

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



SCARS

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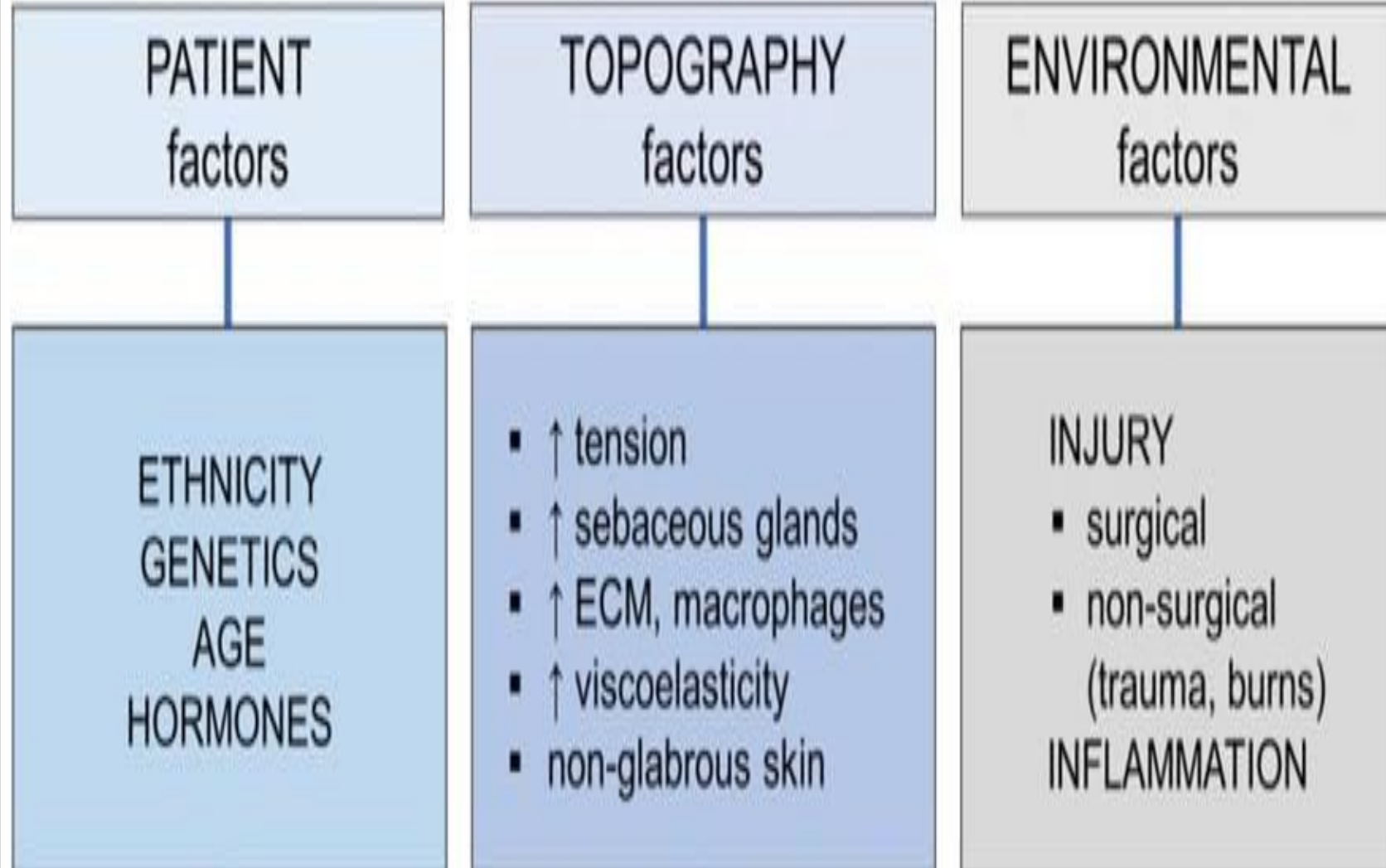
Scars

- **Everyone** has at least a scar somewhere in his body.
- Scars are formed either by **excess** or **decreased** collagen deposition.
- Not only a **cosmetic** disfigurement, but causes **psychological distress** and **lower self-esteem**.

