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patients with thin skin.26

For the treatment of atrophic scars The short-pulsed Er:YAG laser was developed as a less aggressive alternative to CO2 laser skin resurfacing.24،27

Since the introduction of laser treatment for keloids in the mid-1980s،158 the most e - couraging results have been obtained with the 585-nm pulsed-dye laser (PDL)، which has been recognized as an excellent ther - peutic option for the treatment of younger hypertrophic scars and primarily keloids.28

In this research using ablative CO2 show e - cellent result within few weeks after the pr - cedure and all the 17 patients treated with laser were had some comfort and satisfaction about the result at least in this short period of follow up.

With nearly 20 years of broad clinical adoption، CO2 laser skin resurfacing remains very valuable، can remove bulk amounts of tissue in a bloodless fashion، and correct contour irregularities/facets at the periphery of lesions. Differences in outcomes between CO2 and dermabrasion remain incompletely understood، and no randomized prospective study on this topic has been reported to the best of our knowledge.29، 30 However، due to decreasing technology-associated costs، ease of use، and reduced reliance upon extensive training and experience، CO2 laser resurfacing has slowly gained popularity. CO2 lasers emit light at 10600 nm that is preferentially absorbed by water (its pri - cipal chromophore) leading to superficial ablation of tissue by vaporization، provided pulse energy is adequate to heat water past its phase transition at 100°C. Although the majority of the energy is absorbed by the first 20 to 30 μm of the skin، the zone of the - mal damage can be as much as 1 mm deep، depending upon the pulse duration of the laser.31 Residual thermal injury in the r - maining tissue is in part responsible for the persistent erythema experienced by patients that can continue for 6 months or longer a - ter CO2 laser treatment،

albeit this contributes to enhanced collagen remodeling.

Timing of the treatment is typically the same as mechanical dermabrasion، optimally pe - formed 4 to 8 weeks after the initial injury. The ideal application of this laser is for i - duction of contour changes and collagen r - modeling in elevated scars.

Conclusion:-

CO2 laser treatment of different types of f - cial scars is effective، easy، precise، accepted with no significant complications.

The procedure is effective in treatment of both atrophic & hypertrophic scars with i - provement in appearance & texture.

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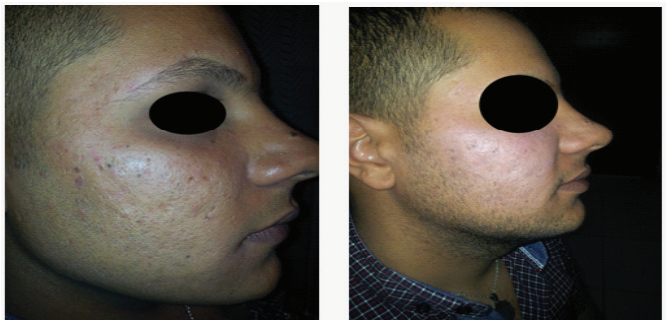


a. Pre treatment b. one week after treatment

Figure3.3: Acne scar treated with co2 laser pretreatment and one week after treatment

Discussion

An unsightly scar negatively affects patients as an unwelcome and often public reminder of a past injury. Conventional CO2 is a powe - ful tool for nonsurgical revision of inflamm - tory, traumatic, and surgical scars, promising excellent results. Unfortunately, the extended recovery period and the side-effect profile of the treatments make some patients hesitant to undergo this treatment. Newer targeted therapies such as PDL, fractional laser, and non ablative lasers have moderate side-effect profiles, and rapid recovery periods while striving to achieve cosmetic
results approaching conventional CO2 laser resurfacing. Earlier intervention, in partic - lar for surgical wounds, can lead to optimized outcomes with respect to scarring.

