Treatment of Sea Urchin Injury on the Sole of the Foot with Er:YAG Laser

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Introduction:

Sea-urchins are creatures that live on the seabed, belonging to the Phylum Echinodermata. There are many types. Their spines are covered with an epithelium containing calcium carbonate crystals. They are relatively immobile creatures that are attached to rocks and corals. Their spines contain histamine, serotonin, glycosides, corticosteroids, cholinergic agents, and bradykinin-like substances. Sea urchin injuries are among the most common marine injuries. Most injuries occur due to the penetration of spines into the dermis and subcutaneous tissue. The spines are very fragile. Although harmless, failure to treat them promptly and appropriately can cause long-term morbidity. There is no clear application guide for sea urchin treatment. However, the most effective treatment is immediate removal. Mechanical removal is almost impossible due to the easy disintegration of the spines. Surgical removal is recommended for widespread injuries and spines that have penetrated into deep tissues. Some authors have suggested leaving the spines in place and spontaneous healing. If more than 20 spines are pricked, systemic symptoms such as nausea, vomiting, paresthesia, general weakness, and respiratory distress may develop. When the spines are left in place, complications such as local infection, inflammation, delayed granulomatous foreign body reaction, arthritis, inflammatory tenosynovitis, granulomatous nodules, joint and muscle pain, dermatitis, hepatitis, and neuroma have been reported. A case of death has been reported after sea urchin injury. Tetanus prophylaxis is recommended.

Laser	SP Dynamis	
	Day 1	**Day 2**
Wavelength	2940 nm Er:YAG	2940 nm Er:YAG
Handpiece	R11	R11 and R08
Fluence	MSP/Basic	MSP/Basic
Mode	6-8.5 J/cm^2	6-8.5 J/cm^2 and 60 mJ
Frequency	2 mm	2 mm-0.45 mm
Passes	5 Hz	5 Hz
Spot size	Multipasses	Multipasses
Aesthetics	-	-
Sessions	2 sessions	

Dr. Filiz Özgür Çavuş graduated from the University of Istanbul Faculty of Medicine in 1998 as a medical doctor. She completed her Dermatology Specialization at Istanbul Göztepe Training and Research Hospital in 2004 and worked as a dermatology specialist at Kastamonu Şerife Bacı State Hospital from 2004-2005 and at Istanbul Leprosy Hospital from 2005-2007. Due to her interest in laser treatments, she has been working at the private Dermart Policlinic since 2007 using many different laser systems.

CLINICAL CASE:

A 25-year-old male patient applied to our clinic with complaints of foot pain, walking difficulty, and mild erythematous black punctate lesions. A week earlier, during a seaside holiday, severe pain occurred after stepping on the sea floor. With this complaint, he applied to the emergency units of several hospitals, was diagnosed with a sea urchin injury, received a tetanus vaccine, and was followed up. Over the course of a week, the pain gradually increased and movement limitation developed. When he came to our clinic, 32 black, point-like foreign bodies—3 of which were deeply located—had erythematous surroundings and were painful under pressure. The appearance and history were consistent with sea urchin injury.

The spines were removed in one session with the Fotona SP Dynamis Er:YAG laser device, with the R11 and R08 handpieces, using the following parameters: MSP mode with spot sizes of 2 mm and 0.45 mm, fluence of 6–8.5 J/cm^2 and 60 mJ, and a frequency of 5 Hz, as shown in the table. On the first day of treatment, immediately after removing six lesions, the patient felt numbness in his foot. The treatment was interrupted for one day due to numbness. On the second day, all remaining spines were removed with the same parameters. The R08 handpiece was used to remove three deeper spines. The pain from the laser was reported as mild and tolerable. Wound care was performed with topical antibiotic cream. No complications developed during the 2-month follow-up. He recovered completely. Pain and limitation of movement disappeared immediately after the procedure.

Day 1	Day 2