



Combined extracorporeal shockwave therapy and platelet-rich plasma for musculoskeletal disorders: A scoping review

Toru Omodani¹, Yusuke Kumazawa²

¹Tokyo Advanced Orthopaedics, Department of Orthopaedics, Tokyo, Japan

²Kumazawa Orthopedic Clinic, Department of Orthopaedics, Tokyo, Japan

Introduction

Application of extracorporeal shockwave therapy (ESWT) and platelet-rich plasma (PRP) has emerged as promising treatments for various musculoskeletal disorders. While ESWT and PRP have each demonstrated therapeutic efficacy, the synergistic potential of combining these modalities remains incompletely understood.

This scoping review aimed to investigate the clinical outcomes of combined ESWT and PRP therapy across different musculoskeletal conditions and to identify gaps in the literature regarding its comparative efficacy and safety.

Material & Methods

A systematic literature search was conducted using PubMed and Cochrane Library to identify relevant studies published up to July 2025. Studies evaluating the combined use of ESWT and PRP for musculoskeletal conditions were included regardless of study design or patient population. Outcomes assessed included pain scores (e.g., Visual Analog Scale), functional scores (e.g., Constant–Murley Score, WOMAC, QuickDASH), healing rates (for nonunion), and adverse events. Studies using PRP alone or ESWT alone as control groups were also included.

Results

Eight studies met the inclusion criteria, including two randomized controlled trials, four retrospective studies, and two case reports. Target conditions included patellar tendinopathy, rotator cuff partial tear, lateral epicondylitis, carpal tunnel syndrome, bone nonunion, and knee osteoarthritis. In general, combined therapy showed superior outcomes in pain relief, functional recovery, and healing time compared to monotherapies. For example, ESWT+PRP significantly improved shoulder range of motion and reduced inflammatory markers in rotator cuff tear patients. In bone nonunion cases, the union rate was 100% with combined therapy. No major adverse events were reported. However, results in neuropathic conditions such as carpal tunnel syndrome were less conclusive.

Discussion

This scoping review demonstrates that combining ESWT with PRP may provide additive or synergistic benefits in the treatment of tendinopathies and bone nonunions. Nevertheless, current evidence is limited by small sample sizes, heterogeneity in protocols, and a lack of long-term follow-up. Further large-scale, standardized trials are needed to validate the optimal application of this combined regenerative strategy across musculoskeletal conditions.