



Lobuloplasty Torn earlobe repair

Tratamento de fissuras de lóbulo de orelha

SANDRO CILINDRO DE SOUZA^{1,2,3*}

■ ABSTRACT

Introduction: The use of ear ornaments is a multicultural practice. The lack of objective evaluations published in the national and international literature is surprising considering the high incidence of torn earlobe (TEL) worldwide. **Objective:** Evaluation of the results of torn earlobe repair with simple marginal excision and closure using a tissue adhesive. **Methods:** This was a prospective study in which TELs (36) were treated by simple excision of epithelialized edges and closure using cyanoacrylate as tissue adhesive. **Results:** TELs caused by earrings (91.7%) and trauma (8.3%) were treated. The following issues were found: flatness (14.8%), unsightly scar (13.9%), notching (11.1%), stretched earlobe (7.4%), and dehiscence (5.6%). No cases of necrosis or keloid scars occurred. **Conclusions:** The proposed treatment proved safe and had satisfactory cosmetic results in 92.6% of patients.

Keywords: Pinna; Pinna/abnormalities; Reconstructive surgical procedures; Adhesives; Cyanoacrylates.

■ RESUMO

Introdução: O uso de ornamentos auriculares é uma prática multicultural. Considerando a grande incidência de fissuras de lóbulo de orelha (FLOs) no mundo inteiro, é surpreendente a escassez de avaliações objetivas na literatura nacional e internacional. **Objetivo:** Avaliação dos resultados do fechamento de FLO's por meio de simples remoção de suas bordas e fechamento usando adesivo tissular. **Métodos:** Estudo prospectivo no qual FLOs (36) foram tratadas por simples excisão de suas bordas epitelizadas e fechamento usando cianoacrilato como adesivo tissular. **Resultados:** Foram tratadas FLOs causadas por brincos (91,7%) e por trauma (8,3%). Achatamento (14,8%), cicatriz inestética (13,9%), entalhe (11,1%), alongamento lobular (7,4%) e deiscência (5,6%) foram os problemas encontrados. Não houve casos de necrose ou queloides. **Conclusões:** O tratamento proposto mostrou-se seguro e com resultados cosméticos satisfatórios em 92,6% das pacientes.

Descritores: Pavilhão auricular; Pavilhão auricular/anormalidades; Procedimentos cirúrgicos reconstrutivos; Adesivos; Cianoacrilatos.

Institution: Secretaria de Saúde do Estado da Bahia, Salvador, BA, Brazil.

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¹ Sociedade Brasileira de Cirurgia Plástica, São Paulo, SP, Brazil.

² Hospital Geral de Camaçari, Camaçari, BA, Brazil.

³ Hospital Geral do Estado, Salvador, BA, Brazil.

INTRODUCTION

The use of ear ornaments by both sexes is an ancient practice in cultures worldwide. Surgical treatment of torn earlobes (TEL) resulting from ear piercing has been described from Babylon and Persia, through ancient India (100 BC to 100 AD), to Victorian England. Stretched earlobe resulting from TEL closure was termed *kákusthapáli* by *Sushruta Samnhita* over two millennia ago (606 BC)^{1,2}.

The lack of objective evaluations published in the literature is surprising, considering the high incidence of TEL worldwide. Most available studies report small case series without replicable bases¹⁻¹¹. Furthermore, few attempts are made to identify etiological factors².

OBJECTIVE

The present study aimed to assess the results of lobuloplasty through simple freshening of the cleft edges and use of tissue adhesive (cyanoacrylate).

METHODS

Prospective study performed from January 1, 2005 to August 1, 2010.

All patients with TEL seeking surgical correction of their injuries were included in the study. Patients with injured lobes with signs of inflammation, including local infections and dermatitis, and patients with keloid scars or a history of allergy to tissue adhesive components, were excluded from the study.

The present study was performed in accordance with the 1964 Declaration of Helsinki criteria and its subsequent amendments. Patients (or their legal guardians) gave signed informed consent after being informed about the objectives, methods, risks, and benefits associated with the use of anesthesia, incisions, sutures, and tissue adhesives.