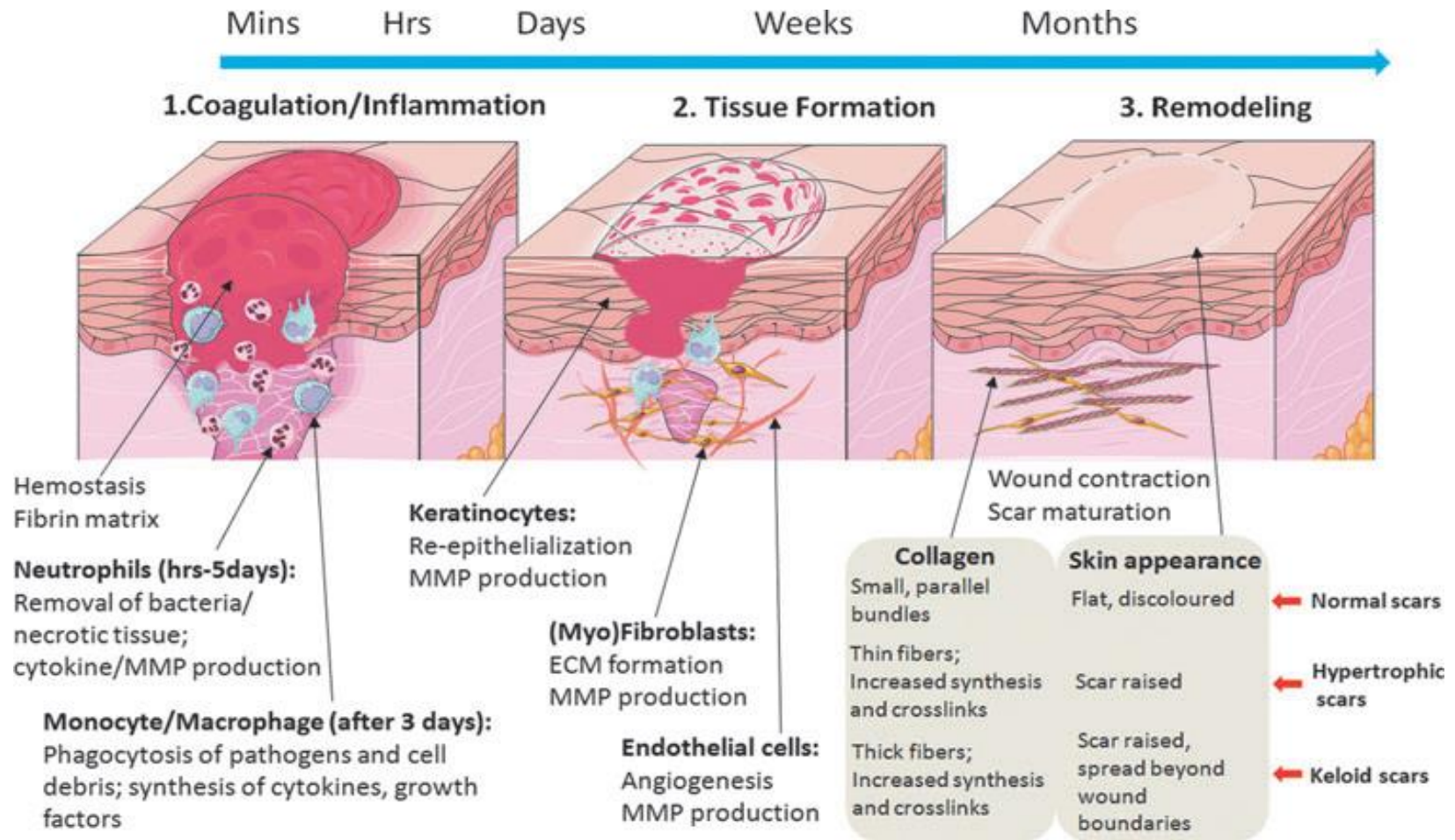
Scars

- Presence of a scar affects the **quality of life negatively** as it may interfere with movement causing **disability**.
- Simply a scar can **destroy someone's life**.
- Treatment is usually a **challenge**.
- Different **causes** and **shapes** tells what is needed to treat !

Pathogenesis of scarring



Pathogenesis of scarring






Three wound healing stages and scarring (Xue M and Jackson C, 2015)

Causes & Types of Scars

Causes	Types
1. Post-acne scars	1. Macule
2. Surgical	2. Erythematous
3. Traumatic	3. Atrophic
4. Burn	4. Hypertrophic
5. Spontaneous	5. Keloid

I- Post-Acne Scars

- They are the **commonest** among all populations
- **80-90% atrophic** scars (ice-pick, rolling and boxcar scars)
- **10-20% hypertrophic** or **keloid** scars
- **Superficial macular** scars (pigmented & erythematous)

Acne Scar Subtypes	Description		Treatment Options	Treatment Efficacy*
Icepick	<2 mm and narrow Tapers as extends to deep dermis		Punch excision TCA CROSS Radiofrequency Laser skin resurfacing	+++ ++ + +
Rolling	4–5 mm wide Sloped and shallow borders Caused by dermal tethering of otherwise normal skin		Subcision Fillers Dermabrasion Microneedling Radiofrequency Laser skin resurfacing	+++ +++ ++ ++ ++ ++
Boxcar	1.5–4 mm wide Round to oval depressions with sharply demarcated vertical edges Can be shallow (0.1–0.5 mm) or deep (≥ 0.5)		Shallow boxcar: Punch elevation Dermabrasion Microneedling Radiofrequency Laser skin resurfacing	+++ ++ ++ ++ ++

*(+++) highly effective (++) effective (+) adequate.
CROSS, chemical reconstruction of skin scars; TCA, trichloroacetic acid.

Summarization of Acne scar treatment by Boen M and Jacob C, 2019.

DOI: [10.1097/DSS.0000000000001765](https://doi.org/10.1097/DSS.0000000000001765)

Dr. Engy Elazhary, MSc, Egypt

I I- Surgical Scars

- Surgeries always result in scars.
- Somehow we can minimize the formation of ugly scars through some **patient** and **surgeon** tips.
- **Preoperative** planning , wound closure **intraoperative** & **postoperative** periods are of great importance.

Prevention of Predicted Scar

- As treatment is **challenging**.
- **No cure** is granted **100%**.
- so, **prevention** is better than treatment and is the **first step in therapy**.
- Prevention is the responsibility of both **patient** and **physician** or **surgeon** equally.

Prevention of Predicted Scar

Patients instructions:

- Avoid **piercing** or **tattooing** with **+ve family h/o**.
- Keloidalis nuchae should have proper treatment in patients with **acne**.
- No need for **non-emergency** surgeries or **aesthetic** procedures.
- Postoperative care is very important to avoid keloid formation.
- Wear proper clothes as surgical bra.
- Silicone sheets over wounds.
- Avoid wrong movements that may lead to widening sutures.
- Avoid friction or rubbing wounds.
- Keep the wound clean and aseptic.

