

# Clinical results after ultrasound-guided intratissue percutaneous electrolysis (EPI<sup>®</sup>) and eccentric exercise in the treatment of patellar tendinopathy

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## Abstract

**Purpose** To investigate the outcome of ultrasound (US)-guided intratissue percutaneous electrolysis (EPI<sup>®</sup>) and eccentric exercise in the treatment of patellar tendinopathy during a long-term follow-up.

**Methods** Forty patients with patellar tendinopathy were prospectively evaluated over a 10-year follow-up period. Pain and function were evaluated before treatment, at 3 months and at 2, 5 and 10 years using the Victorian Institute of Sport Assessment–Patella (VISA-P) score, the Tegner score and Blazina's classification. According to VISA-P score at baseline, patients were also dichotomized into Group 1 (<50 points) and Group 2 (≥50 points). There were 21 patients in Group 1 and 19 in Group 2. Patient satisfaction was measured according to the Roles and Maudsley score.

**Results** The VISA-P score improved globally by 41.2 points ( $p < 0.01$ ) after a mean 4.1 procedures. In Group 1, VISA-P score improved from  $33.1 \pm 13$  to  $78.9 \pm 14.4$  at 3-month and to  $88.8 \pm 10.1$  at 10-year follow-up ( $p < 0.001$ ). In Group 2, VISA-P score improved from  $69.3 \pm 10.5$  to  $84.9 \pm 9$  at 3-month and to  $96.0 \pm 4.3$  at 10-year follow-up ( $p < 0.001$ ). After 10 years, 91.2 % of

the patients had a VISA-P score >80 points. The same level (80 % of patients) or the Tegner score at no more than one level lower (20 % of patients) was restored, and 97.5 % of the patients were satisfied with the procedure.

**Conclusion** Treatment with the US-guided EPI<sup>®</sup> technique and eccentric exercises in patellar tendinopathy resulted in a great improvement in knee function and a rapid return to the previous level of activity after few sessions. The procedure has proved to be safe with no recurrences on a long-term basis.

**Level of evidence** Therapeutic study, Level IV.

**Keywords** Intratissue percutaneous electrolysis · EPI · Eccentric exercises

## Introduction

Patellar tendinopathy or jumper's knee is a frequent condition that most commonly affects the tendon's origin on the inferior pole of the patella [2, 4, 10]. Once considered an inflammatory condition, it is currently considered a degenerative process due to the presence of myxoid degeneration, the disruption of the collagen fibres and signs of hypoxia in tenocytes and resident macrophages [6, 17].

The overall prevalence of patellar tendinopathy is around 14 % in the sports population [3, 16], but may be as high as 40 % in highly demanding athletes [8]. The tendon's overuse in sports that involve running, jumping or rapid change in direction is considered the main risk factor for developing the said condition [16].

Current treatment options include eccentric training [15, 18, 29], open or arthroscopic surgery, extracorporeal shockwave therapy [25], ultrasound (US)-guided sclerosis [12], non-steroidal anti-inflammatory drugs, platelet-rich

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