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ORIGINAL ARTICLE

More than 10 years of follow up of the stop screw technique☆

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KEYWORDS
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Abstract
Introduction: Infantile flexible flatfoot does not require treatment in most cases. Symptomatic flexible flat feet are treated orthopaedically and surgery is only indicated when orthosis fails.
Material and methods: Cases who underwent surgical treatment with the stop screw technique at the 12 de Octubre Hospital between 1995 and 2002 are reported. Patient progress is also analysed. Six angles are measured on the X-ray prior to surgery and those same X-ray angles are measured again before material extraction. They are then compared to see if the correction achieved is statistically significant. A more reduced sample is currently being assessed with the same radiological measurements and two clinical assessment scales: Lickert, and Smith and Millar. The latest X-rays are analysed by two radiologists to determine if there is subtalar arthrosis.
Results: In the short term, statistically significant differences are observed in all angles. The comparison between the post-surgery angles and the current angles does not show differences, except for the Giannestras angle, which has statistically significantly worsened. Clinical results and patient satisfaction is good. Incipient subtalar arthrosis is present in 68.5% of current patient X-rays.
Conclusions: Stop screw method is a cheap, simple and effective technique to correct symptomatic flexible flatfoot that has not improved with conservative treatment. This technique provides short-term foot correction which can be maintained over time.

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PALABRAS CLAVE
Pie plano flexible infantil;
Calcáneo stop;
Resultados

Más de 10 años de seguimiento de la técnica de calcáneo stop

Resumen
Introducción: El pie plano valgo flexible infantil no requiere tratamiento en la mayoría de los casos. Cuando son sintomáticos se tratan de manera ortopédica y si no se consigue mejoría se procede a la cirugía.
Material y métodos: Se describen los casos operados en el Hospital 12 de Octubre con la técnica de calcáneo stop entre los años 1995 y 2002. Se valora también cómo están actualmente estos pacientes. Hemos medido 6 ángulos en la radiografía antes de la cirugía y en la radiografía posterior a esta, y se comparan los ángulos para sabre si la corrección conseguida es estadísticamente significativa. En el momento actual se valora una muestra más reducida de pacientes con las mismas mediciones radiológicas y escalas de valoración clínica: de Lickert, y de Smith y Millar. Las últimas radiografías son valoradas por 2 radiólogos para ver si existe artrosis subastragalina.
Resultados: A corto plazo se observan diferencias estadísticamente significativas en todos los ángulos. Comparando los ángulos poscirugía con los actuales se concluye que no hay diferencias, excepto en el ángulo de Giannestras, que ha empeorado de manera estadísticamente significativa. Los resultados clínicos y la satisfacción de los pacientes es buena. En las radiografías actuales hay artrosis subastragalina muy incipiente en el 68,5% de los pacientes.
Conclusiones: El calcáneo stop es una técnica barata, sencilla y eficaz para corregir el pie plano flexible infantil sintomático y que no haya respondido a medidas conservadoras. La técnica corrige el pie a corto plazo y esta corrección se mantiene en el tiempo.

Introduction

In 1976, Doctor Recaredo Álvarez described the calcaneal stop screw technique for the surgical treatment of symptomatic infantile flexible flatfoot. It is a simple technique, involving an arthroereisis, whereby a cancellous screw is introduced at the level of the tarsal sinus, in the posteroexternal subtalar (or subastragalar) aspect. About 1 cm of the screw is allowed to protrude in the upper part, in order to act as a stop which passively blocks calcaneal pronation.

Infantile flexible flatfoot is physiological; it can be considered as a normal stage in the evolution of the foot which disappears spontaneously with growth.[1]

Several surgical techniques have been developed to treat this foot condition, but they are reserved for symptomatic feet causing pain and fatigue.[2]

The objective of this study is to evaluate the results obtained with the calcaneal stop screw technique in the short and medium-long term (over 10 years follow-up).

Material and methods

A total of 79 patients were intervened using the calcaneal stop screw technique at *12 de Octubre* Hospital, in Madrid, between 1995 and 2002. Due to clinical and radiographic losses, only 52 histories could be reviewed, with a total of 103 idiopathic and flexible flat feet. We defined as flexible flat feet those presenting a decrease in the height of the plantar arch associated to forefoot supination and valgus hindfoot. It is called flexible because the foot regains the arch when standing on tiptoe or passively extending the first toe (Jack test).

All patients had both feet flat, except for 1 patient who only had 1. The symptoms reported were foot pain or fatigue. Initially, all patients followed a conservative treatment with insoles for at least 6 months.

The gender distribution was 20 girls and 32 boys. They were intervened at a mean age of 11.6 years (range: 7.11 to 14.8 years).

All patients had the screw extracted after a mean period of 23 months. The screw was extracted by protocol, as the aim was for the limitation of subtalar mobility to be temporary.

Flexible flatfoot is occasionally associated with short Achilles tendon and 3 of the patients required an extension of the Achilles tendon through a percutaneous Hooke technique.

Radiographic measurements were taken before and after the procedure, and patients were clinically and radiographically evaluated at the moment of measurement. All radiographs used for assessment were obtained under weight load.

Due to changes of address and telephone number, only 28 patients could be contacted. They underwent a telephone interview to know their level of satisfaction. A total of 18 patients (35 feet) also attended the hospital, after a mean period of 15 years and 8 months, and were examined clinically and radiographically.

The mean long-term follow-up period of these patients was 15.66 years (range: 13.61–17.72 years). The minimum follow-up period was 12 years and 1 month, and the maximum was 18 years and 9 months.