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ORIGINAL ARTICLE

Results of polyurethane implant for persistent knee pain after partial meniscectomy with a minimum of two years follow-up☆

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KEYWORDS
Meniscus scaffold;
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Abstract
Purpose: To present the results of a polyurethane meniscal scaffold implant in 10 patients with persistent pain after meniscectomy.
Methods: Prospective, descriptive study of ten patients who underwent arthroscopic implantation of a polyurethane meniscal scaffold. Functional, MRI, and radiography assessments were performed pre-operatively and at 6 months, 1 year, and a final follow-up at a minimum of two years. Clinical evaluation included Lysholm score, KOOS and VAS. The MRI morphology and signal intensity of the implant were evaluated according to the criteria of Genovese et al.
Results: Statistically significant differences were found between the mean Lysholm score before surgery (63.5 points) and that at 6 months (76.8 points) ($p = .001$), one year (83.3 points) ($p < .001$) and final follow-up (84.4 points) ($p < .001$).

KOOS showed significant differences between before surgery (64.23 points), 6 months (73.66 points) ($p = .001$), one year (81.39 points) ($p < .001$) and final follow-up (83.34 points) ($p < .001$).

The mean values for VAS were 5.7 points in the pre-operative evaluation, 3.6 points at 6 months follow-up ($p < .001$), 1.9 points at one year ($p < .001$), and 1.9 points at final follow-up ($p < .001$).

Radiology showed degenerative changes in one case.

In MRI, the size of the implant and the intensity of the MRI signal gradually decreased, but it never changed to that of a normal meniscus.
Conclusion: A significant improvement was found in all the clinical parameters 24 months after the surgery, except in one patient who underwent further surgery. The scaffold reduced its size and but never achieved an MRI image similar to that of a normal meniscus.

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The procedure proved to be safe and useful for the treatment of persistent pain after meniscectomy.

PALABRAS CLAVE
Implante meniscal;
Poliuretano;
Síndrome postmeniscectomía

Resultados de un implante de poliuretano para el tratamiento del dolor persistente de rodilla tras meniscectomía parcial con un mínimo de dos años de seguimiento

Resumen
Objetivo: Evaluar los resultados de un implante de poliuretano en 10 pacientes con dolor persistente tras meniscectomía parcial.
Material y métodos: Estudio prospectivo descriptivo de 10 pacientes que fueron intervenidos para colocación artroscópica de un implante meniscal de poliuretano.

Se realizó evaluación funcional, de resonancia magnética y radiología simple antes de la intervención, a los 6 meses, un año, y en el seguimiento final con un mínimo de dos años. La evaluación clínica incluyó las escalas de Lysholm, KOOS y EVA. En resonancia magnética (RM) se evaluó la morfología y la intensidad de la señal del implante según los criterios de Genovese et al.
Resultados: Se encontraron diferencias significativas entre la media de puntuación de Lysholm antes de la cirugía (63,5 puntos), a los 6 meses (76,8 puntos) ($p = 0,001$), al año (83,3 puntos) ($p < 0,001$) y al final del seguimiento (84,4 puntos) ($p < 0,001$).

En la puntuación del KOOS se hallaron diferencias significativas entre las medias en el preoperatorio (64,23 puntos) y 6 meses (73,66 puntos) ($p = 0,001$), un año (81,39 puntos) ($p < 0,001$) y el seguimiento final (83,34 puntos) ($p < 0,001$).

Los valores promedio de la EVA fueron de 5,7 puntos en el preoperatorio, 3,6 puntos a los 6 meses ($p < 0,001$), 1,9 puntos al año ($p < 0,001$) y 1,9 puntos al final del seguimiento ($p < 0,001$).

La radiología mostró cambios degenerativos en un caso.

En la RM, el tamaño del implante y la intensidad de la señal de RM disminuyeron progresivamente, no llegando a alcanzar nunca los de un menisco normal.
Conclusiones: Veinticuatro meses después de la cirugía se ha encontrado una mejora significativa en todos los parámetros clínicos, salvo en un paciente que precisó reintervención. El tamaño del implante se redujo y en ningún caso se alcanzó una imagen de RM similar a la de un menisco normal.

El procedimiento demostró ser seguro y útil para el tratamiento del dolor persistente tras meniscectomía.

Introduction

The association between meniscectomy and the onset of arthrosic phenomena in the knee joint cartilage was first described by Fairbanks[1] in 1948. Several meniscal replacement techniques have been developed to prevent these phenomena, among which allografts have been extensively used with promising results.[2]

In recent years, meniscal implants have been used to prevent degenerative changes in the knee following partial meniscectomy. These implants have been designed as scaffolds to house native cellular proliferation with the aim of regenerating meniscal tissue.[3–5]

Meniscal collagen implants (CMI®; Ivy Sports Medicine, Gräfelfing, Germany) have been used in patients with medial and lateral meniscectomy and have shown promising medium-term[6–8] and long-term[9] results.

Actifit® (Orteq Ltd, London, UK) is a synthetic, acellular, biodegradable implant made of aliphatic polyurethane designed to fill the defect generated by a meniscectomy, as irreparable partial lesions. The objective of treatment with this implant is to provide pain relief and, potentially, restore the functionality of the lost meniscus. This implant offers 80% porosity, is made of a polymer with segments of polycaprolactone and urethane which biodegrades slowly and has shown good results in previous series.[10,11]

The purpose of this study is to publish the medium-term clinical and radiographic results of the Actifit® meniscal implant in a group of 10 patients with persistent postmeniscectomy pain and a minimum follow-up of 24 months.

The hypothesis of this work is that patients would report improvements in pain and functionality following implantation and that these would persist over time.

Materials and methods

Between January 2009 and November 2010, 10 patients who fulfilled the inclusion criteria underwent arthroscopic