



Use of trichloroacetic acid for closure of lesion by extensors in lobules of ears

Uso de ácido tricloroacético para fechamento de lesão por alargadores em lóbulos de orelhas

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■ ABSTRACT

Introduction: The use of ear lobe extenders causes a circular defect whose closure becomes a challenge for the plastic surgeon. There are multiple techniques with mobilization of local flaps in an attempt to close and return to the natural shape of the lobe. We propose to present trichloroacetic acid (TCA) as an alternative for the correction of these lesions.

Methods: A total of five patients with lesions by ear skin eyelets were selected, and 90% TCA was used to close the defects.

Results: After applying the product, in the first days, there was a hyperemia around the area where the acid was applied. The frosting area was replaced by a crust, which loosened over the days, concomitantly reducing the diameter of the lesion with progressive closure of the defect. **Conclusion:** Although more studies are needed, the use of 90% TCA proved to be a simple and practical option for the closure of enlarged ear lobes.

Keywords: Acquired ear deformities; Trichloroacetic acid; Chemical abrasion; External ear; Ear.

■ RESUMO

Introdução: O uso de alargadores de lóbulos de orelhas provoca um defeito circular cujo fechamento se torna um desafio para o cirurgião plástico. Existem múltiplas técnicas com mobilização de retalhos locais na tentativa de promover o fechamento e devolver o formato natural do lóbulo. Nossa proposta é apresentar o ácido tricloroacético (ATA) como alternativa para a correção dessas lesões. **Métodos:** Foram selecionados um total de 5 pacientes com lesões por alargadores nos lóbulos das orelhas e utilizado ATA 90% para o fechamento dos defeitos. **Resultados:** Após a aplicação do produto, observou-se uma hiperemia ao redor da área onde foi aplicado o ácido nos primeiros dias, a área de frosting foi substituída por uma crosta, que foi se soltando com o passar dos dias, concomitante a redução do diâmetro da lesão com fechamento progressivo do defeito. **Conclusão:** Apesar de mais estudos serem necessários, a utilização de ATA 90% se mostrou uma opção simples e eficaz para o fechamento de lóbulos de orelhas alargados.

Descritores: Deformidades adquiridas da orelha; Ácido tricloroacético; Abrasão química; Orelha externa; Orelha.

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INTRODUCTION

The use of ear lobe extenders is a widespread habit, especially among adolescents. Such devices cause a deformity in the ear lobe, with enlargement and circular holes. Several techniques have already been described and are currently used to close such defects. Mostly, different local flap techniques are used as a tool for lobe repair^{1,2,3}.

We propose to present a new correction option, simpler, faster, and cheaper, using trichloroacetic acid to close these lesions.

Trichloroacetic acid (TCA) in high concentrations induces necrosis of all layers of the epidermis, reaching the papillary dermis, followed by the reconstitution of the epidermis and the matrix of the papillary dermis, through wound healing processes^{4,5}.

TCA has cytotoxic effects, such as suppressing the proliferation of keratinocytes and fibroblasts and the synthesis of proteins by fibroblasts, but its biological mechanism is not yet fully understood⁶.

TCA-treated skin stimulates platelets, monocytes and keratinocytes to produce different growth factors, including PDGF-B transiently. The platelet-derived growth factor stimulates tissue fibroblasts around the wound to proliferate, express the appropriate integrin receptors and migrate into the wound space and thus, presumably, increase wound closure by stimulating reepithelization⁷.

Keratinocytes treated with TCA expressed IL-1 (pro-inflammatory) and IL-10 (anti-inflammatory) depending on TCA concentrations, which were regulated after treatment, which suggests that the inflammatory reaction after treatment with TCA is well balanced, resulting in a better cosmetic result⁴.

METHODS

After using TCA 90% frequently for closing partial fissures in ear lobes, we decided to evaluate its action in patients with sequelae due to the use of skin eyelets.

We selected four patients with previous use of ear skin eyelets bilaterally, and 1 with unilateral injury and intent to close (Table 1), to assess the feasibility of the technique. First, the patients were instructed regarding the procedure and signed a free and informed consent term. Asepsis was performed with alcoholic chlorhexidine, followed by the application of a single uniform layer of 90% TCA, with the aid of a cotton swab or wooden toothpick. After application, the frosting was observed, noting a solid white layer, covering the entire internal surface of the hole. A dressing with micropore was performed, approaching the edges of the lesion (Figure 1). Patients were instructed on local care and scheduled weekly follow-up visits.