The process of wound repair and restructuring is complicated, and various factors contribute to the creation of various types of scars such as hypertrophic, keloid atrophic 16
Proper scar classification is important because differences in clinical scar characteristics determine the treatment protocol 16

Excision alone of keloids results in a high rate of recurrence (45% to 100%). Hypertrophic scars, on the other hand, rarely recur after surgical excision. 19
The application of laser has advanced rapidly within the last 30 years. 19
The side effects of laser were minimal and had mostly resolved by 3 months, and no patient is suffered from obvious side effects. 19
Progress in laser technology and refinements in technique have made laser therapy a preferred treatment choice for hypertrophic scars and keloids. 20, 21, 22 While Atrophic scar resurfacing with a CO2 laser has effected scar improvements of 50%__80%. 22, 23, 24
Keloid and hypertrophic scars require different therapeutic approaches but are often confused because of an apparent lack of morphologic differences.25 According to a recent study, the treatment with laser appears to be more effective in younger

effects observed during the study was noticed in all patients treated.
Infection not observed.
No scar، hyper pigmentation، hypo pigme - tation were noticed.
Mild pain was observed in most of the p - tients as burning sensation in the few hours post-operatively managed by non-steroidal anti-inflammatory drugs while intra-oper - tive pain is limited.

Grade 0	none
Grade1	Four patients
Grade 2	Eight patients
Grade 3	Five patients

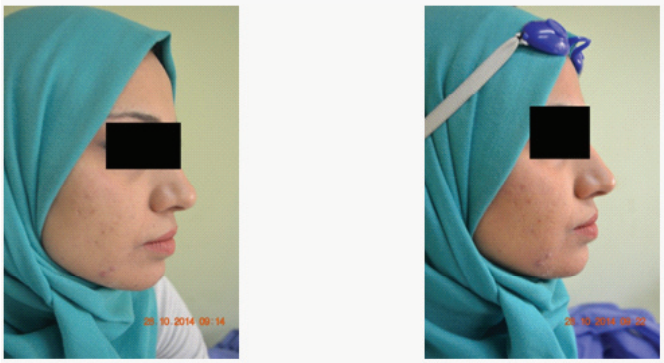
Table (1) Grades of satisfaction for treated patients

Side effect	no. of patient
Transient erythema	17 patients
infection	none
scar	none
hyper pigmentation	none
hypopigmentation	none
pain	15 patients

Table (2) Complications reported during laser session

a. Pretreatment b. immediately posttreatment

Figure3.1: Case of post traumatic atrophic scar in the face with suture marks treated by co2 laser



a. Pretreatment b. immediately post treatment

Figure3.2 : Acne scar treated by co2 laser application

Material and methods

Patients:

Between may 2014 and December 2014 seventeen patients seven male and ten female with age range from 10 years to 40 years. with Fitzpatrick skin types range from II-IV trea - ed for scars in different sites of the face with different causes in the outpatient clinic in the laser institute / university of Baghdad.

2.2 Method of treatment:

Resurfacing had been done to the scar areas using pulsed mode CO2 laser with the following parameters:

- Peak power: 241 W
- Pulse duration: 700 µs
- Repeat time: 70 ms

Treatment involved 2-4 sessions according to patient's case requirements with the aid of topical anesthesia EMLA with occlusive method and use of hydrocortisone cream for 5 days postoperatively and instruct them not to expose to sun light until exfoliation co - pleted and use of sunscreen cream for at least one month later. and follow up in 6 weeks intervals

Figure Laser devise panel and parameters

Results:

All patients underwent the co2 laser appl - cation showed response graded from mild to significant and in turn it's reflected to the patient's satisfaction as will be mentioned below:

Five patients with 3 sessions were completely satisfied (grade 3). eight patients are mode - ately satisfied (grade 2). While Four patients are mildly satisfied (Table 1)

The number of sessions given depends upon improvement judged by the clinical appea - ance of the scars. patient's satisfaction; the scars became less noticeable. very fine. with smooth contour of the area.

Regarding side effects noticed:

Side effects were observed during procedure. immediately after session and 2weeks. 1 month.

Erythema considered the most common side

10600 نانومتر كبديل فعال وأمين مع قلة الاعراض الجانبية مقارنة بالطرق التقليدية الاخرى في معالجة التليفات الجلدية.

