AN OVERVIEW ON LOW LESAR THERAPY IN DISTAL RADIUS FRACTURE

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Abstract

Several therapeutic procedures have been proposed to improve the current management of fractures. Low-lesar treatment appears to be linked to pain relief and improved function and bone regeneration. Regardless of the settings or the usage of biomaterials, a low-level laser promotes the procedures of bone defect repair, according to data. However, standardizations are yet lacking, and additional research is needed to reach more definitive conclusions about the usage of low-level lasers. Low-power laser treatment is the assimilation of laser beam at the electronic level with in visible to near-infrared spectral spectrum without the generation of heat (390-1100 nm). It's used to manage healing of wounds, inflammation, and pain reduction, among other things. Despite its potential benefits, the use of lasers for health purposes is still controversial in mainstream medicine. The study's goal is to present a full picture of current research in the area in light of the potential influence at the molecular level, while taking into consideration the physical characteristics of various types of lasers used in bone fractures.

Keywords: low lesar therapy, photobiomodulation, distal radius fracture.

INTRODUCTION

- According to the statistics from 2008, crack of the distal radius constituted for the majority of the cases estimated that 7.5 percent of all fractures and 15.7 percent of all upper limbs fractures, second only to the 30 percent prevalence of phalangeal fractures(1).

- High-energy trauma is more closely correlated with younger individuals with adequate bone density who are more prone to suffer distal radius fractures, whereas elderly patients with osteopenia/osteoporosis are more likely to suffer minimal-energy trauma, as in a falling from a standing position(2).

- Men had a heightened incidence of distal radius fracture over female population following a distal radius fracture in the group 50 years old and over(3).

- Distal radius fractures generally appear preceding hip and vertebral fractures with in geriatric, and they often contain antecedent irregularities in bone density and structure(4).

- In the diagnosis of distal radius fractures, imaging studies remain the gold standard. The ulnar variance will be examined, and the articulating region will be well seen, utilising a posteroanterior (PA) approach in neutral variance, and also a lateral exposure with a 20° angled beam. The dorsal ulnar cortex is profiled in a 45° pronated oblique view, which provides insight into this biomechanically significant region(5).
The findings suggest a huge spectrum of complications for distal radius fractures, ranging from 6% to 80%. There is a chance that the fracture or its management will cause health risks. Late consequences include tendon rupture, tenosynovitis, adhesions, and trigger finger.

Light therapy has a long history, extending back to ancient civilizations such as Egypt and India, who employed sun (heliotherapy) for therapeutic and treatment plans. Theodore Maiman devised the L.A.S.E.R. in 1960, based on Albert Einstein's 1917 theoretical study.

Low-power laser treatment is a newer contribution to the field of light-based medicines. Photobiomodulation, or the absorption of red/near-infrared light radiation, boosts mitochondrial ATP synthesis, cell signalling, and growth factor synthesis while decreasing oxidative stress.

In a variety of injuries, the PBM treatment can relieve pain, manage the inflammatory response, and speed up the healing process. Its mode of action is dependent on light absorption by cellular chromophores, which contributes in enhanced ATP generation as well as increased nitric oxide production, calcium modulation, and the activation of several transcription and protein synthesis factors, all of which are responsible for the observed therapeutic effects.

Bone rejuvenation is a time-consuming and periodic process. In contrast to a biological process, it is now widely known that activation by biological, electrical, and mechanical means are essential contributors in the preservation of bone structure.

Although there is presently a dearth of significant clinical research using photobiomodulation for the treatment of bone cracks, it has been reported to enhance osteogenesis in fractures, bone abnormalities, and Orthopaedic osteoporosis. Fracture healing can be accelerated or initiated to reduce the frequency of late healing, nonunionized and reinjury after a fracture.

Therapy with laser beam during the initial stages of recovery was highly beneficial on the process of bone recovery; however, therapy with laser light later in the process of may have a valuable role in bone regeneration and regulation. PBMT increases the processes of bone defect repair, irrespective of the parameters or the usage of biomaterials, as per investigations. However, standardizations are still imperfect, as well as further studies are needed to draw more definite conclusions about the PBMT use procedure.

**SUMMARY AND FUTURE PERSPECTIVE**

With the advancement in the health care system, decreasing the interval needed to the treatment is the main focus of all the researchers. In the sector of orthopedics fracture is the main condition seen from a long ago. The healing of fracture is a cyclic and lengthy process in which the micronutrients helps to regain the microarchitecture of the bone. The low laser therapy can be advantageous in the distal radius fracture as its has been demonstrated to promote the bone regeneration in fractures and bone deformities to improve the quality of regenerated bone and rapid healing of the fracture.

**REFERENCES**