Table 1. Relationship between age, affected side, sex, usage time and skin eyelet diameter.

| | Age | Side | Gender | Usage time | Diameter |
|-----------|-----|-----------|-----------|------------|----------|
| Patient 1 | 14 | Bilateral | Feminine | 2 years | 30 mm |
| Patient 2 | 29 | Bilateral | Masculine | 10 years | 18 mm |
| Patient 3 | 29 | Bilateral | Feminine | 8 years | 18 mm |
| Patient 4 | 22 | Bilateral | Feminine | 7 years | 16 mm |
| Patient 5 | 16 | Left | Masculine | 2 years | 26 mm |

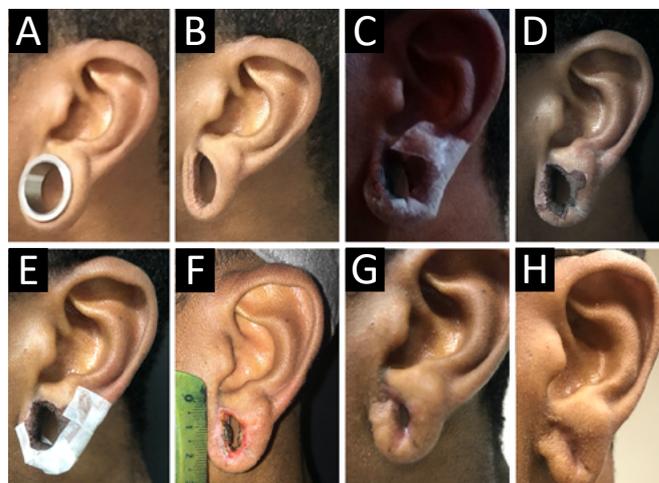


Figure 1. A. Patient with skin eyelets; B. Patient without skin eyelets; C. After immediate application of TCA; D. 2 weeks after application; E. 1 month after application; F. 2 months after application; G. 4 months after application; H. 1 year after application.

RESULTS

After applying the product, hyperemia was observed around the area where the acid was applied, followed by frosting. The frosting area was replaced by a crust in a few days and loosened over time, concomitantly reducing the diameter of the lesion. Patients were evaluated weekly with a photographic record to document their progress. Complete closure of the lesions was observed in moments, as described in Table 2. In just one patient, it was necessary to reapply the product, which was done at 4-week intervals. The lobes regained an aesthetically pleasing shape. There was a coaptation of the edges concentrically, returning a rounded shape to the lobes with a central scar (Figure 2).

Table 2. Relationship between closing time and number of applications.

| | Closing time | No. of applications |
|-----------|--------------|---------------------|
| Patient 1 | 3 weeks | 1 |
| Patient 2 | 2 weeks | 1 |
| Patient 3 | 2 weeks | 1 |
| Patient 4 | 2 weeks | 1 |
| Patient 5 | 12 weeks | 3 |



Figure 2. A. Patient with skin eyelets; B. Patient without skin eyelets, with a defect in the lobe of the right ear; C. After immediate application of TCA; D. 2 weeks after application; E. 2 months after application; F. 1 year after application.

DISCUSSION

The use of 90% TCA proved to be a simple and effective option for closing enlarged ear lobes. It can be an excellent alternative to surgeries for correction, which requires operative time, surgical material, and has a higher cost.

The procedure can be performed in the office, in a few minutes, without the need for surgical or auxiliary material. The cost of the procedure is low, and there is no need for anesthesia or any other additional material. Patients do not need to be away from work activities. We, therefore, understand that this is an up-and-coming technique for resolving a frequent complaint in our offices.

CONCLUSION

Although our sample is not significant enough to create a clinical approach, the use of TCA to correct ear lobe elongation has proved to be a low-risk, economical

procedure that does not require a surgical environment for its execution. Further studies are needed to evaluate its effectiveness in different scenarios of lobuloplasty caused by using skin eyelets.

COLLABORATIONS

- JGS** Conception and design study, Methodology, Project Administration, Realization of operations and/or trials, Supervision, Writing - Original Draft Preparation
- DOT** Conceptualization, Data Curation, Investigation, Methodology, Project Administration, Writing - Review & Editing
- JP** Analysis and/or data interpretation, Supervision
- ACN** Data Curation, Methodology
- CP** Analysis and/or data interpretation, Data Curation
- FGM** Analysis and/or data interpretation, Methodology, Project Administration
- RPG** Analysis and/or data interpretation, Final manuscript approval, Project Administration

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