## Supplementary Materials

Table 1. Review Table

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| **No** | **Title (Year), Author, Study Design** | **Patients (n), Criteria** | **Intervention** | **Comparison** | **Measurement** | **Duration of treatment and follow up** | **Primary Outcome** | **Secondary Outcome** | **Conclusion** |
| 1 | Comparison of efficacy of chemical peeling with25% trichloroacetic acid and 0.1% retinoic acidfor facial rejuvenation 10 (2016)Yildirim S, Gurel MS, Gungor S, Tekeli O, Canat D.Randomized clinical trial. | Total: 50 patientsInclusion criteria:* Female patients age 30-60 years old with medium-advanced photoaging (Glogau II-III)
* Fitzpatrick II-IV skin type
* Treatment naïve
* Could participate in the follow-up visits regularly
* Had not presented with active infection and inflammatory dermatosis in the treatment region
* Had not had any significant collagen tissue disease, cardiovascular, pulmonary, renal or psychiatric disease history.

Exclusion criteria:* Using medications that might lead to photosensitization
* Patients with photosensitive disease
* Having a hypertrophic scar or keloid tendency
* Patients undergoing the isotretinoin treatment for the last 6 months
* Recent operation in the facial region
* Pregnant women and nursing mothers
 | 25% TCA skin peeling once every month. | 0.1% retinoic acid peeling treatment applied 5 nights of weekdays | * Three dermatologists measure treatment response in quartile range: (0) no response, (1) minimal response, (2) partialresponse, (3) good response and (4) optimal response.
* Likert scale for burning and irritation by the patients immediately post-treatment: none (0), very mild (1), mild (2), severe (3) and very severe (4).
* Turkish Dermatology Life Quality Scale questionnaire for social, emotional status, and daily activities as well as sexual life and symptoms of those patients.
 | Duration: four months.Follow up: every month for four months and three months after treatment.  | Retinoic acid presented a statistically significant higher healing rate compared to TCA according to two observers. One observer declared the same result with no statistical significance.  | * Burning and irritation was reported to be more severe in the TCA group
* Hyper- or hypopigmentation and scar formation were not statistically significant between both groups.
* Both of the groups presented improvement in quality of life.
 | 25% TCA peeling is as effective as 0.1% retinoic acid peeling for treating photoaging |
| 2 | Radio Peel—Synergism Between Nano-fractional Radiofrequency and 20% Trichloroacetic Acid Chemical Peeling. (2019)Artzi O, Cohen S, Verner I, et al.Multicenter randomized prospective clinical comparison study.  | Total: 67 patientsInclusion criteria:* Healthy subjects age 18-60 years old.

Exclusion criteria:* Unable or unwilling to follow the treatment protocol
* History of poor wound healing
* Active lesion in the treated area
* History of keloid formation
* HIV, hepatitis or immunocompromised condition
* Currentpregnancy or lactating
* Use of oral retinoids in the previous 12 months
* History of deep chemical peels or laser resurfacing procedures within the last 6 months
 | TCA skin peeling with 20% concentration | Microneedling bipolar fractional radiofrequency (FRF) technology, TCA 20% peeling followed by FRF, and FRF followed by TCA peeling | The patients and two dermatologists assess the degree of improvement using the global aesthetic improvement scale (GAIS) in four parameters:* pigmentation and dyschromia
* erythema and blood vessels
* laxity and wrinkling
* skin imperfections

The patients’ satisfaction was rated on a numerical scale.Adverse events were recorded by quantify the period of downtime to assess treatment safety.Skin impedance and histological changes following the different protocols were evaluated on 3 additional volunteers. | 3 to 5 treatments at 4-to 6-week intervals.  | * GAIS scores were significantly lower (indicating better cosmesis) for the FRF -> TCA treatment protocol compared with the other 3 protocols in laxity and wrinkling as well as pigmentation and dyschromia.
* There were no significant differences in redness and skin imperfections between the 4 protocols
 | * No complications documented.
* FRF 🡪 TCA resulted in longer downtimes
* TCA20% group showed no signs of burn clinically and histologically.
 | FRF🡪TCA yielded the best result on skin rejuvenation but resulted in longer downtimes. |
| 3 | Comparative study of 15% trichloroacetic acid peel combined with 70% glycolic acid and 35% trichloroacetic acid peel for the treatment of photodamaged facial skin in aging women. (2019)Kubiak M, Mucha P, Rotszjen H.Prospective cohort study. | Total: 40 patientsInclusion criteria:* Healthy women, aged between 41 and 60
* Type II and III Glogau photoaging scale
* Presented benign skin lesion: dryness, wrinkling, pigmentary dyschromia, and erythema.

