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Effectiveness of Conservative Treatment of Scaphoid Nonunion Using Extracorporeal Shock Wave Therapy

Topic: Physical Modalities

Mouad Yazidi, Abdelhakim Kabil, Rime Dades, Ryme El Beloui, Hasnaa Boutalja, Nada Kyal, Fatima Lmidmani, Abdellatif El Fatimi

Physical and Rehabilitation Medicine, University Hospital Ibn Rochd, Casablanca, Morocco

BACKGROUND

Scaphoid fracture is the most common fracture of the carpal bones. It mainly affects young populations. In 5 to 10% of cases, it can lead to pseudarthrosis. If left untreated, scaphoid pseudarthrosis may result in early wrist osteoarthritis, initially periscaphoid and eventually pancarpal, which can be highly disabling for the patient.

METHODS

We conducted a retrospective study between January 2023 and December 2024, including eight patients with scaphoid pseudarthrosis in the department of physical and rehabilitation medicine. Conservative radial shockwave therapy was performed over four sessions at one-week intervals (3000 pulses per session, average energy flux density of 0.06 mJ/mm^2, adjusted according to the patient's pain tolerance). An evaluation was carried out before treatment and two months after its completion, including a clinical examination and pain assessment using a Visual Analog Scale. Functional outcomes were subjectively assessed using the QuickDash outcome measure and the Mayo Wrist Score. An initial radiographic assessment was carried out, showing the location of the pseudarthrosis according to Schenberg's radiological classification. A follow-up X-ray was performed two months after the end of treatment to assess bone consolidation.

RESULTS

The sample consisted of eight men with an average age of 26.8 years. Six patients had heavy manual work. The dominant hand was affected in 62.5%. 87.5% of patients were active smokers at the time of the treatment. Trauma history was present in all cases. Initial orthopaedic treatment was given after diagnosis of the fracture, with varying degrees of immobilization and duration. The fractures were classified according to the Schernberg classification as follows: 4 in zone III, 3 in zone IV, and 1 in zone V. The mean time from initial trauma to radial shockwave therapy treatment was 14.8 months [standard deviation 7.9]. Mean rest pain was 4.3/10 initially, with significant improvement after completion of treatment. Mean QuickDASH was 13.8 initially vs. 27.3 at two months. The Mayo Wrist score showed a significant improvement (62% vs. 79%). Complete consolidation of the pseudarthrosis site was achieved in seven patients (87.5%). One patient had persistent pseudarthrosis, but follow-up X-rays showed a reduction in diastasis.

CONCLUSION

Surgical and non-surgical techniques are used to treat scaphoid nonunion. Among the non-surgical options, radial shockwave therapy has proven to be a reliable and effective non-invasive modality. The result obtained is comparable to surgery, with a clearly positive cost-benefit ratio.

Statement of Disclosures

None

Corresponding Author:
Mouad Yazidi
Physical and Rehabilitation Medicine, University Hospital Ibn Rochd, Casablanca, Morocco
Email: mouad.yzd@gmail.com

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