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CO_2 Laser Treatment in Idiopathic Scrotal Calcinosis: A Case Series

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Abstract

Background: Idiopathic scrotal calcinosis (ISC) is a benign and uncommon condition characterized by the presence of multiple and calcified nodules of the scrotum without disorders in the calcium/phosphorous metabolism. The condition is usually asymptomatic. Various treatments are available. Surgery is the traditional treatment for ISC, as it allows a histopathological exam. However, newer treatments, such as ablative lasers, have been proposed with very good results.

Methods: In this article, we report our experience in the treatment of ISC with a CO_2 laser. Five patients affected by ISC were enrolled for CO_2 laser treatment.

Results: All patients had excellent healing. Four patients reported minimal scarring. No bleeding was reported after the procedure. Two patients reported itching and were treated with oral antibiotics and antihistamine drugs.

Conclusion: The CO_2 super pulsed laser is a fast and effective way to treat ISC and may be an alternative to traditional surgery in this condition.

Keywords: Idiopathic scrotal calcinosis, CO_2 laser, laser therapy

Introduction

Idiopathic scrotal calcinosis (ISC) is a rare, benign condition characterized by multiple and calcified nodules in the absence of any calcium/phosphorus metabolism disorder.[1] Lesions are various in numbers and dimensions. These lesions are the result of calcium deposits in the dermis surrounded by granulomatous reactions.[2] Various treatments are available in the management of this rare disease. Traditional surgery is nowadays the most common approach, as it consents to the histological examination of the lesions. However, the complication related to surgery may be present. Based on the interested scrotal surface interested, skin grafts or even musculocutaneous flaps may be executed when large areas are interested. Even if smaller areas are interested, the reduction of scrotal skin, the risk of superinfections and testis damage may be present. A less invasive procedure with less tissue loss and a good aesthetic outcome is needed.[3] Newer therapeutic approaches have been proposed. In this paper, we present our experience in treating this condition with a CO2 laser. The CO2 laser is an ablative laser used in the treatment of various dermatological conditions[4,5]; with its wavelength of 10600 nm, its energy is almost completely absorbed with reduced tissue damage.[6]

Anonymity was guaranteed to all patients. Informed consent was obtained from all patients enrolled. Five patients affected by ISC were enrolled at Tor Vergata University Laser Unit and Magna Graecia University Dermatologic Unit for CO2 laser treatment. The patients were enrolled from 2009 to 2018 and treated with this technology. The patients' data are reported in Table 1. Annual follow-up visits were conducted at Magna Graecia University after treatments. No other previous treatments were administered in these patients. The treatment consisted in the CO2 super pulsed ablative laser. Local anaesthesia with carbocaine 2% was executed. The pulse repetition rate varied from 3 Hz in the initial phase of surgery to 0.3 Hz for last touches in order to avoid scarring. Epidermis covering the cyst was carefully removed, the cist was then excised and the scrotum then healed for the second intention, thanks to its elastic nature. The procedure was repeated for each cyst in every patient. The patients were treated with a fusidic acid ointment twice a day for 2 weeks after laser therapy. The primary end point of this study was to evaluate the results obtained with this technique and to compare them to other treatments available. The secondary end point of the study was to evaluate the risk of complications related to this technique.

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Table 1. Patients Data

Age at Enrollment	Comorbidities	Enrollment Data/Follow up Period	Complications	Results
45	None	2009/10 years	None	Minimal scarring
31	Hypercholesterolemia	2015/3 years	None	Minimal scarring
53	Diabetes	2016/ 2 years	Itching, burning	Minimal scarring, Hypopigmentation
25	None	2012/7 years	None	Minimal scarring
38	None	2012/7 years	Itching, burning	Scars, Hypopigmentation

Results

All 5 patients had excellent healing. Out of the 5 patients, 4 reported minimal scarring. No bleeding was reported after the procedure. Two patients reported itching after the procedure and were treated with oral antibiotics and antihistamine drugs. The first patient treated in 2009 (F.N.) was followed until 2019 with minimal scarring and a very good outcome (Figure 1). In two patients hypopigmentation on part of the areas treated was present. The patients' characteristics, comorbidities and results are reported in Table 1.

Discussion

Although various case reports in literature talk about the utility of this technology in the treatment of diseases characterized by calcium deposition in the skin, such as calcinosis cutis and CREST syndrome,[7] no other articles report the use of the CO2 laser in this rare condition. Only a single case report talks about the application of the Erbium YAG laser, with similar results.[8] Our study reports that CO2 laser treatment has an aesthetic outcome superior to traditional surgery, sparing scrotal tissue with a minor risk of complications and scarring. The limitations of our study are the small sample of patients and the fact that there is no control group performing traditional surgery due to the rarity of the disease. A larger study with a higher number of patients and a control group performing traditional surgery should be performed. Nevertheless, the use of a CO2 super pulsed laser is a fast and effective way to treat ISC. The almost complete absence of scarring and other side effects like hypopigmentation and the precision guaranteed by laser technology, together with the important diffusion of this kind of laser in dermatology, make this treatment a safe option for patients that want to avoid traditional surgery.

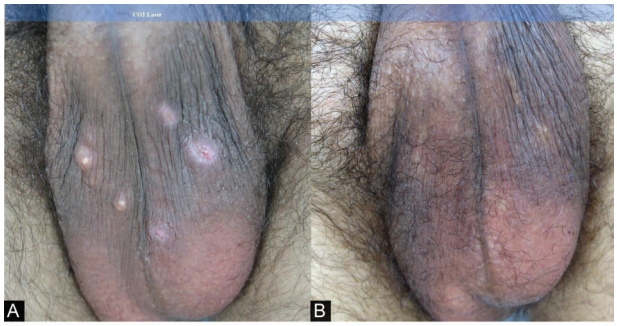


Figure 1. Idiopathic Scrotal Calcinosis Before **(A)** and 10 Years After **(B)** Treatment.

Ethical Considerations

Informed consent for the execution of the procedure and for the scientific use of images was obtained from the patients. According to the Declaration of Helsinki on the medical protocol and ethics, the regional Ethical Review Board of Central Calabria (reference for Magna Graecia University of Catanzaro) approved the procedure (N00009325).

Conflict of Interests

The authors declare no conflict of interest.

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