

# CASE REPORT: Sutureless Earlobe Repair using 2940 nm Er:YAG Laser

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## ABSTRACT

Recent fashion and cultural trends have led to an increase in earlobe piercing in men and women. Wearing heavy earrings or pulling on the ring can cause an earlobe defect. Various techniques have been reported for the repair of cleft earlobe, like Z-plasty, L-plasty and V-plasty. In this paper we describe a method using ablative Er:YAG laser that provides quick healing time and minimal adverse effects, which we used in 12 female patients with earlobe deformities. The proposed procedure does not require cutting of the tissue or stitches, but utilizes a combination of deep Er:YAG laser peel and fractional ablative laser resurfacing of the skin inside and around the defect, followed by fixation using an adhesive surgical strip. After a short healing time of around 10 days, all treated defects were repaired. There were no adverse effects and the patients' satisfaction with the results was high.

**Key words:** earlobe, ablative ER:YAG, earlobe defect.

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## I. INTRODUCTION

Earlobe piercing in men and women is a worldwide cultural and fashion trend[1]. Traumatic elongation of the earlobe can happen because of the wearing of heavy earrings, from pulling on the rings or from poor piercing techniques[2,3]. The most common causes of ear cleft in the auricular lobule are from holes made in the auricle for ornamentation. These expand over time and the ornaments separate the lips of the cleft from each other due to the influence of gravity [4].

McLaren (1954) was the first to treat patients with such earlobe defects by excising the scar tissue at the edges of the defect followed by simple linear suturing[5]. Z-plasty, L-plasty and V-shaped flap are other techniques for repair of cleft earlobe. Complications after surgical repair include local

bruising, infection, discomfort, asymmetry of the lobe and keloid formation [6]. To avoid these complications, laser treatment can be used. The aim of this study is to showcase a method using ablative Er:YAG laser for treating the earlobe.

## II. MATERIALS AND METHODS

In a study conducted at the Medical Cosmetology and Laser Clinic in Baku, Azerbaijan, female patients with split earlobes received one session of laser treatment. The approach of the study was to treat the injury using ablative Er:YAG laser (SP Dynamis, Fotona, Slovenia) in two steps. In the first step, the R11 handpiece (spot size: 2 mm, energy density 7-8 J/cm<sup>2</sup>, 15 Hz; 2-3 passes, deep peel) was used across the entire surrounding area of the defect, including the inner skin, until the appearance of pin-point bleeding. In the second step, the FS01 fractional handpiece was used across the same areas with the following parameters: TURBO 6 mode, MSP, 72 J/cm<sup>2</sup>, 1-2 overlapping passes according the age of the patient (1 pass for younger patients up to 40 years of age, 2 passes for older).

Before the laser treatment 4% Ultracaine injection anesthesia was used. After the treatment, the edges of the earlobe defect were put together and fixed with a surgical strip (for example 3M Steri-strips). Then after 3 days, the strip was replaced with another one and after 10 days the strip was removed. The patients did not receive any stitches. The treatment session as well as follow-ups were photo-documented.

## III. RESULTS

12 female patients participated in this study. All of the patients had earlobe defects. Before the treatment all patients received local anesthesia (Ultracaine, 4%). The majority of the patients (11 or 91.7%) had earlobe defects presented as an enlarged and elongated hole, while one patient (8.3%) had a tear, or open split of the earlobe (Pt. 3, Fig. 3a). The earlobe defects in all 12 patients were repaired with a single laser session performed as described in the Methods section above.

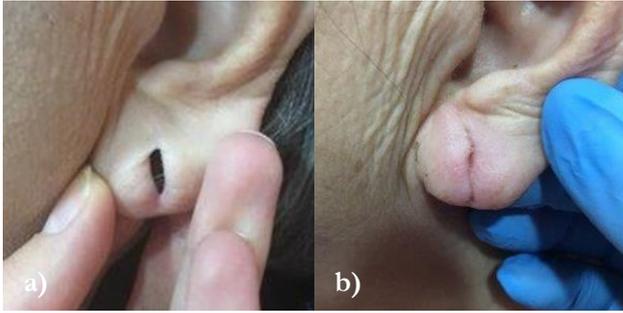


Fig. 1: Patient 1: Left earlobe with elongated hole (a). Earlobe 10 days after the laser treatment (b)



Fig. 2: Patient 2: Left earlobe with elongated hole (a). Earlobe 6 weeks after the laser treatment (b)



Fig. 3: Patient 3: Left earlobe tear (a). Earlobe 6 weeks after the laser treatment (b)

The healing time for all patients was around 10 days, after which all treated earlobe defects were eliminated and the earlobes regained the integrity they had before the defects.

No complications were observed after the ablative Er:YAG laser treatment. All patients participated in a survey about satisfaction and all were fully satisfied with the results.

#### IV. DISCUSSION

Earlobe defects can be divided into two categories: acquired (traumatic) and congenital [7]. Although the congenital earlobe defects are relatively common, in our practice and in this paper we are discussing only traumatic earlobe defects. Traumatic deformities of earlobes can be a consequence of long-term wearing of earrings, which slowly – over an extended period of

time – produce an enlarged and elongated hole that can lead to a tear, or alternatively, it may appear suddenly as a consequence of a variety of traumatic situations.

Aside from the use of a classical surgical approach, there are also repair techniques using energy-based tools like lasers and radiofrequency devices. Treatments with CO<sub>2</sub> laser and radiofrequency have been reported, giving good results [8]. There was also one study published [2] in which Er:YAG laser was used for earlobe defect repair, however, in the approach described, the edges were stitched together after the laser processing of the defect. Our approach to the treatment of earlobe defects is based on a desire for minimal invasiveness of the intervention, a quick healing time and minimal adverse effects. So in our protocol we do not cut the tissue, nor do stitches, but just obtain a minimal removal of the skin surface, with the healing of which we achieve good adhesion of the defect edges, thus eliminating the need for stitches.

#### V. CONCLUSIONS

This study showed that sutureless earlobe repair with ablative Er:YAG laser is a technique that produces excellent results with no adverse effects. The healing time was short and the patients' satisfaction was high.

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