Surgical technique

Lobuloplasty was performed according to the following steps (Figure 1):

- ear antisepsis with a solution of 0.5% chlorhexidine in alcohol and placement of sterile surgical fields around the wound;
- infiltration of cleft edges with 2 to 4 ml of 1% lidocaine with adrenalin 1:100.000^{1,3} and 10-minute wait for a vasoconstrictor effect;
- resection of the cleft edges: using a No. 11 scalpel, wedge excision of complete cleft edges and circular excision of incomplete cleft edges; excision

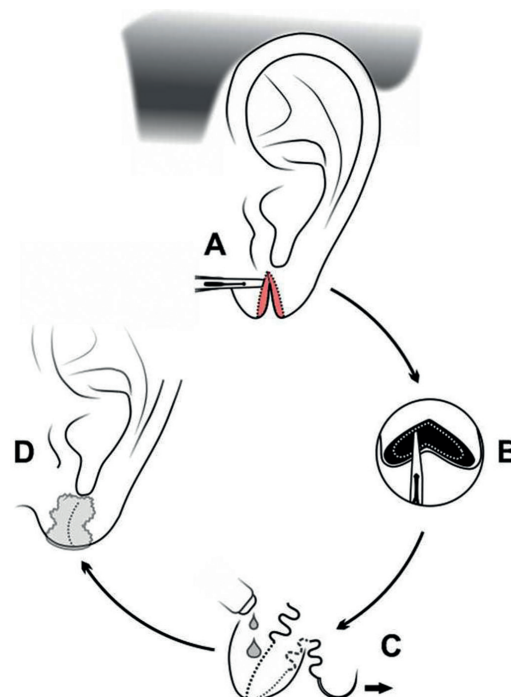


Figure 1. Surgical technique; **A:** Excision of cleft edges; **B:** Displacement of the skin edge; **C:** Intradermal suturing and start of adhesive bonding; **D:** Adhesive-bonded earlobe and exposed dressing.

of acute traumatic clefts (3) with open wound edges was obviously unnecessary;

- 1-mm displacement of the wound edges;
- intradermal suture with 5-0 monofilament nylon^{1,3}
- sealing of the sutured edges with cyanoacrylate adhesive;
- removal of intradermal sutures;
- dressing exposure.

Digital photographs were taken immediately prior to surgery, 30 and 90 days after the procedures, and at any time complications appeared, for surgical documentation.

The author observed the earlobes for symmetry, volume reduction, bottom edge alignment, and presence of unsightly scars at the 3-month evaluation. At this time, patients were asked whether they were satisfied with the outcome, rating the results from the surgery as satisfactory or unsatisfactory.

RESULTS

The study population characteristics and technical details of the surgical procedure are shown in Table 1. Figures 2 to 9 shows the results assessed, incidence of complications, illustrative cases, and cosmetic results.

Table 1. Sample definition, cleft characteristics and types of anesthesia.

Sample	24 patients; 36 clefts; 27 earlobes	
Age	5 to 47 years; average 29.7 years	
Sexo	Female	100%
	Male	0
Cause of clefts	Earrings	91.7% (33 clefts)
	Trauma	8.3% (3 clefts)
Extension	4 to 36 mm; average: 8 mm	
Clefts/earlobe	1 to 5, average: 1.3	
Anesthesia	Local	95.87% (23 patients)
	General	4.2% (1 patient)

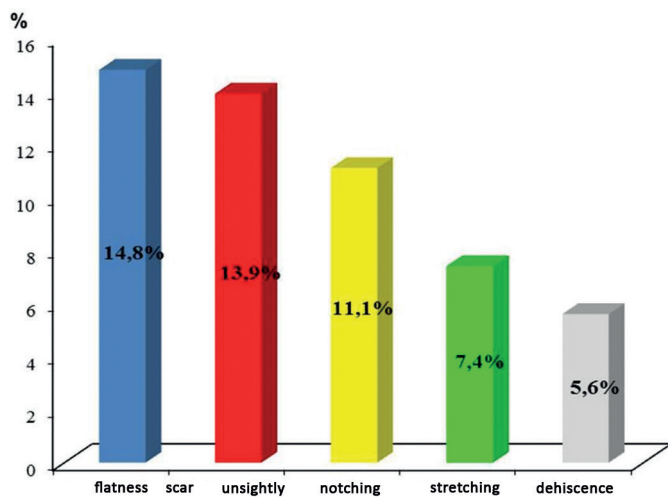


Figure 2. Complications.

