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## Evaluation and clinical implication of fractional $CO_2$ laser to non-invasively treat lower lid laxity: A retrospective review

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**Introduction & Aim:** Infraorbital laxity and fat pad protrusion is a common problem of aging. Many subjects wish to cosmetically tighten the infraorbital skin area but are reluctant to undergo invasive procedures. Fractional  $CO_2$  laser is the most effective method currently available for skin tightening. This study was a retrospective non-comparative study of a novel noninvasive method to safely tighten lower lids to enhance cosmesis and to reduce the appearance of aging in a variety of subjects of varying ages and Fitzpatrick types.

**Methods:** The results of 100 adult subjects were reviewed. All patients received fractional  $CO_2$  treatments with energy levels that varied according to severity. Patients received treatment up to the lash line. Standardized color digital photography was taken at each visit. The primary outcome measure was an objective improvement in a paired comparison of pre-treatment and post-treatment (three months) photographs. Treatment efficacy was evaluated by both the expert observer and the subject at each visit.

**Results:** The mean patient age was 50 years (ranges 19-76). Fitzpatrick type I-IV was treated. All patients received one treatment with fractional  $CO_2$  laser and two patients received two additional touches up treatments for incomplete results. After three months, 89% showed 25% or more tightening. 45 (45%) showed 25% or more tightening. Eight subjects (8%) have 51-75% tightening at three months.

**Conclusions:** The use of fractional  $CO_2$  laser was shown to be safe and effective in shrinking lower lids of patients of all ages and all tested Fitzpatrick types. More dramatic results may be seen with this technology with lighter Fitzpatrick types and in Asian subjects. Further study is warranted to determine the ideal power setting and number of treatments required to achieve desired results. Fractional  $CO_2$  laser may be a safe alternative to mild to moderate lid laxity and fat pad protrusion.

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