Microneedling fractional radiofrequency (FRF) and chemical peels are widely used for skin rejuvenation. We aimed at evaluating the efficacy and safety of FRF and trichloroacetic acid 20% (TCA20%) peel in different combinations for determining the optimal treatment protocol.

In this prospective clinical comparison of four protocols [FRF alone, TCA20% alone, TCA20% before FRF (TCA◊FRF) and TCA20% following FRF (FRF◊TCA)], the patients underwent 3.8 ± 1.2 successive treatments of one protocol at 4- to 6-week intervals. The patients and 2 dermatologists evaluated improvement of pigmentation and dyschromia, erythema and blood vessels, laxity and wrinkling and skin imperfections using a global aesthetic improvement scale (GAIS) and a 1-5 scoring system. The patients rated their satisfaction, and reported adverse effects and reduced activity. Skin impedance and histological changes following the different protocols were also evaluated on 3 additional volunteers. Sixty-seven patients (age range 22-80) were studied. TCA◊FRF caused skin impedance to decrease, yielding a more superficial and less efficient penetration of FRF energy. FRF◊TCA produced more significant improvement in overall facial skin appearance (GAIS) and most evaluated skin parameters. Adverse effects and satisfaction rates were similar for all approaches. FRF◊TCA had the best synergistic effect on skin rejuvenation compared to FRF or TCA20% alone and TCA◊FRF.