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Original Article

Saphenous nerve injury during harvesting of one or two hamstring tendons for anterior cruciate ligament reconstruction☆

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ABSTRACT

Objective: The aim of this study was to assess whether harvesting of two hamstring tendons (semitendinosus and gracilis) has the same rate of nerve injury as harvesting of the semitendinosus tendon alone, used as a triple graft.
Methods: Changes in sensitivity relating to injury of the infrapatellar branch of the saphenous nerve were evaluated in 110 patients six months after they underwent anterior cruciate ligament (ACL) reconstruction using hamstring tendons. They were divided into two groups: one in which only the semitendinosus was used and the other, the semitendinosus and gracilis.
Results: The group in which only the semitendinosus was used as a graft presented a nerve injury rate of 36.1%. In the group in which the semitendinosus and gracilis tendons were used, 58.1% of the patients presented altered sensitivity. In the general assessment on all the patients, the nerve injury rate was 50.9%.
Conclusion: Harvesting the semitendinosus alone and using it in triple form is a viable option for ACL reconstruction and may give rise to fewer nerve injuries relating to branches of the saphenous nerve.

Lesão do nervo safeno na retirada de 1 ou 2 tendões flexores na reconstrução do ligamento cruzado anterior

Palavras-chave:
Ligamento cruzado anterior
Parestesia

RESUMO

Objetivo: Avaliar se a retirada dos dois tendões flexores (semitendíneo [ST] e grácil [GC]) tem o mesmo índice de lesão nervosa que a retirada isolada do tendão ST usado como enxerto triplo.

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Tendões flexores

Métodos: Foi avaliada a alteração de sensibilidade relacionada à lesão do ramo infrapatelar do nervo safeno em 110 pacientes seis meses após serem submetidos à reconstrução do LCA com o uso dos tendões flexores, dividido num grupo no qual se usou somente o ST e outro com o ST e o GC.

Resultados: O grupo no qual se usou somente o ST como enxerto apresentou um índice de lesão nervosa de 36,1% e no grupo com os tendões ST e GC 58,1% dos pacientes tiveram alteração da sensibilidade. Na avaliação geral de todos os pacientes o índice de lesão nervosa foi de 50,9%.

Conclusão: A retirada do ST isolado e usado de forma tripla é uma opção viável na reconstrução do LCA e pode ocasionar um menor número de lesão nervosa relacionada a ramos do nervo safeno.

Introduction

Anterior cruciate ligament (ACL) injuries, which are incapacitating for certain physical activities because of the instability that is caused, predispose toward meniscal and cartilage lesions that may evolve to arthrosis.[1] ACL reconstruction seeks to restore joint stability.

With the evolution of surgical procedures for ACL reconstruction, patients' expectations regarding the results are becoming greater. They seek to return to their daily activities earlier and with less morbidity.[2]

The tendons that are most used for this procedure are the flexor tendons (semitendinosus and gracilis) and the central third of the patellar ligament. The literature shows that the results from using these two grafts are similar,[3–6] but it is believed that using the flexor tendons leads to lower postoperative morbidity.[7]

However, graft harvesting is not risk-free. The commonest complication is regional paresthesia or anesthesia in the leg, caused by injury to the infrapatellar branch of the saphenous nerve (IPSN). There have been reports of incidence greater than 70%.[8,9]

To reduce the incidence of this complication, some authors have chosen to use a more oblique incision,[10] while others have attempted to explore and identify the nerve at the time of harvesting the graft.[2]

The aim of the present study was to compare whether harvesting a flexor tendon (semitendinosus) has the same incidence of nerve injuries as does harvesting of both tendons (semitendinosus and gracilis) by means of a vertical incision, for use as grafts in ACL reconstruction.

Materials and methods

Six months after the operation, 110 patients who had undergone ACL reconstruction using flexor tendons were assessed. A triple graft from the semitendinosus tendon was used when remnants of the torn ACL had been preserved or when the diameter of the graft was greater than 8 mm, for a total of 36 patients.

When there was no remnant ACL or the semitendinosus tendon did not reach a diameter of 8 mm, the reconstruction was done using a quadruple graft from the flexor tendons (semitendinosus and gracilis), while always maintaining their distal insertion in the tibia, for a total of 74 patients.

Patients who had not undergone suturing of the medial meniscus using the "in-out" or "out-in" technique (in which a small medial incision was made) were not included in the evaluation. Likewise, patients with scars or previous surgery on the knee were also not included.

Surgical technique

ACL reconstruction was performed using a tourniquet at the base of the thigh and spinal anesthesia in all cases.

The procedure was started with harvesting of the semitendinosus tendon by means of a vertical incision that was made approximately 1.5 cm medially and distally to the anterior tuberosity of the tibia, with an average length of 2.8 cm. The fascia of the sartorius, which covers the flexor tendons, was opened horizontally and, with the aid of two "mixters", the semitendinosus was isolated and harvested by means of an open stripper (pigtail type), while maintaining its distal insertion in the tibia.[6]

The muscle portion was cleaned and the arthroscopic procedure was started through conventional anteromedial and anterolateral portals. After treatment of the associated lesions, the existence of any viable remains of the ACL was ascertained. The femur was then prepared for drilling the tunnel, which was done by means of independent "out-in" drilling, following the technique of Chambat.[11]

In the tibia, when there were viable remains of the ACL, we did the drilling using the remains as the location. With the aid of a shaver, a path within the remains was created.[12]

When there were no remains of the ACL or these were unviable, the tibial tunnel was constructed within the tibial footprint, using the anterior cornu of the lateral meniscus and the medial tibial spine as the location parameter. In this case, or when the triple graft from the semitendinosus presented a diameter of less than 8 mm, we returned to the incision over the flexors and harvested the gracilis tendon in the same manner.

After the graft had been prepared, it was passed through from distal to proximal, while maintaining its distal insertion