Surgeons instructions:

- Skin incisions should be done according to **tension forces** of skin.
- Use **delicate instruments** to avoid more skin trauma especially in **black and dark skin**.
- Suture edges must be taken with minimal tension forces as possible and **avoid overuse of electrocautery**.
- Avoid wound infection by removing any foreign bodies and giving suitable **antibiotics**.
- Use **preventive therapeutic modalities** as compressive, occlusive dressings, intralesional TAC, lasers to lessen keloid occurrence.
- Good **follow up** of the scars.

- In this paper how to **manage surgical scars** in details. DOI: [10.1016/j.fsc.2019.07.013](https://doi.org/10.1016/j.fsc.2019.07.013)

Management of Surgical Scars



Grace Lee Peng, MD^{a,*}, Julia L. Kerolus, MD^b

KEYWORDS

- Hypertrophic scars • Keloids • Scar revision • Scars • Incisions • Wound healing
- Depressed scars • Microneedling

KEY POINTS

- Meticulous presurgical incision planning and wound closure are the first steps to avoiding the development of unsightly scars.
- Postoperative care of incisions includes maintaining a clean, moist environment to prevent inflammation and infection.
- Depressed scars can be treated with resurfacing, fillers, and scar revision.
- Hypertrophic scars and keloids are managed with a combination of various modalities including excision, radiation therapy, and intralesional injection of steroids, 5-fluorouracil, and botulinum toxin A.

III - Traumatic Scars

- They are **inherently heterogeneous**.
- **No 2 injuries are alike**.
- **Laser** is the **first** step between conservative & surgical treatments.
- Lasers work on scar **texture, pliability, thickness & contractures**.

- In this paper the explanation of using **different Laser types** and **timing** of treatment according to scar.
- DOI: [10.1002/lsm.23201](https://doi.org/10.1002/lsm.23201)



Laser Treatment of Traumatic Scars and Contractures: 2020 International Consensus Recommendations

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KELOID

- A keloid is a benign well-demarcated overgrowth of fibrotic tissue which extends beyond the original boundaries of a defect.
- Scars at earlobes, chin, neck, shoulders, upper trunk and lower legs have the potential to become keloid.
- Keloids are cosmetically distressing and often painful or pruritic.

KELOID

- **Incidence**

- Ranges from 5%-16%
- Africans > Caucasians & Asians
- Mostly in 2nd & 3rd decades of life

- **Precipitating factors**

- Superficial injuries, deep injuries
- After piercing & surgeries
- Spontaneously

KELOID

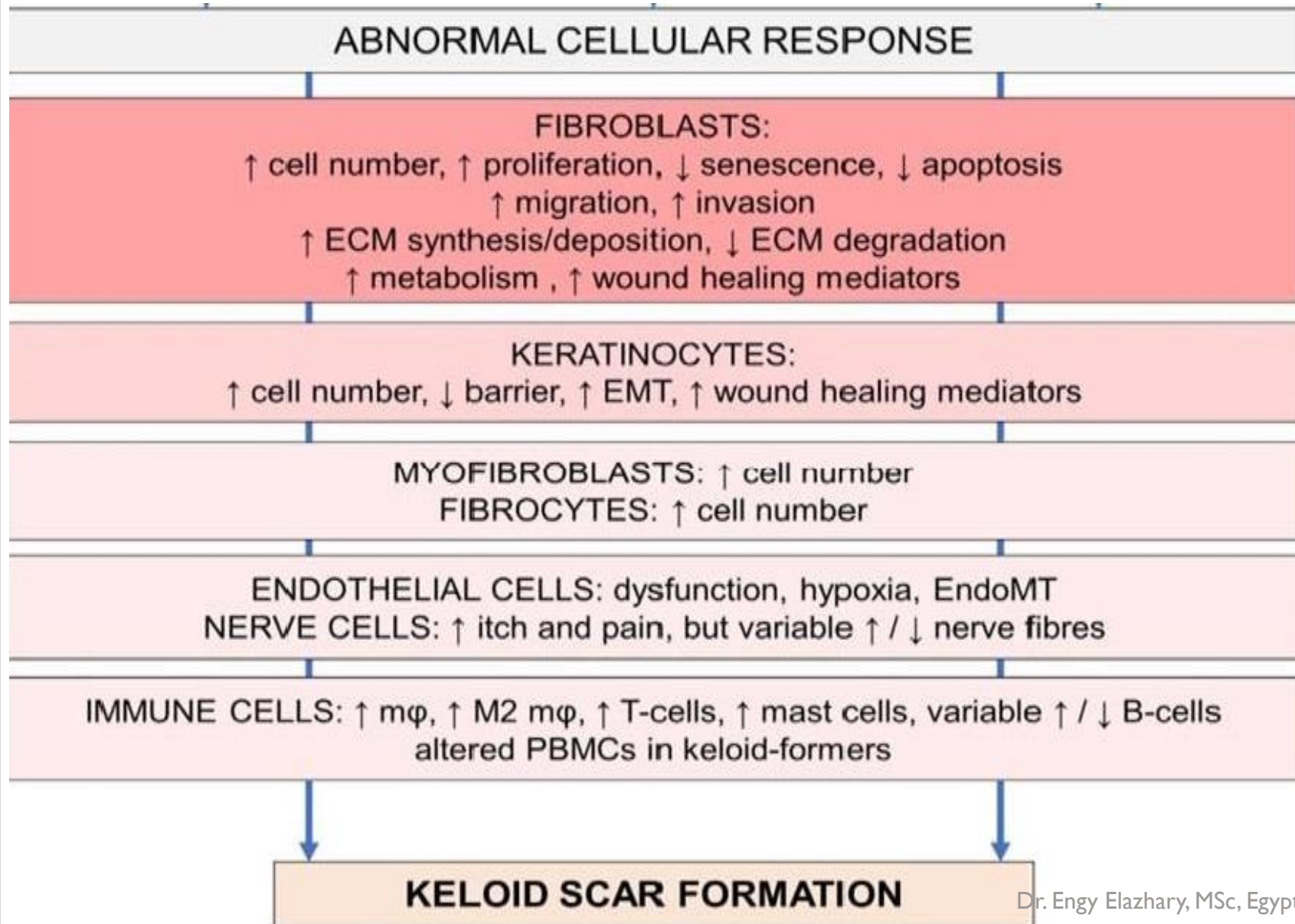
- **Clinical Picture:**

- Exaggerated growth
- Firm
- Maybe tender
- Erythematous
- Becomes paler as it ages
- Color vary

