



Original Article

Reconstruction of the anterior cruciate ligament by means of an anteromedial portal and femoral fixation using Rigidfix^{☆,☆☆}



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ABSTRACT

Objective: To evaluate a series of patients who underwent surgery for reconstruction of the anterior cruciate ligament with flexor tendons, by means of the anteromedial transportal technique using Rigidfix for femoral fixation, and to analyze the positioning of the pins by means of tomography.

Methods: Thirty-two patients were included in the study. The clinical evaluation was done using the Lysholm, subjective IKDC and Rolimeter. All of them underwent computed tomography with 3D reconstruction in order to evaluate the entry point and positioning of the Rigidfix pins in relation to the joint cartilage of the lateral condyle of the femur.

Results: The mean Lysholm score obtained was 87.81 and the subjective IKDC was 83.72. Among the 32 patients evaluated, 43% returned to activities that were considered to be very vigorous, 9% vigorous, 37.5% moderate and 12.5% light. In 16 patients (50%), the distal entry point of the Rigidfix pin was located outside of the cartilage (extracartilage); in seven (21.87%), the distal pin injured the joint cartilage (intracartilage); and in nine (28.12%), it was at the border of the lateral condyle of the femur.

Conclusion: The patients who underwent ACL reconstruction by means of the anteromedial transportal using the Rigidfix system presented satisfactory clinical results over the length of follow-up evaluated. However, the risk of lesions of the joint cartilage from the distal Rigidfix pin needs to be taken into consideration when the technique via an anteromedial portal is used. Further studies with larger numbers of patients and longer follow-up times should be conducted for better evaluation.

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☆☆ Work developed in the Institute of Orthopedics and Traumatology of Passo Fundo, Passo Fundo, RS, Brazil.

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Reconstrução do ligamento cruzado anterior pelo portal anteromedial e fixação femoral com Rigidfix

R E S U M O

Palavras-chave:

Joelho/cirurgia
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Objetivo: Avaliar uma série de pacientes submetidos à cirurgia de reconstrução do ligamento cruzado anterior com tendões flexores pela técnica transportal anteromedial com o uso de Rigidfix para fixação femoral e analisar o posicionamento dos pinos por meio de tomografia. **Métodos:** Foram incluídos no estudo 32 pacientes. A avaliação clínica foi feita com os escores de Lysholm, IKDC subjetivo e Rolimeter. Todos foram submetidos a tomografia computadorizada com reconstrução em 3D para avaliação do ponto de entrada e do posicionamento dos pinos do Rigidfix em relação à cartilagem articular do côndilo lateral do fêmur.

Resultados: A média do escore de Lysholm obtido foi de 87,81 e do IKDC subjetivo, de 83,72. Dos 32 pacientes avaliados, 43% retornaram a atividades consideradas muito vigorosas, 9% a vigorosas, 37,5% a moderadas e 12,5% a leves. Em 16 pacientes (50%), o ponto de entrada do pino distal do Rigidfix foi localizado fora da cartilagem (extracartilagem), em sete (21,87%) o pino distal lesou a cartilagem articular (intracartilagem) e em nove (28,12%) ficou na borda da cartilagem articular do côndilo lateral do fêmur.

Conclusão: Os pacientes submetidos à reconstrução do LCA com o sistema Rigidfix pela técnica transportal anteromedial apresentaram um resultado clínico satisfatório no tempo de seguimento avaliado. Entretanto, o risco de lesão da cartilagem articular pelo pino distal do Rigidfix deve ser considerado quando a técnica via portal anteromedial é usada. Outros estudos com maior número de pacientes e com um tempo de seguimento mais longo devem ser feitos para melhor avaliação.

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Introduction

Anterior cruciate ligament (ACL) injuries are among the commonest ligament injuries of the knee. Different techniques with different types of graft and different fixation methods have been described for surgical treatment, all with satisfactory clinical results. Today, ACL reconstruction using autologous grafts from the tendons of the gracilis and semitendinosus muscles has gained popularity because of the lower morbidity at the graft donor site, lower incidence of femoropatellar symptoms and lower incidence of contractures in flexion.^{1,2}

The success of ACL reconstruction surgery is related to various preoperative, transoperative and postoperative factors. Among these, the positioning of the bone tunnels in ACL reconstruction surgery, and consequently the positioning of the tendon graft, is considered to be one of the single most important factors. Recent studies have shown that when the femoral tunnel is positioned more anatomically in relation to the femoral insertion of the ACL, it provides better rotational control of the knee, better knee mobility and less chance of impact of the ACL on the posterior cruciate ligament (PCL) during flexion.³ There are three techniques for constructing the femoral tunnel: the transtibial technique, the outside-to-inside or two-incision technique and the transportal technique (anteromedial or accessory medial portal). Some studies have shown that with the transtibial technique, in which the femoral tunnel is constructed through the tibial tunnel, it is more difficult to achieve anatomical positioning

of the femoral tunnel.^{4,5} For this reason, the anteromedial transportal technique, with tunnels constructed independently and without the need for an additional incision in the lateral face of the femur, is a constant focus of discussion.

The different types of tendon graft and the pursuit of femoral tunnel positioning that is more horizontal in the lateral femoral condyle have given rise to adaptation of the fixation methods traditionally used in ACL reconstruction with flexor tendons. Thus, transverse fixation methods with fixed angles of implant entry in the lateral face of the femur have been reassessed, because they may put the posterolateral and intra-articular structures of the knee at risk.⁴

The Rigidfix system (Mytek, Norwood, MA) consists of two pins made of polylactic acid, diameter 2.7 mm, for femoral fixation of the graft in the femoral tunnel. The system transfixes the graft at two points, which produces compression against the tunnel wall and enables a wide bone-graft contact area.⁶ In an anatomical study, Castoldi et al.⁷ evaluated the positioning of the entry of Rigidfix pins in the lateral condyle in relation to the technique via an anteromedial portal. These authors concluded that the risk of chondral lesions resulting from the entry of the implant varied according to the angle of the pin insertion guides and also according to the size of the femoral condyles.

The present study had the objective of evaluating a series of patients who underwent ACL reconstruction surgery using flexor tendons by means of the anteromedial transportal technique, with the Rigidfix system for femoral fixation. This study

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