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### 重要醫學研究論文：

1. Chou WY, Cheng JH, Lien YJ, Paul Chou PH, Ho WH\*. Treatment Algorithm for the Resorption of Calcific Tendinitis Using Extracorporeal Shockwave Therapy: A Data Mining Study. Orthopaedic Journal of Sports Medicine. 2024.
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4. Chen YT, Wu KT\*†, Jhan SW, Hsu SL, Liu HC, Wang CJ, Ko JY, Chou WY\*. Is coracoclavicular reconstruction necessary in hook plate fixation for acute. unstable acromioclavicular dislocation? *BMC Musculoskeletal Disorders*. 22:127, 2021.
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Speaker



## 體外震波於肩鈣化性肌腱炎：從基礎研究到人工智慧

# Extracorporeal Shockwave in Shoulder Tendinitis: From bench to Artificial intelligence

Wen-Yi Chou, MD, PhD

Shoulder tendinitis, with or without rotator cuff tears, is a prevalent condition in the general population. Extracorporeal shockwave therapy (ESWT) has been extensively studied for its efficacy in treating shoulder tendinitis, including cases with calcification. While previous research has shown promising results in treating calcific tendinitis using ESWT, a notable percentage of patients (20-30%) fail to respond adequately. The aim of this presentation is to discuss advanced research on prognostic factors and the application of recent artificial intelligence methods in developing a prediction model for the precise utilization of ESWT in clinical settings.

In a study involving 241 symptomatic shoulders treated with ESWT, complete resorption (CR) of calcification occurred in 134 cases (CR group), while the remaining 107 shoulders had incomplete resorption (ICR group). Gartner type I calcification was most common in the ICR group, comprising 64.5% of cases. The mean duration of symptoms before ESWT was significantly longer in the ICR group. Overall, 81% of the CR group and 23.4% of the ICR group achieved symptom relief. Poor prognosis was significantly associated with Gartner type I calcification, calcification extent > 15 mm, and symptom duration > 11 months. Furthermore, analysis of shoulder tendinitis without calcification revealed differences between athletic (AG) and non-athletic (NAG) groups. AG



patients showed a 53.8% satisfaction rate compared to 52.1% in NAG patients at one-year follow-up. Additionally, high-dose ESWT demonstrated superior efficacy in type II/III calcification tendinosis and noncalcific shoulder tendinosis. Using data-mining techniques, we analyzed 248 patients with calcified shoulder tendinitis. Shorter symptom duration, smaller calcification size, and calcification type were identified as significant predictors. The J48 decision tree method achieved an accuracy of 89.5% by 10-fold cross-validation.

In conclusion, ESWT demonstrates superior efficacy in treating radiolucent calcific tendinitis of the shoulder. Poor prognostic factors for calcification resorption include symptom duration longer than 10 months, dense calcification (type I), and calcification size larger than 10 mm. Utilizing the J48 decision tree, a feasible prediction model can be established before ESWT for shoulder calcific tendinitis.