(pink-purple, skin-colored, hypo- or hyperpigmented)



Pathogenesis of Keloid scarring



Pretreatment Evaluation

CLINICALLY

SCORES

- Vancouver Scar Scale (**VSS**)
- Manchester Scar Scale (**MSS**)
- Patient & Observer Scar Assessment Scale (**POSAS**)
- Visual Analog Scale (**VAS**)
- Stony Brook Scar Evaluation Scale (**SBSES**)
- Modified seattle scale

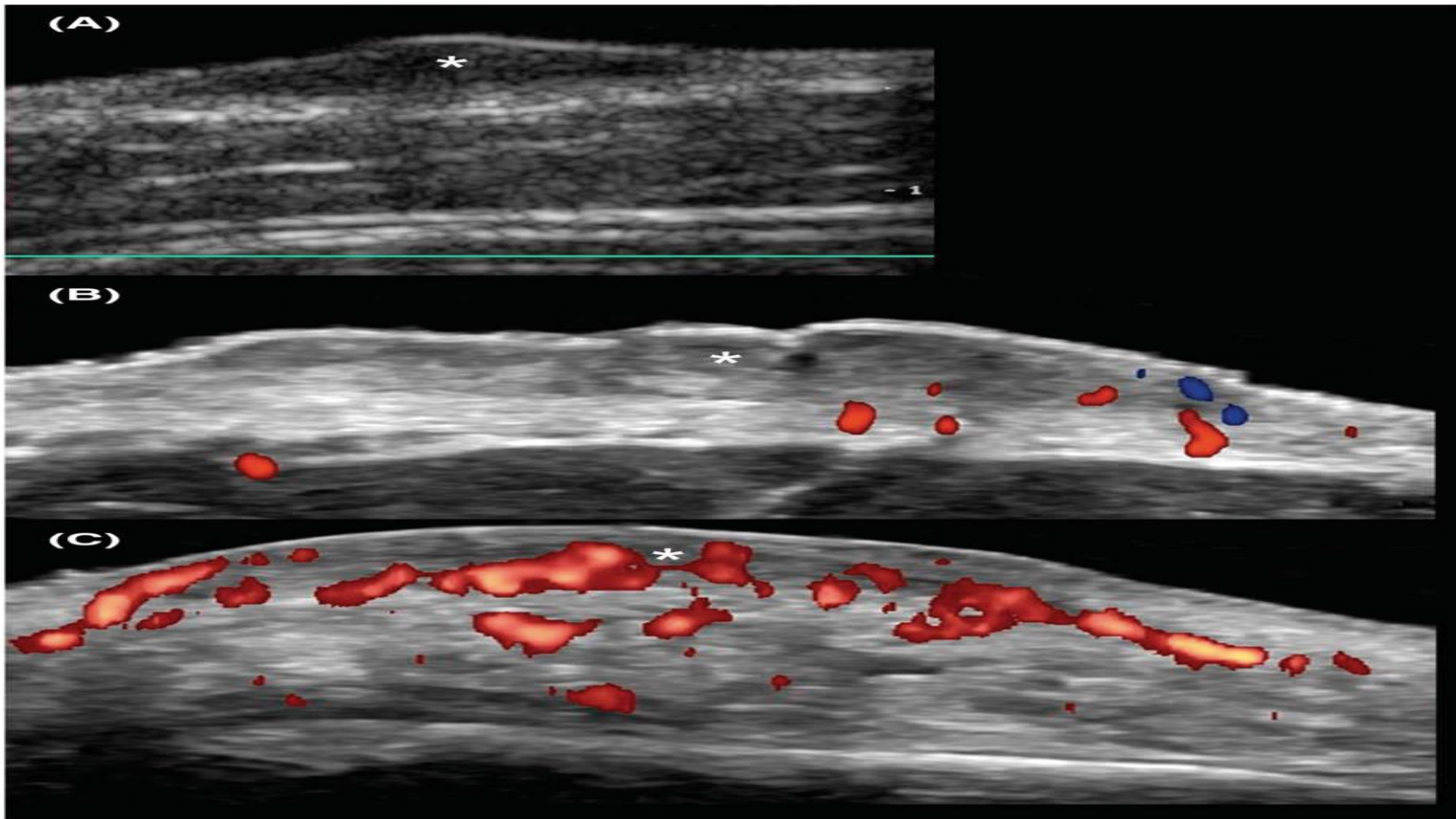
RADIOLOGICALLY BY **CDU & SONAR**

Color Doppler Ultrasonography (CDU)

- Scales used to evaluate scars are **subjective**.
- **Biopsies** may be **contraindicated** in scars as **keloids**.
- So ultrasonography, Doppler are being tried in diagnosis and follow up of keloid nowadays.
- The parameter for assessing **activity** on CDU was the **presence of blood flow** within the scar.

