



## Original Article

# Percutaneous golfer's elbow release under local anesthesia: a prospective study<sup>☆</sup>



Ramji Lal Sahu

Sharda University, School of Medical Science and Research, Greater Noida, India

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## ABSTRACT

**Objectives:** To evaluate the results of percutaneous golfer's elbow release under local anesthesia.

**Methods:** From December 2010 to December 2013, 34 elbows in 34 patients (10 males and 24 females) that presented golfer's elbow for over one year were recruited from the outpatient department. All patients were operated under local anesthesia and were followed-up for 12 months. The functional outcome was evaluated through the Mayo Elbow Performance Index (MEPI).

**Results:** Pain relief was achieved on average eight weeks after surgery. The results were excellent in 88.23% (30/34) cases and good in 11.76% (4/34) cases. Neither wound-related complications nor ulnar nerve complications were observed. On subjective evaluations, 88.23% (30/34) patients reported full satisfaction and 11.76% (4/34) patients reported partial satisfaction with the results of treatment.

**Conclusion:** Percutaneous golfer's elbow release under local anesthesia is a minimally invasive procedure that can be performed in an outpatient setting. This procedure is easy, quick, and economical, presenting a low complication rate with good results.

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## Liberação percutânea do cotovelo de golfista sob anestesia local: um estudo prospectivo

## RESUMO

**Objetivo:** Avaliar os resultados da liberação percutânea do cotovelo de golfista sob anestesia local.

**Métodos:** Entre dezembro de 2010 e dezembro de 2013, 34 cotovelos em 34 pacientes (10 homens e 24 mulheres) que apresentavam cotovelo de golfista há mais de um ano foram recrutados do ambulatório. Todos os pacientes foram operados sob anestesia local e foram acompanhados por 12 meses. O resultado funcional foi avaliado pelo Mayo Elbow Performance Index (MEPI).

## Palavras-chave:

Cotovelo de golfista

Percutânea

Anestesia local

Procedimento minimamente

invasivo

<sup>☆</sup> Study conducted in the Sharda University, School of Medical Sciences and Research, Orthopaedics Department, Greater Noida, India. E-mail: [drrlsahu@gmail.com](mailto:drrlsahu@gmail.com)

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**Resultados:** O alívio da dor foi alcançado em média, oito semanas após a cirurgia. Os resultados foram excelentes em 88,23% (30/34) dos casos e bons em 11,76% (4/34) dos casos. Não se observaram complicações relacionadas à ferida nem complicações do nervo ulnar. Em avaliações subjetivas, 88,23% (30/34) dos pacientes relataram satisfação total e 11,76% (4/34) dos pacientes relataram satisfação parcial com os resultados do tratamento.

**Conclusão:** A liberação percutânea do cotovelo de golfista sob anestesia local é um procedimento minimamente invasivo que pode ser realizado em ambulatório. Este procedimento é fácil, rápido e econômico, apresentando um baixo índice de complicações e bons resultados.

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## Introduction

Golfer's elbow or medial epicondylitis is considered the most common cause of elbow pain, affecting 1–2% of the population and resulting in significant activity restriction and economic burden.<sup>1,2</sup> The chronic symptoms are typically associated with tendon degeneration resulting from repetitive micro-trauma, cellular apoptosis, and autophagic cell death.<sup>2</sup> More specifically, patients with chronic symptoms demonstrate a histologic pattern of angiofibroblastic hyperplasia, characterized by fibroblast proliferation, increased ground substance, disorganized collagen, and poorly functional neovascularity.<sup>3</sup> Majority of the patients respond to activity modification, non-steroidal anti-inflammatory drugs, bracing, physical therapy, modalities (e.g., ice, electrical stimulation), and various injections, approximately 10–15% will be refractory and therefore considered surgical candidates.<sup>3</sup> Multiple open, arthroscopic, and percutaneous surgical procedures have been described to treat elbow tendinopathy, all sharing the fundamental goals of removing the pathologic tendinotic tissue and stimulating a healing response.<sup>4</sup> Sonographically guided percutaneous tenotomy using ultrasonic energy to remove diseased tissue has recently become available with the release of the TX1 device.<sup>5</sup> These procedures have been effective in 75–90% of patients but expose patients to operative risks and a recovery that is often prolonged.<sup>4</sup> The purpose of this study was to find out the outcome results of percutaneous golfer's elbow release under local anesthesia.