Introduction:

SCAR:

Scars are a common concern among popul - tion. Although a great number of therapies exist for the treatment of scars، there exists a lack of large controlled studies to exa - ine currently available and newly emerging strategies to standardize scar treatment pr - tocols1. Currently available therapies include topical and intralesional corticosteroid inje - tions، intralesional 5-fluorouracil (5-FU) or bleomycin، silicone gel
sheets، pressure therapy، cryotherapy، r - diation، surgery، and laser treatments. Other strategies، including the use of transforming growth factor-b، COX-2 inhibitors and ot - er nonsteroidal anti-inflammatory agents، collagen synthesis inhibitors، angiotensin-converting enzyme inhibitors، minocycline، and gene therapy، are still under study. The ideal scar treatment would address both the mechanism of abnormal scar formation and the mechanical and physical properties of the resulting scar itself1. Future therapies aim to achieve regeneration of normal skin rather than scar formation after tissue inj - ry. Advances in laser technology have led to progress in the treatment of many skin co - ditions; scars are not an exception.1

cial scars is effective، easy، precise، accepted with no significant complications.
The procedure is effective in treatment of both atrophic & hypertrophic
scars with improvement in appearance & texture.

المقدمة

ليزر ثنائي اوكسيد الكربون ذو الطول الموجي 10600 نانومتر فعال في معالجة ندب الوجه مع الاخذ بنظر الاعتبار فترة النقاهة الطويلة نسبيا قد احدث من استخدامه خصوصا في حالات الجلد الغامق ذي الدرجتين الثالثة الرابعة حسب تصنيف فيتزباتريك لانواع الجلد.

ان الاشعة المقطعة لليزر ثنائي اوكسيد الكاربون ذي الطول الموجي 10600 نانو متر قد سجل افضل النتائج مع اقل الاعراض الجانبية في علاج ندب الوجه.

ان الهدف من هذه الدراسة هو لتقيم فعالية وأمان استخدام ليزر ثنائي اوكسيد الكربون ذو الطول الموجي 10600 نانومتر في علاج التليفات الجلدية.

مادة البحث

سبعة عشر مريض بمختلف انواع التليفات الجلدية لأسباب مختلفة عولجت باستخدام ليزر ثنائي اوكسيد الكربون ذو الطول الموجي 10600 نانومتر في 2 الى 4 جلسات و بفترات زمنية 6 اسابيع بين الجلسات في عيادات البحثية للطب الليزري في معهد الليزر للدراسات العليا.

النتيجة

كل المرضى الذين خضعوا للمعالجة بهذه الطريقة شعروا بنوع من التغير في الشكل والملمس للتليفات الجلدية التي يعانون منها مع درجات مختلفة من الرضى من قبل المرضى او ذويهمز

الاستنتاج

يمكن استخدام ليزر ثنائي اوكسيد الكربون ذو الطول الموجي

Clinical evaluation of Facial scar Treatment Using 10600 nm CO2 laser

تقييم علاج ندب الوجه باستخدام ليزر ثنائي اوكسيد الكربون ذي الطول الموجي 10600 نانو متر

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Abstract
Background:
Ablative laser therapy with carbon dioxide is effective for facial scars; however, the long downtime limits its use, especially in types III and IV Fitzpatrick skin types.
The fractional ablative 10,600-nm carbon dioxide laser system reportedly maximizes efficacy and minimizes side effects.
The goal of this study was to evaluate the e - cacy of an ablative 10,600-nm carbon dioxide laser system in Iraqian patients.
Material and Methods:-
Seventeen patients 7 male and 10 female with age range from 10 years to 40 years treated for scars in the face with different causes in the laser medicine research clinics in the institute of laser for postgraduate studies / University of Baghdad.
Treatment parameters were
Peak power 241 W
Pulse duration 0.7 ms
Repeat time 70 ms
And the fellow up sessions between 2 two 4 with 6 weeks intervals.
Patients and their satisfaction were assessed throughout the sessions and follow up
Results:-
All patients underwent the CO2 laser appl - cation showed response
graded from mild to significant and in turn it's reflected to the patient's
satisfaction with few and mild adverse rea - tions .
Conclusion:-
CO2 laser treatment of different types of f -