Color Doppler Ultrasonography (CDU)

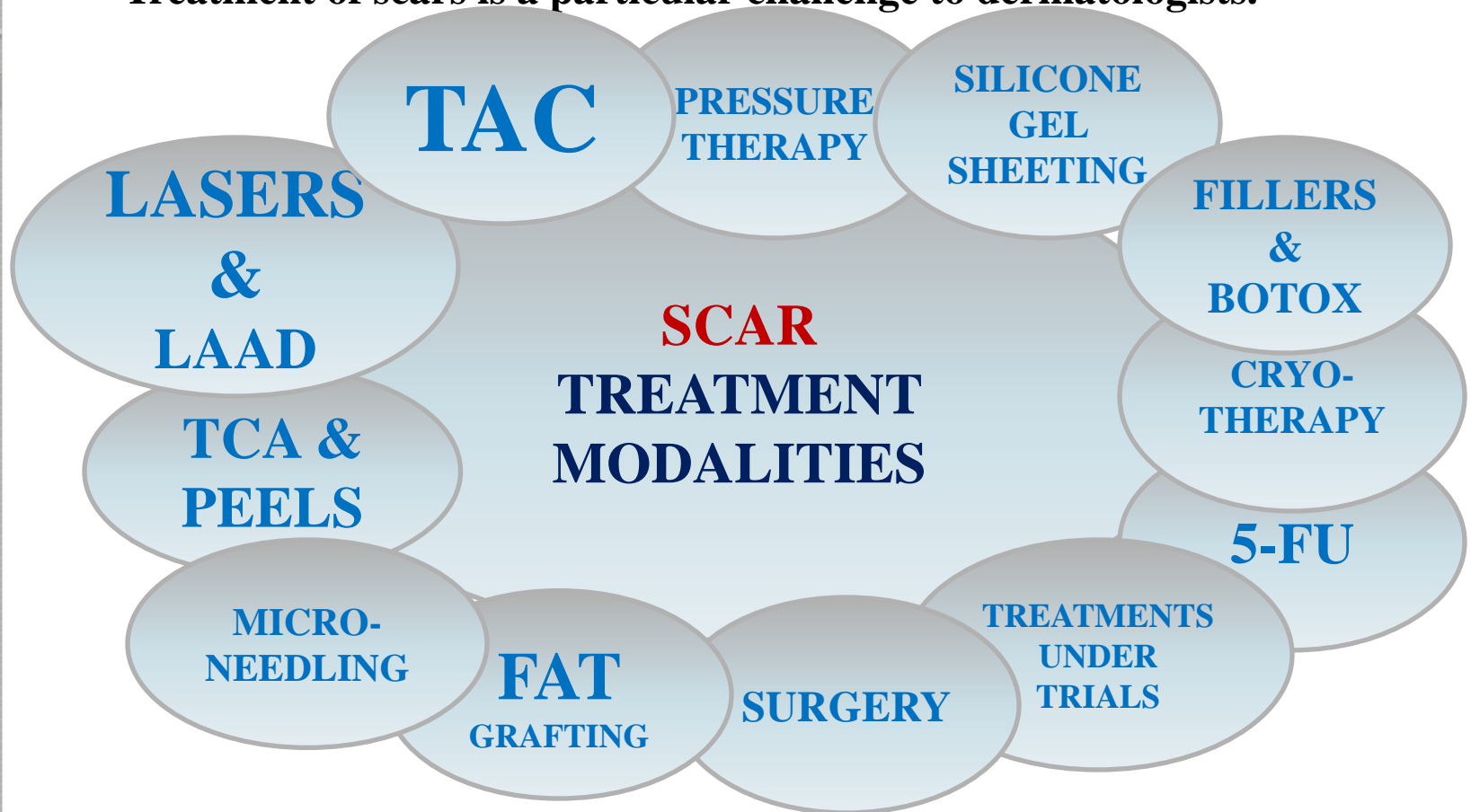
- Color Doppler ultrasound **assess** the following:
 1. Longitudinal, transverse and thickness (**depth**) diameters
 2. **Volume**
 3. Presence of blood flow or not (**activity**)
 4. Type of vascularity (**arterial** or **venous**)
 5. **Thickness** of the vessels (**mm**)
 6. Peak systolic **velocity** of the vessels



Color Doppler ultrasound grading of activity in keloids. (A) **Inactive** (no presence of colors). (B) (**Low**) and (C) (**High**) presence of vessels (colors): active (*Lobos et al., 2017*).

Treatment

- Treatment of scars is a particular challenge to dermatologists.



- Treatment modalities can be used either as **monotherapy** or **combined** therapies, however combinations give always better response.

Updates on keloid scar pathogenesis, assessment & treatment modalities by doses.

DOI: [10.21608/JRAM.2021.82892.1123](https://doi.org/10.21608/JRAM.2021.82892.1123)

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Review
Article

Updates on keloid scar pathogenesis,
assessment and treatment modalities

Dermatology and
Venereology

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ABSTRACT

Background: Keloids are disfiguring fibrous scars distressing patients emotionally. Keloids are yet considered as a challenge for doctors to treat due to their high ability of regrowth and extending. Prevention of keloid scar is considered as the first line of keloid management. Many theories were suggested to explain keloid formation. Imbalance between synthesis and degradation of collagen and extracellular matrix is the most realistic theory. Keloid scar assessment has been done clinically for years, though it hasn't shown all the aspects of scar. So, radiological assessment has been tried for a couple of years and proved to be efficient in keloid scar assessment combined to clinical assessment. Many treatments were tried in keloid therapy, where intra-lesional corticosteroids injection was stated as the first line treatment, later on other therapies as lasers, compression, cryosurgery, occlusive therapy, 5-fluorouracil, interferon, retinoid acids, vitamin D, surgical excision and radiation were tried either as a monotherapy or combined.

Objective: Detecting developments in the formation and treatment of keloids in order to help the doctor choose the optimal method of treatment according to each patient after its adequate clinical evaluation and by Doppler.