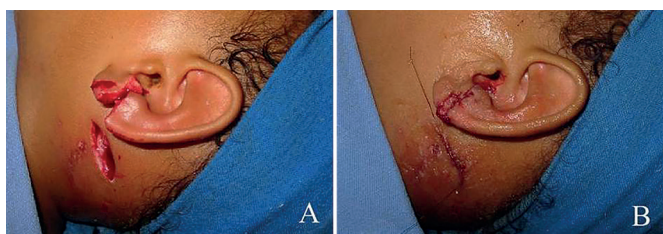


Figure 3. Traumatic left earlobe cleft in a 5-year-old child; A: Preoperative; B: Postoperative after bonding with tissue adhesive.

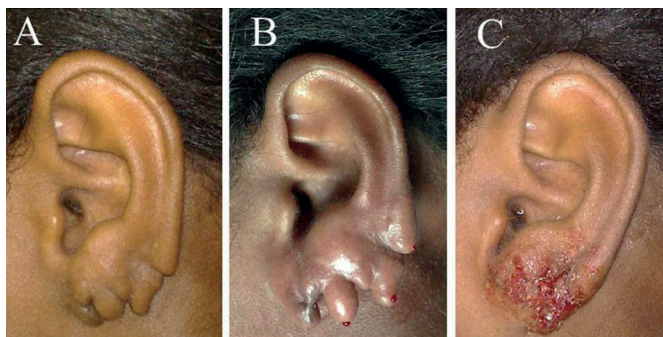


Figure 4. Triple earlobe cleft in a 27-year-old patient; A: Preoperative; B: After anesthetic infiltration; C: After bonding with tissue adhesive.

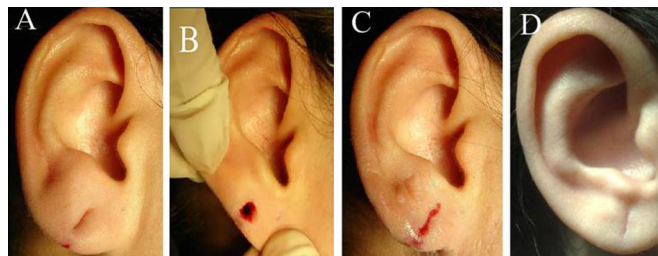


Figure 5. Incomplete earlobe cleft in a 35-year-old patient; A: After anesthetic infiltration; B: Excision of cleft edges; C: After adhesive bonding; D: Complication: depressed scar (POD 90).

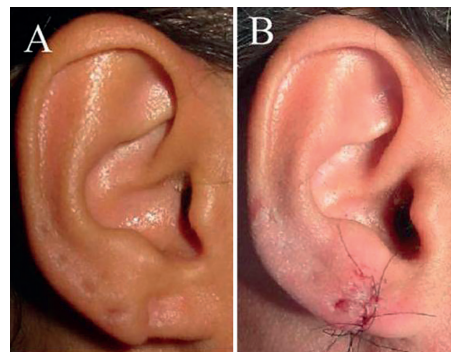


Figure 6. Notching in a 33-year-old patient (POD 90); A: Preoperative; B: Postoperative: suture correction.

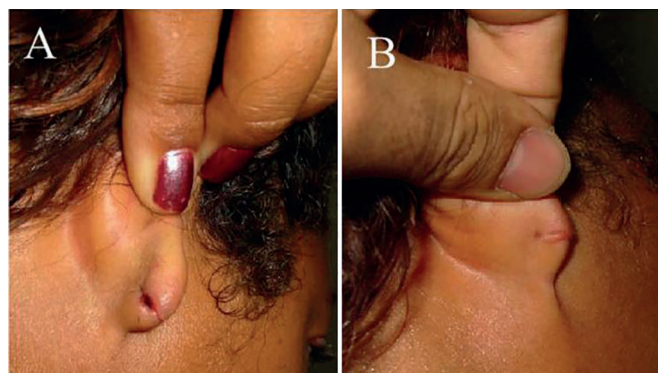


Figure 7. Dehiscence (posterior) in a 32-year-old patient (POD 7); A: Preoperative; B: Resulting hypertrophic Scar (POD 90).

DISCUSSION AND CONCLUSION

Ear piercing may result in early and late complications, despite being a low-risk procedure. The most serious complications include infections, keloid scarring, tissue avulsion, and TEL³.

TEL may be congenital, ischemic (compression by pressure earrings), cosmetic (erosion by pierced earrings), or traumatic. The relative incidence of each cause has not been reported². The present study shows that cosmetic injuries are the most common cause of TEL (94.4%), thus confirming the standard clinical practice^{2,6}.