Exclusion criteria: not explained | 35% trichloroacetic acid peel | 15% trichloroacetic acid peel combinedwith 70% glycolic acid | * Epidermal skin elasticity: Cutometer SEM 474
* Hydration: Corneometer CM 820
* Melanin and erythema index: Mexameter MX 18
* Depth and volume of wrinkles: PRIMOS
* Subjective evaluation and irritation complaints assessed according to the following scale: 0 = none, 1 = mild, 2 = moderate, 3 = severe.
 | Treatment duration: five peel sessions with 14 days intervals. (10 weeks)Follow-up examination: beginning of study, before each treatment, and 3 months after the last application.  | * Significant clinical improvement in both groups for all parameters
* Elasticity improvement of TCA was slightly greater than GA/TCA
* GA/TCA was characterized by significantly higher values of the hydration parameter and lower values of melanin index compared with 35% TCA
* Depth of wrinkling reduction was found to be more significant in the TCA group
 | * Combination peel GA/TCA did not cause dryness, edema, or intensive lysis of the epidermis
* The frequency of peel‐induced erythema did not increase with the addition of glycolic acid, but with a higher concentration of the TCA solution.
* Subject‐perceived improvements of the 35% TCA peel did not differ significantly from combination peel treatment.
* Marked adverse events were not observed in either group
 | Both medium‐depth chemicalpeels proved tobe useful for the removal of epidermal or superficial lesions and to improve grade II‐III Glogau photoaged skin 35% TCA peel is more effectivein reducing wrinkleThe addition of glycolic acid before 15% TCA chemical peel application significantly enhanced the increase in skin elasticity and hydration; reduction in melanin index and erythemaindex. |
| 4 | Evaluation of 70% Glycolic Peels Versus 15% Trichloroacetic Peels for the Treatment of Photodamaged Facial Skin in Aging Women. (2014)Kubiak M, Mucha P, Debowska R, Rotszjen H.Prospective cohort study | Total: 25 patientsInclusion criteria:* Healthy women aged 41-60 years old with photodamaged skin.
* Patients with Fitzpatrick skin Types II-III
* Glogau photoaging scale Types II and III
* Patients had at least 3 of the 4 signs of photoaging (mild-to-moderate hyperpigmentation as well as fine lines and wrinkles, dryness, and erythema).

Exclusion criteria:* Patients with dermatologic disorders that would interfere with the test results or increase risks of adverse reaction.
 | 15%Trichloroacetic acid Peels | 70% Glycolic Peels | * Epidermal skin elasticity: Noninvasive in vivo suction skin elasticity meter equipped with 2-mm measuring probe (Cutometer SEM 474)
* Hydration of the stratum corneum: non-invasive skin capacitance meter

(Corneometer CM 820)* Melanin and erythema index: narrow-band reflectance spectrophotometer (Mexameter MX 18)
* Skin improvements (smoothness, roughness, and wrinkles): video sensor chip with a very high resolution, an objective and UVA light source (Visioscan 98)

Subjective irritation complaints assessed according to the following scale: 0 = none, 1 = mild, 2 = moderate, 3 = severe. | Treatment duration: five peel sessions with 2 weeks interval ( 10 weeks) Follow up: before each treatmentand 3 months after the last application. | * Elasticity improvement was similar in both groups
* GA is more superior in TCA in improving skin moisture
* Melanin intensity decreased significantly after GA peeling but not statistically significant with TCA peeling
* Erythema was increased in both groups for the first 5 weeks but reduce after 20 weeks significantly only in the TCA group
* Both groups showed improvement of skin surface with no significant difference.
 | * Subjective evaluation showed a good or very good response (GA, 84%; TCA, 68%) which was statistically insignificant.
* The 70% GA procedure caused more discomfort and strong stinging during the application
* 15% TCA peel was associated with immediate stinging and burning that was most pronounced at the first visit
 | 70% GA and 15% TCA as superficial peels proved to be an effective treatment modalityfor photodamaged facial skin.Glycolic acid increases skin’s hydration faster. |
| 5 | Randomized controlled trial comparing 35% trichloroacetic acid peel and 5‐aminolaevulinic acid photodynamic therapy (ALA PDT) for treating multiple actinic keratosis. (2016)Holzer G, Pinkowicz A, Radakovic S, Schmidt JB, Tanew A.Randomized controlled trial | Total: 28Inclusion criteria: Patients with five actinic keratoses lesions in two comparable anatomical areas on the headExclusion criteria:* Pregnancy
* Immunosuppression
* Topical treatment within the last two weeks before inclusion into the study
* Systemic retinoid therapy within the previous six months
* Patients under ongoing therapy with oral anticoagulants
* Contraindication against PDT or TCA peeling such as local skin infections or sensitization against 5-ALA or TCA.
 | 35% trichloroacetic acid peel | 5-aminolaevulinic acid 20% photodynamic therapy | Therapeutic efficacy and cosmetic outcome was assessed by measuring the reduction of the total lesion count, complete clearance of pre-existing actinic keratosis lesions, PGA (physician global assessment) of the target area on a 7-point scale (0=completely cleared, 1=almost clear, 2=mild, 3=mild-to-moderate, 4=moderate, 5=moderate to severe, 6=severe), and new lesion count within the target area using Fotofinder software.Adverse events were assessed by recording treatment-related pain using the Visual Analogue Scale and scarring.  | Treatment duration: 12 months. Follow up:Assessments were done by a blinded investigator 1,3,6, and 12 months after treatment.  | - Reduction of the total lesion count was found 31% in the TCA group and 58% in the ALA PDT group.- Complete clearance of pre‐existing lesions was 49% for TCA and 74% for ALA PDT.- Treatment failure was observed in seven patients (25%) after TCA and in two patients (7%) after PDT treatment. | -Treatment related pain was significantly higher for ALA PDT (VAS 7·5 ± 2·3 vs. TCA: 5·1 ± 2·6)- Scarring (n = 6, 21%) was seen only in TCA-treated patients. | ALA PDT provided better clinical results than TCA in the treatment of patients with extensive field cancerization and multiple AKs. |