Conclusion: Keloids are a psychological burden for the patient and a challenge for doctors in treating it. Every day, new theories are being discovered about the formation and physiology of keloids, which helps to discover effective treatments. There is no specific method for evaluating keloids, so clinical scales are best used in conjunction with imaging. There is no specific treatment agreed upon, but the combined treatments have proven to be more effective than using each treatment alone.

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Key words: Keloid pathogenesis, keloid treatment, keloid monotherapeutic modalities, keloid combined therapeutic modalities.

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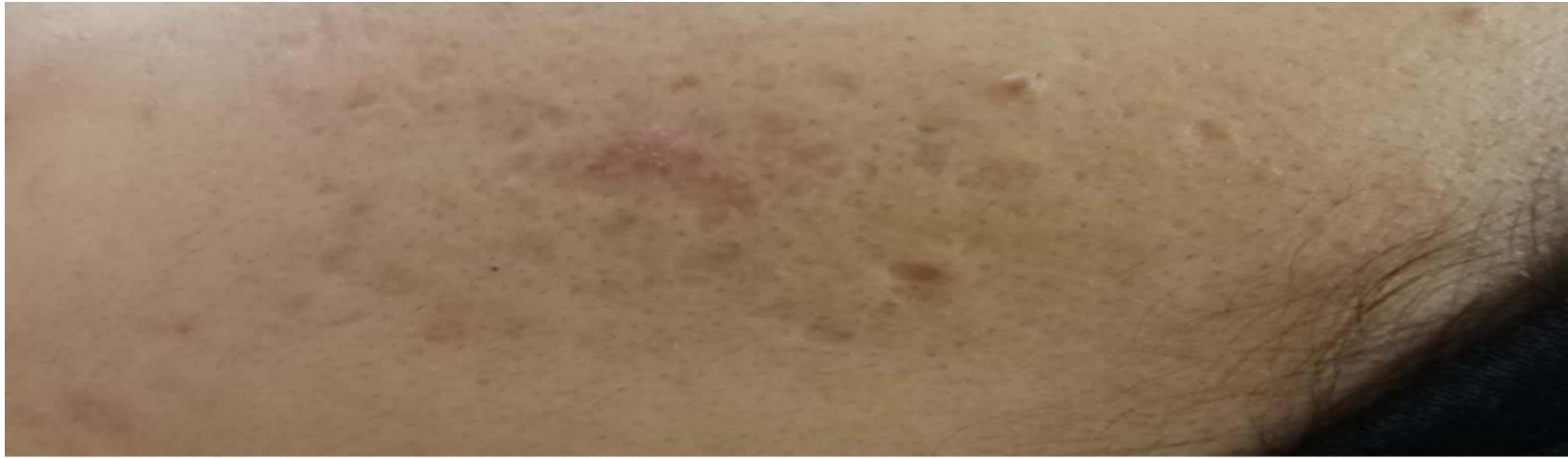
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Complications

Noticed by **patient** or **physician**:

1. Pain
2. Erythema
3. Itching
4. Swelling
5. Infection
6. Hyper- or hypopigmentation
7. Ulceration

Some of My Cases



Dr. Engy Elazhary

- 25 years female.
- Post acne scars in form of rolling and boxcar.
- 4 sessions of dermapen (microneedling).

Some of My Cases

- 25 years female
- Post-acne scars in form of rolling, boxcar and icepicks.
- 4 sessions of dermapen (microneedling) and subcision.



Dr. Engy Elazhary

Some of My Cases

- 23 male years old.
- Post-traumatic scar.
- 2 dermapen sessions.
- 1 chemical peeling session using salicylic acid 30%.



Dr. Engy Elazhary

Some of My Cases



- 20 years male
- Active acne lesions together with post-acne scars.
- 1 peeling session with Salicylic acid 30% together with oral antibiotics.

Some of My Cases

- 24 years female.
- Post-traumatic scar.
- 3 dermapen sessions.
- HA injections.



Dr. Engy Elazhary



Some of My Cases

- 28 years male.
- Post-surgical.
- 2 dermapen sessions.
- 2 fractional CO_2 laser sessions.



Dr. Engy Elazhary

Some of My Cases

- Female 25 years old.
- Post-surgical scar 3 years ago.
- 3 dermapen sessions.
- 2 fractional CO₂ laser sessions.



Dr. Engy Elazhary

A new trial combining fractional CO₂ laser with trichloroacetic acid was tried by me with my professors and here is the results shown in our comparative study.

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Dermatology Practical & Conceptual

Fractional Carbon Dioxide (CO₂) Laser Alone Versus Fractional CO₂ Laser Combined With Triamcinolone Acetonide or Trichloroacetic Acid in Keloid Treatment: A Comparative Clinical and Radiological Study

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Key words: keloid, fractional laser, TAC, TGA, doppler.

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ABSTRACT

Introduction: Keloids are benign fibro-proliferative scarring extending outside the initial wound. Different treatment modalities as intralesional corticosteroid injection, fractional CO₂ laser, and others can be used either as mono or combined therapies.

Objectives: To assess the efficacy of fractional CO₂ laser versus fractional CO₂ laser accompanied with either triamcinolone acetonide or trichloroacetic acid 20% in keloid treatment clinically and radiologically.

Methods: The current study was conducted on 45 Egyptian participants with keloid scars at different sites of the body. They were classified into 3 groups treated by fractional CO₂ laser only (group I), fractional CO₂ laser followed by triamcinolone acetonide (group II), or trichloroacetic acid application (group III), respectively. Evaluation of the keloid was done with Vancouver Scar Scale (VSS) and Color Doppler Ultrasound (CDU) before and after treatment. Four sessions 4 weeks apart were applied for the patients. They were followed-up for 8 weeks after the last session.

