

# ULTRASOUND-GUIDED MULTIMODAL TREATMENT FOR PATELLAR TENDINOPATHY: A PERSONALIZED THREE-STEP INTERVENTIONAL APPROACH

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## Background

Patellar tendinopathy, commonly known as “Jumper’s Knee”, is a chronic overuse condition frequently observed in athletes engaged in repetitive knee-loading activities. In some cases, it may be associated with partial tendon rupture and Hoffa fat pad impingement, contributing to persistent anterior knee pain and functional limitations. Recent studies have emphasized the importance of targeting not only the tendinous tissue but also the peritendinous structures, including the interface with Hoffa fat pad, to optimize clinical rehabilitation outcomes.

## Case report

A 49-year-old non-competitive kickboxing athlete presented with chronic bilateral knee pain localized at the lower pole of the patella, significantly limiting sports participation and daily activities. He was referred to a PRM specialist after undergoing an MRI scan, which revealed bilateral patellar tendinopathy with partial tendon ruptures (6mm on the left, 10mm on the right), reactive bone edema, and Hoffa fat pad inflammation. Following clinical examination and ultrasound evaluation, the patient underwent a three-session ultrasound-guided interventional protocol, with one-week intervals. Each session included: (1) hydrodissection of the Hoffa-patellar tendon interface using saline and lidocaine, to disrupt adhesions and debride bridging neovessels and neonerves; (2) micro-fenestration of the damaged tendon tissue (dry needling) to stimulate blood flow and growth factors release; (3) injection of tendon-specific hyaluronic acid (e.g., Hyalotend MD) to improve tendon gliding and promote intra-tendinous structural remodeling. A tailored physiotherapy program followed, focusing on isometric and eccentric strengthening. Pain and function were assessed using the VISA-P and NRS scales, which improved from 31/100 and 9/10 pre-treatment to 84/100 and 1/10 at follow-up, respectively.

## Conclusion

This case highlights how a personalized, ultrasound-guided approach targeting both intra- and peritendinous structures can lead to substantial clinical improvement in complex patellar tendinopathy. The combination of hydrodissection, dry needling, and hyaluronic acid injections under ultrasound guidance may provide synergistic benefits in pain relief and functional recovery.

**Keywords:** Patellar-Tendinopathy, Hoffa-Pad-Syndrome, HyaluronicAcid, Ultrasound