

# **Defocused shockwave therapy and hip osteoarthritis**

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### **Device:**

Storz

### **Introduction:**

Coxalgia is the main symptom of hip osteoarthritis (OA) and leads to loss of function as well as disability. Nevertheless, it is not specific to hip OA and can also be present in other conditions such as tendinitis of the hip region (periartrosis of the hip or “frozen hip”) or “irritable hip syndrome”. In addition to standard strategies for the treatment of hip OA, in the present study we have tested local application of defocused shock waves to hip joints and periarticular structures in order to better define their possible role in the treatment protocol for this condition. Their anti-inflammatory effect, effect on pain and ability to induce muscle relaxation may be responsible for improvement of symptoms. Cartilage regeneration, depending on their positive effect on tissue trophism, has also been demonstrated (B. Moretti et al.).

### **Methods:**

In this study we enrolled 50 patients, 27 females and 23 males, aged from 48 to 64 years (mean age 56 years), diagnosed with either idiopathic or secondary hip OA on standard radiograms (28 belonging to stage I and 22 to stage II). Our patients were evaluated using the Harris Hip Score (HHS) and received standard X-rays at their first hospital admission, at the end of the treatment and 6 and 12 months after the end of the treatment. All patients had been suffering from coxalgia (32 right hip, 14 left hip, 4 bilateral) for 9 to 28 months: 30% had tried both medical (non-steroidal anti-inflammatory drugs and/or other analgesic drugs) and physical (magnet therapy, ultrasound therapy, TENS or iontophoresis) therapies; only 2% had practised associated kinesiotherapy.

Our protocol consisted of at least 4 (maximum 6) defocused shock wave applications (2,500 to 4,000 shocks - energy level 0.1- 0.15 mJ/mm<sup>2</sup>), depending on the severity of pain, with an interval of 2 to 3 days between two applications. There was no need for local anaesthetics as the treatment was well tolerated by the patients.

After each shockwave application, patients were treated with kinesiotherapy consisting of gradual stretching of the periarticular muscles, joint specific stretching (“pompaggio”) and careful articular mobilization. This rehabilitation protocol was carried on for an additional 16 weeks after the end of the shockwave treatment and consisted of 3 cycles of 4, 8 and 4 weeks, respectively: I cycle (4 weeks, 5 days a week) Deep Transverse Massage (DTM) of the muscles of the thigh Prolonged stretching sessions (each posture > 2 minutes) of the flexor and adductor muscles of the hip DTM of perimalleolar regions Passive articular mobilization and decoaptation Lymphatic drainage of lower limbs Back stretching postures II cycle (8 weeks, 3 days a week) Prolonged stretching sessions (each posture > 2 minutes) of the involved muscles Isometric exercises Active kinesiotherapy Proprioceptive Neuromuscular Facilitation exercises Postural exercises Gait rehabilitation III cycle (4 weeks, home rehabilitation) Global muscular stretching Isotonic exercises Exercises for motor coordination During the final stages of the study, we recommended the correct lifestyle to our patients in order to avoid additional physical stress.

### **Results:**

In the present study we used defocused shock wave therapy to treat antalgic muscular contractures secondary to hip OA. After the treatment we observed a general improvement of symptoms and dysfunction in all the patients included in the study (mean HHS before the treatment of 64, mean HHS after the treatment of 92). Unfortunately the effect of the treatment was diminished at 6-month follow-up (mean HHS of 82) and even more so at 1 year

(mean HHS of 77). No significant changes were evidenced in X-ray scans and/or MR images, which showed a progression of the articular degenerative process in 34% of cases.

**Discussion:**

The protocol associating defocused shockwave therapy and kinesiotherapy was able to reduce pain and disability in stage I and II hip OA.

Defocused shock wave therapy seems to be more effective than focused shock wave therapy in reducing periarticular muscle contractures and is better tolerated by the patients even at high energy levels.

The positive effect on symptoms and function tends to decrease over time due to the progression of cartilage degeneration that is not influenced by the therapy.

The treatment can be repeated in the absence of specific contra-indications, as it is well tolerated and has very limited side effects. This postpones the need for surgery.

This protocol does not prevent resorting to surgical treatment, if necessary.

**Bibliography:**

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