Before

After



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32 years old female with post-traumatic knee keloid of 18 years duration. A: before treatment (VSS 6). B: after 4 sessions of **fractional CO₂ alone** (VSS became 4).

Before

After

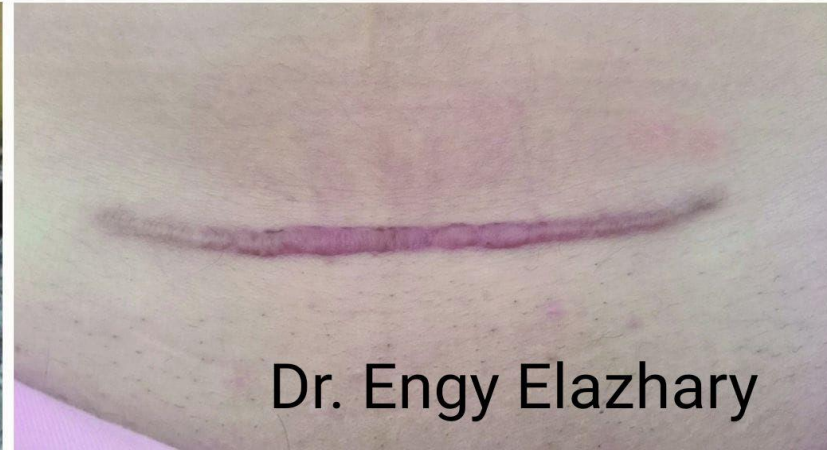


Female patient, 37 years old with neck post-thyroidectomy keloid of 4 years duration. A: before treatment (VSS 11). B: after 4 sessions of **fractional CO₂** followed by **TAC** (VSS became 7).

Before



After

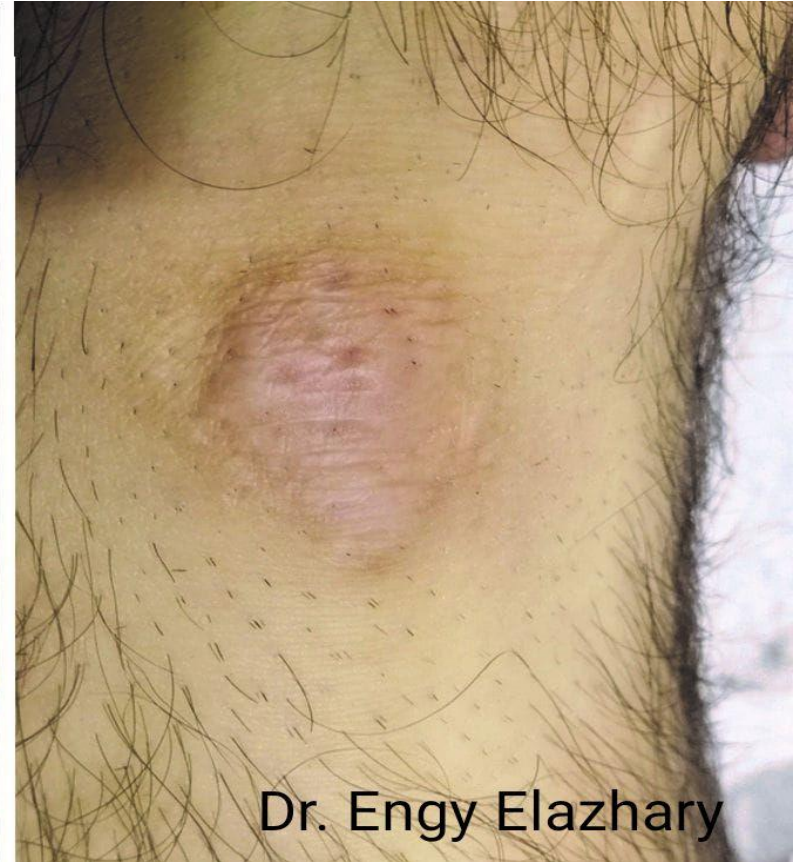


Female patient, 27 years old with abdominal post-ciserean keloid of 1 year duration. A: before treatment (VSS 11). B: after 4 sessions of **fractional CO₂ followed by TAC** (VSS became 7).

Before



After



22 years old male with knee post-traumatic keloid of 3 years duration. A: before treatment (VSS 11). B: after 4 sessions of fractional CO₂ followed by TCA 20% (VSS became 8).