## Methods

This prospective study was carried out at Orthopaedics department of SMS&R, Sharda University, Greater Noida, UP from December 2010 to December 2013. It was approved by institutional medical ethics committee. A total of 34 elbows in 34 patients with golfers-elbow admitted to our institute were included in the present study. Twenty-four patients (70.58%) were women and ten patients (29.41%) were male. All patients had unilateral golfers elbow. 26 cases of golfers elbow were found on the right side and eight cases were seen on the left side. The mean age of patients was 45 years (range: 30–60 years). A written informed consent was obtained from all the patients. All patients were followed for twelve months. The indications for surgery were as follows: more than six months of persistent symptoms despite the aggressive

conservative treatments, such as rest, drug therapy, splinting, physiotherapy, and a history of more than three steroid injections for treatment, and functional impairment at work and home. Cases were excluded if there had been previous surgery or other elbow pathology such as rheumatoid arthritis, osteoarthritis, or radial tunnel syndrome. Differential diagnosis of pain on the medial aspect of the elbow include Pronator Syndrome, referred pain from myofascial trigger points in the shoulder and cervical, any of which may mimic or coexist with golfer's elbow. Medial epicondylalgia and ulnar nerve neuropraxia are commonly associated. Furthermore, golfer's elbow and ulnar nerve neuropraxia are very commonly present when chronic medial ulnar collateral insufficiency exists.

## Percutaneous technique

This percutaneous operative procedure was performed on an outpatient basis with use of local anesthesia and a pneumatic tourniquet. A gentle curved stab incision of 0.5 cm long was made directly over the medial epicondyle. The flexor origin was exposed and was completely divided transversely close to its attachment to the medial epicondyle. No removal of bone and debridement of tissue were performed. The skin is closed in routine fashion. Thereafter local pressure applied to create haemostasis when the tourniquet is released. A wool and crepe bandage was applied that was removed after seven days to allow the early commencement of an exercise programme.

Functional outcome was evaluated according to the MEPI (Mayo Elbow Performance index) as described by Turchin et al.<sup>6</sup> MEPI is a four-part scale where clinical information is rated based on a 100-point scale, as follows:

- 90–100: excellent
- 75–89: good
- 60–74: fair
- Below 60: poor

1. Pain: The therapist asks the patient how severe the pain is and how frequently the pain appears. 45 points are for patients who do not have pain, 30 points are given to patients who have mild pain, and moderate pain results in 15 points; patients with severe pain get 0 points.
2. The arc of elbow motion: 20 points are given when the arm reaches more than 100° flexion; when the angle is between

- 100° and 50° the patient is given 15 points. When the maximum flexion is no more than 50°, then 5 points are given.
3. Stability: When the elbow is considered stable, 10 points are scored. A mildly unstable elbow results in 5 points. An unstable elbow receives 0 points.
  4. ADL (Activities of Daily Living): five ADLs are each given 5 points, viz. combing hair, performing personal hygiene, eating, and putting on shirt and shoes.
- Rehabilitation: At the 2-week and 6-week follow-up assessments, the wound was inspected for complications, and patients were specifically asked about complications or significant discomfort. At the 6-week follow-up, MEPS scores (Mayo Elbow Performance Score) were obtained, as previously noted. Thereafter, MEPS scores were obtained at 3, 6, and 12 months.

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## Results

There were 34 patients in this study. Out of 100% (34/34), 29.41% (10/34) cases were male and 70.58% (24/34) cases were female. All patients had unilateral golfers elbow. 76.47% (26/34) cases of golfers elbow were found on the right side and 23.52% (8/34) cases were seen on the left side. The mean age of patients was 45 years (range: 30–60 years). All patients were followed for twelve months. Pain relief was achieved on average eight weeks after surgery. Functional outcome was evaluated according to the Mayo Elbow Performance Index (MEPI). The results were excellent in thirty patients (88.23%) and good in four patients (11.76%). No wound related complications were encountered. No ulnar nerve complications were seen. On subjective evaluations, 30 patients reported full satisfaction and four patients reported partial satisfaction with the results of treatment. All patients had a full range of elbow motion at follow-up examination. All patients with excellent or good results returned to their former occupations or activities. All were satisfied with the incision scar.

