

CASE STUDY

SHOCK WAVES – METHOD FOR THE TREATMENT OF MUSKULOSKELETAL AND DERMATOLOGICAL PATHOLOGIES

Problem – Challenge

Tendinopathies are chronic tendon injuries with degeneration at the cellular level and no inflammation. They are caused by an overuse in frequency or intensity of tendons. Tendinopathies are difficult to get rid of and physiotherapists struggle to treat them. Radial Extracorporeal Shock Wave Therapy (rESWT) was invented by EMS in 1997. It has been extensively studied for its effect on tendinopathies. The 26 Randomized controlled trials conducted with the Swiss DolorClast have shown 80% success rate to heal tendinopathies. Indeed, rESWT not only alleviate pain but also provide long term effect to patients (follow-up in studies up to 2 years). To date, rESWT is used for the treatment of tendinopathies, muscle pain, knee osteoarthritis, spasticity, delayed union, wound healing, lymphedema and cellulite. Although all mechanisms of actions are still unclear, we know that rESWT increase blood flow and angiogenesis, decrease substance P in the C nerve fibers, activate stem cells and have an active role on growth factors.

Swiss DolorClast®

A fruitful collaboration between E.M.S. Electro Medical Systems SA (Nyon, VD) and the Ecole Polytechnique Fédérale de Lausanne (EPFL) was supported by a CTI grant. During this collaboration, the shock wave generation in the impact device and the wave propagation in tissues were studied using the Swiss DolorClast® device. This collaboration led to a specific mechanical design to generate high energy pressure waves and was protected by a patent. The improvement is focusing on the design of the pressure chamber, allowing to double the energy density as compared to the previous generation. More than 10'000 Swiss DolorClast® have been sold worldwide. To date, it is the only rESWT device approved by the FDA.

