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Case Report

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Fractional CO₂ for Unconventional Indications



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ABSTRACT

Fractional CO₂ has always been one of the most versatile and must have lasers any aesthetic surgeon should have at their center. Fractional CO₂ is a truly versatile laser. Once familiar with the laser physics and the parameters to use it's 3 principles mainly Collagen denaturing and remodeling. Photothermolysis and Ablation can be used to perform various aesthetic procedures with great precision and results.



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INTRODUCTION

Fractional CO₂ has always been one of the most versatile and must have lasers any aesthetic surgeon should have at their center. Having done more than 2000 cases with the help of a fractional CO₂, I would like to highlight 5 unconventional uses of this laser in this case report. Of course one should never buy a Fractional CO₂ laser if the aim is to treat freckles or pigmentation or keloids, tattoos as gold standard results of a fractional CO₂ laser is mainly for scars of all kinds namely due to Acne, Trauma, Burns etc. and also for facial rejuvenation, although when it comes to facial rejuvenation on darker skin it could be a tricky laser to use considering the possibility of post procedure pigmentation.(1-3)

Case report:

Case report 1: A 74 year old male patient came to our OPD with a lesion on the lower lip. On examination, we found out it's a Pyogenic Granuloma. As the patient had a history Coronary Artery Disease and had undergone bypass surgery, he was on a combination of Aspirin-Clopidogrel tablets for blood thinning. The patient was explained he would require to stop medication for at least 5 days prior to excision by RF, for which he was reluctant. So we decided to do this procedure with a Fractional CO₂, Surgical handpiece after applying local Anesthesia for 45 minutes. As a Pyogenic Granuloma is more like an inverted cone in origin we did expect bleeding but although we did a complete excision and even fired deeper into the origin of the lesion to clear and cauterize any vasculature, there was hardly any bleeding and the entire procedure lasted 15 minutes. The patient was sent home with a topical antibiotic for dressing. I would like to highlight the importance of a Fractional CO₂ laser here, with which we could ablate without any bleeding on a patient on blood thinners which wouldn't have been possible normally. The patient came after 1 month for follow up and the wound had completely healed.

Case 2: A patient presented in our OP with sinus tract on his upper portion near the mandibular angle of his neck. He had a Chin augmentation surgery done and had a silicon implant done in his lower area of Mandible. The tract was minimally infected and bleeding. Ideally like any sinus tract to treat we needed to incise the tract so that they heal back together. Again the most minimally invasive procedure over here would have been a Cauterization or Laser incision. The patient had doubts if the heat of the Cautery machine would dissolve the Silicon and on checking literature there was no reported cases in the past

treated in the same way at a Dermatology center. We decided to incise the tract with again the surgical handpiece of the laser and was effectively able to do so without damaging the Silicon implant and also without causing any bleeding. The patient was given antibiotics post procedure for 5 days and reviewed after 2 weeks. The lesions had completely healed without even a scar again highlighting the importance of a Fractional CO₂ laser.

Case 3. Transdermal Drug Delivery (TEDD) is becoming popular among many laser surgeon, especially when there is a thick burnt scars. My experience with it has been extremely satisfying especially when we combine Triamcinolone, 5-Fluorouracil and Botulinum Toxin. There has been few cases presented in this combination before. I would like to present a case of Alopecia Areata treated is initially treated with a fractional CO₂, once a month for 3 months along with topical Minoxidil twice daily for 6 months. The area to be treated which in this case was in the temporal region of the scalp had developed Alopecia area few months back and inspite on application with Topical Tacrolimus 1 % ointment wasn't responding. The patient was apprehensive for Triamcinolone injections. We took this case up, treating his with high fluence 25j/cms with a Density of 15% coverage (AcuPulse, Lumenis, Santa Clara, California). Post procedure immediately Triamcinolone cream was applied and for 1 month was asked to apply Topical 5% minoxidil on the affected area. This procedure was repeated for 3 months. On the 3rd visit, visible thin hair was seen which was initially white and, on follow up by 6 months the Alopecia Areata had completely resolved.

Case 4: A young female patient of 24 years presented to our clinic with a clinical diagnosis of Acrokeratosis Verruciformis. The patient was about to get married and was clearly not a candidate for Acitretin. The treatment options in front of her was very minimal. We suggested a Fractional CO₂, laser ablation and clearly told the patient it's temporary relief as the lesions will reccur in time. However the patient wanted to get rid of the lesions before the marriage, especially for the occasion. A high fluence, low density Fractional CO₂, ablation was done and post procedure given topical Steroid-Antibiotic ointment for healing. (Fluence 30j/cms with 10% density (AcuPulse, Lumenis, Santa Clara, California). The patient was reviewed after 2 weeks and the lesions had completely resolved and the skin has smoothed out with normal skin appearance. Although this is not a standard procedure or indication, in such circumstances the use of a Fractional CO₂, can be considered.

Case 5: The final case we want to present here is of a lady who had come to our center for getting her Xanthelasma Palpebrarum removed. We directly suggested the best option would

be laser ablation. 2 passes of Fractional CO₂, with 27.5j/cms and 15% density was fired on the lesion minimal charring and damaging the upper layer. (AcuPulse, Lumenis, Santa Clara, California). It was clearly visible that the superficial skin was damaged. We charred skin was whipped off and a 3rd pass was done with 12.5j/cms fluence and 20% density which was enough to melt the fat pad which could be whipped off and even damage the inner covering of the lesion. The patient was dressed under occlusion with Fucidic acid cream and given course of Antibiotics and sent home. The case was reviewed after 2 weeks and the lesions had completely been removed with hardly any remnants. The patient was counseled that these lesions tend to recur. However, this was a minimally invasive treatment, unlike the open surgical resection which usually takes longer to heal and is more painful for the patient when done under topical anesthesia cream.

DISCUSSION

Fractional CO₂ is a truly versatile laser. Once familiar with the laser physics and the parameters to use it's 3 principles mainly Collagen denaturing and remodeling, Photothermolysis and Ablation can be used to perform various aesthetic procedures with great precision and results. (1-5) Ablative lasers any day give better results than non-ablative lasers when it comes for conventional uses although the disadvantage being the longer downtime and chances of hypo or hyperpigmentation with the cumulative knowledge of Dermatology and Aesthetic Surgery one can surely deliver satisfying results to the patients. The learning curve for a fractional CO₂, is definitely longer than a non-ablative laser and it's always recommended to get trained well under a seasoned treating physician before one ventures individually into going aggressive and into ablative lasers. It is one of the lasers that any Dermatologist who is into Aesthetics is passionate about and I would recommend it as one of the first lasers to buy when one starts their individual Aesthetic center, perhaps along with a Laser hair removal machine.

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