## 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 with  25% trichloroacetic acid and 0.1% retinoic acid  for facial rejuvenation 10 (2016)  Yildirim S, Gurel MS, Gungor S, Tekeli O, Canat D.  Randomized clinical trial. | Total: 50 patients  Inclusion 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) partial response, (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 patients  Inclusion 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 * Current pregnancy 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 patients  Inclusion 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 combined  with 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 chemical  peels proved to  be useful for the removal of epidermal or superficial lesions and to improve  grade II‐III Glogau photoaged skin  35% TCA peel is more effective  in reducing wrinkle  The addition of glycolic acid before 15% TCA chemical peel application significantly enhanced the increase in skin elasticity and hydration; reduction in melanin index and erythema  index. |
| 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 patients  Inclusion 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 treatment  and 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 modality  for 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: 28  Inclusion criteria: Patients with five actinic keratoses lesions in two comparable anatomical areas on the head  Exclusion 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. |