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## Discussion

Golfer's elbow occurs in middle-aged people often involved in sports or occupational activities that require a strong hand-grip. In sports contributing factors include: over-exertion of the trailing arm in golf, opening up to quickly and dragging the arm behind the body when pitching a baseball. People may also get it from using tools like screwdrivers and hammers, raking, or painting. Initial clinical management of medial epicondylitis involves cessation of the provocative activity, application of cold packs to the elbow, and oral NSAID therapy. If these measures fail to bring relief, nighttime use of a splint and one or more local corticosteroid injections may be necessary.<sup>7,8</sup> Other treatment options include the application of ultrasound waves or high-voltage galvanic stimulation.<sup>8</sup> These therapies are followed by a guided rehabilitation program in which the intensity and frequency of activity is gradually increased, with the eventual goal of reinitiation into full participation in the suspended sporting or occupational activity. During rehabilitation, sporting equipment and technique are reevaluated and modified if necessary; for example, older golfing irons might be replaced with lighter graphite

clubs. The success rates for nonsurgical treatments of medial epicondylitis vary across the literature, ranging from 26% to 90%.<sup>8</sup> The use of MR imaging is therefore more commonly indicated in medial epicondylitis than in lateral epicondylitis. Surgery is often performed if there is no clinical response after three to six months of conservative treatment. In our study, we also included 34 cases who had not responded after three to six months of conservative treatment. Surgical techniques include open and arthroscopic approaches with dissection, release, and débridement of the degenerated tendon.<sup>9,10</sup> For professional athletes, earlier surgery may be indicated if there is evidence of tendon disruption at physical examination and imaging evaluation. Various surgical procedures have been employed for medial epicondylitis as for lateral epicondylitis. The surgical technique that we prefer begins with a curvilinear posterior incision to spare the medial cutaneous nerve. Care must be taken to protect the ulnar nerve, as well.<sup>8</sup> Degenerated peritendinous tissue in the interval between the pronator teres and the flexor carpi radialis is removed with aggressive débridement. Multiple holes are then drilled into the exposed medial epicondyle to enhance local vascularity and promote a more robust healing response. Unlike the procedure used to treat lateral epicondylitis, this procedure includes firm reattachment of the flexor-pronator tendon to its origin at the medial epicondyle.<sup>8</sup> An abnormality of the ulnar nerve or MCL, if present, may be treated surgically at the same time. Because of the close proximity of the nerve and ligament, aggressive tendon débridement is not performed for medial epicondylitis.<sup>8</sup> In a cross-sectional study of about 10,000 randomly selected adults, 11% reported elbow pain in the previous week. Of those surveyed, 0.6% were diagnosed with medial epicondylitis.<sup>11</sup> Poor prognosticating factors for medial epicondylitis include work activities with high levels of strain, particularly with non-neutral wrist postures.<sup>12</sup> Immediately after surgery, with the elbow in flexion at 90° and the forearm in neutral position, a posterior plaster splint is applied. Early postoperative mobilization is followed by strengthening exercises at six–eight weeks and full activity at four–five months after surgery.<sup>8</sup> We prefer a percutaneous approach that allows a shorter recovery time, and we encourage early postoperative mobilization therapy. The goal in rehabilitation is the eventual reintroduction of the implicated activity with corrected biomechanics. The literature reports a high success rate for surgical procedures, with overall patient satisfaction and full return to preinjury activities.<sup>9,10,13</sup> Although the literature about surgical treatment of medial epicondylitis is limited, good to excellent results are reported, with 85% of patients returning to preinjury activity levels and reporting overall satisfaction.<sup>8</sup> In our study the results were excellent in 88.23% patients and good in 11.76% patients.

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## Conclusion

Percutaneous common flexor origin release of medial humeral epicondyle in golfer's elbow appears to be a safe and effective treatment option and provides significant and sustainable improvements in pain and function during a 1-year follow-up period. It also increases the satisfaction of the patients. It is a

relatively simple and minimally invasive procedure. It has the advantage of not being associated with serious complications.

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### Conflicts of interest

The author declares no conflicts of interest.

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