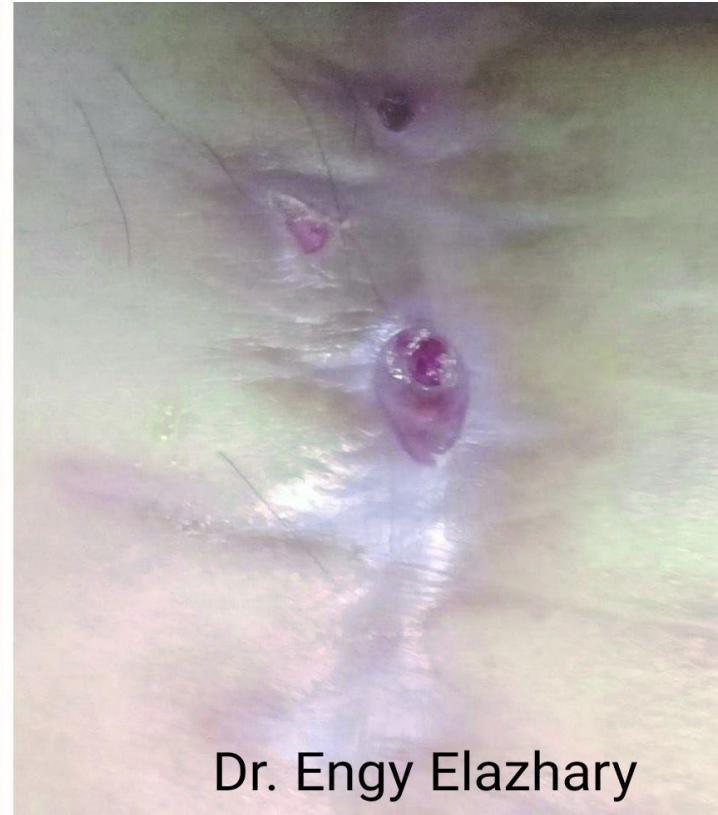


Side effects

Before



After



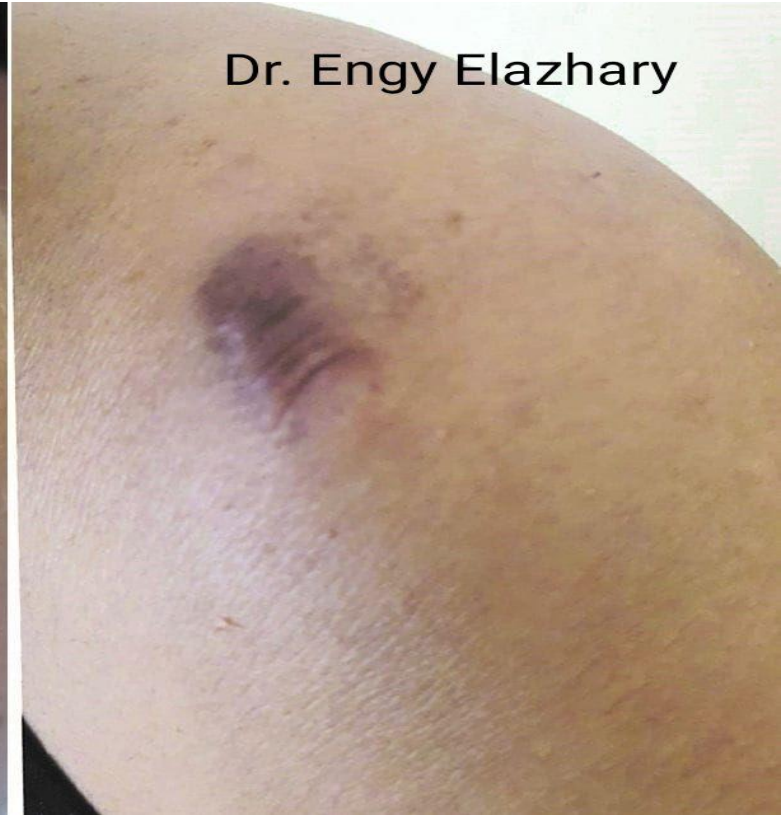
Dr. Engy Elazhary

55 years old male with chest post-open heart surgery keloid of 3 years duration. A: before treatment (VSS 12). B: after 4 sessions of **fractional CO₂ followed by TCA 20%** (VSS became 8), showing good improvement but ulceration occurred as a side effect.

Before



After

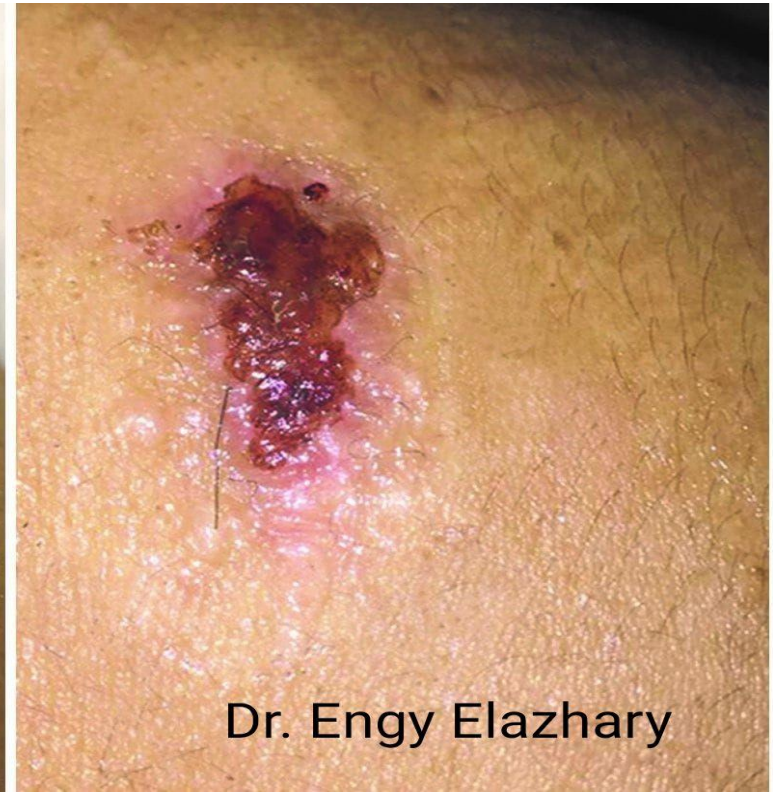


25 years old female with shoulder post-traumatic keloid of 6 years duration. A: before treatment (VSS 8). B: after 4 sessions of fractional CO₂ followed by TCA 20% (VSS became 9), showing mild improvement but hyperpigmentation occurred as a side effect.

Before



After



55 years old male with shoulder post-traumatic keloid of 2 years duration. A: before treatment (VSS 6). B: after 4 sessions of **fractional CO₂ followed by TCA 20%** (VSS became 4), showing good improvement but ulceration occurred as a side effect.



Thank you

Arigato 😊