEYWORDS
Anterior cruciate ligament reconstruction;
Hamstrings;
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Autografts

Abstract
Objective: Evaluate the enlargement effect of the tibial tunnel emergence of 2 different of anterior cruciate ligament reconstruction techniques: antero-medial portal (AMP) vs. transtibial (TT) technique.
Methods: A prospective, randomised controlled study was performed in 36 consecutive patients who underwent anterior cruciate ligament reconstruction with autologous hamstring tendon grafts employing the AMP and conventional TT techniques. Lateral and antero-posterior radiographs were obtained for each patient at 6 weeks and 12 months postoperatively. The sclerotic margins of the tibial tunnels were measured at the widest dimension of the tunnel as well as the diameter of the tibial emergence and were compared with the initially drilled tunnel size after correction for radiographic magnification. Statistical analysis was performed to compare the 2 groups by use of the independent-samples *t* test, with significance set at .05.
Results: The mean percentage increase in the diameter of tibial tunnel emergence at 6 weeks after surgery was 8.1% ± 2.9 for the PAM technique and 21.20% ± 11.87 for the TT technique on

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the anteroposterior X-ray view. However, the mean percentage increase in the diameter of the tibial tunnel emergence on the lateral view was 7.1% ± 4.72 for the medial portal technique and 17.64% ± 11.48 for the transtibial technique. This difference was statistically significant on both anteroposterior and lateral views.
Conclusions: The diameter of the tibial tunnel emergence for hamstring autologous anterior cruciate ligament reconstructions was significantly lower for the medial portal technique when compared with the conventional TT technique.

PALABRAS CLAVE
Reconstrucción del ligamento cruzado anterior;
Isquiotibiales;
Ensanchamiento del túnel;
Túnel tibial;
Túnel femoral;
Autoinjerto

Valoración de la apertura del túnel tibial tras la reconstrucción del ligamento cruzado anterior empleando isquiotibiales autógenos: Estudio comparativo entre la técnica de portal anteromedial y la técnica transtibial convencional

Resumen
Objetivo: Evaluar el diámetro de la emergencia del túnel tibial con relación a la técnica de reconstrucción del ligamento cruzado anterior, empleando isquiotibiales autógenos, y comparar las técnicas a través del portal anteromedial (PAM) y la convencional transtibial (TT).
Métodos: Estudio prospectivo, aleatorizado y comparativo de 36 pacientes diagnosticados con insuficiencia del ligamento cruzado anterior, intervenidos en forma sucesiva mediante reconstrucción primaria, con las técnicas de reconstrucción a través de PAM (16 pacientes) y la TT convencional (20 pacientes) con isquiotibiales autógenos. Todos los pacientes fueron evaluados radiológicamente, con valoración del diámetro de emergencia tibial en los planos anteroposterior y lateral a las 6 semanas y a los 12 meses del procedimiento quirúrgico respecto al tamaño de la plastia utilizada en la cirugía. Se realizó un análisis estadístico comparando ambos grupos mediante la t de Student con un valour de significación de 0,05.
Resultados: El diámetro de la emergencia tibial con relación al tamaño de la plastia utilizada, obtenido a las 6 semanas en la proyección anteroposterior, manifestó un incremento del 8,1% ± 2,9 con la técnica PAM y del 21,20% ± 11,87 con la técnica TT, mientras que en la proyección lateral fue de 71% ± 4,72 y del 17,64% ± 11,48, respectivamente. Las diferencias fueron estadísticamente significativas tanto en el plano anteroposterior como en el lateral.
Conclusiones: El diámetro de la apertura tibial mostró ser significativamente mayor con la técnica TT a las 6 semanas y a los 12 meses de seguimiento radiológico tanto en la proyección anteroposterior como en la lateral.

Introduction

Many studies have supported the efficacy of anterior cruciate ligament (ACL) reconstruction in re-establishing normal knee movement and joint function.[1–3]

Nevertheless, single-bundle transtibial reconstruction does not seem to completely re-establish joint stability, as although it would give rise to sagittal (antero-posterior) plane stability, it would not make it possible to achieve rotational stability.[4,5]

With the aim of reproducing the anatomy and re-establishing knee rotational component stability, anatomical reconstruction techniques have emerged using an independent portal such as the antero-medial portal (AMP). In spite of the numerous studies that prove the advantages of reconstruction using an independent portal,[6,7] some publications evaluate the clinical results of AMP and conventional transtibial (TT) techniques, showing that there is no significant difference between them.[8,9]

There is still controversy regarding reconstruction technique and fixing method. When soft tissue grafts are used, attachment close to the joint interline seems to give rise to greater rigidity and a reduction in the frequency of tunnel widening.[10–12]

The causes of bone tunnel widening following ACL reconstruction are multifactorial, and mechanical and biological factors are the most common. Tunnel widening occurs in the immediate postoperative period, followed by a gradual increase over weeks and months.[13,14] In spite of this, there is no correlation between the degree of tibial tunnel widening and clinical results after ACL reconstruction.[15–18]

However, tunnel widening leads to more demanding revision surgery, so that in the most severe cases of widening reconstruction has to take place in 2 stages.