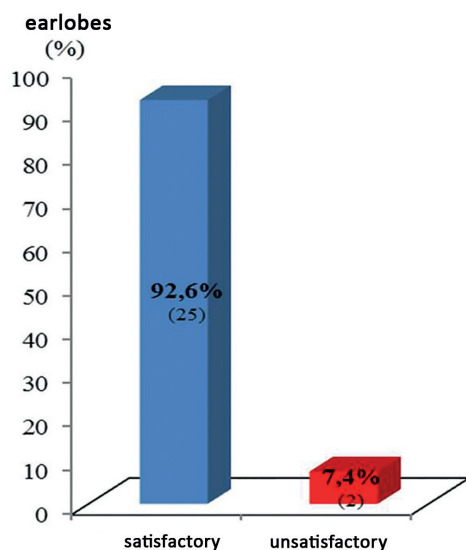


Figure 8. Aesthetic results.

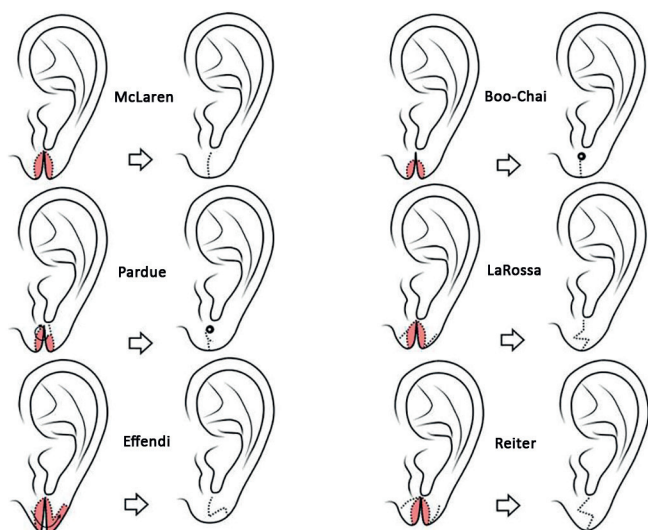


Figure 9. Surgical techniques.

Currently, TEL is the most common earlobe deformity, and is primarily caused by traction from heavy piercing earrings. The defect may be unilateral or bilateral, complete or incomplete, depending on the presence or absence of an intact skin edge on the periphery of the earlobe. Complete clefts often result from a small force applied to the earring placed in an incomplete cleft, which was previously extended. Less commonly, the cleft results from a strong, sudden traction on the earring. However, most patients ignore such trauma³⁻⁵.

There are numerous lobuloplasty methods (Figure 9)^{1,5,7}. McLaren⁸ first approached the subject in a four-case report. He addressed the problem by simple linear suturing after freshening of the cleft

edges and scar excision under general anesthesia². Boo-Chai⁶ reported congenital and acquired clefts, and designated congenital clefts as “coloboma lobuli.” In contrast to McLaren, Boo-Chai performed outpatient surgeries with local anesthesia. The technique consisted of excising the cleft edges, only leaving epithelium in the apex, wherein a rod was placed. Then, the cleft was closed linearly below the rod to redo the hole; 3 weeks later, the rod was replaced with an earring^{2,5,6,9}.

Pardue¹⁰, when treating patients seeking to continue using earrings, modified the Boo-Chai technique by using a small skin flap from one side of the cleft near the apex, which was looped to form the floor of the epithelialized canal around a nylon thread, suturing the open wound edges. The earring was only used for 6 weeks after the surgery to maintain the sutures².

Hamilton and LaRossa¹¹ published the first study with objective data collected from repairing acquired earlobe clefts in 14 women. They performed linear closure with Z-plasty at the bottom edge of the earlobe^{2,5,9}. Effendi⁹ reports a cleft reconstruction method that also corrects stretched and thin earlobes due to prolonged use of heavy earrings. The technique is an L-plasty, which begins with deepithelialization of the cleft edges. The posterior edge is further deepithelialized backwards until it is fitted into the end of the anterior flap. After suturing, the elongated earlobe is shortened in the vertical direction and lengthened in the horizontal direction. The earlobe is repierced after 90 days². Reiter & Alford² reported a series of 64 patients treated with full-thickness Z-plasty throughout the complete cleft in a comprehensive review on TEL.

Various Z-plasty techniques or small repairs have been reported for TEL correction since the publication of those seminal studies⁴. No useful purpose is served by repeating these data. Therefore, the references used in the present study are purposely limited and are summarized in Figure 9.

TEL repair has been influenced by the study of small case series and misadventures. The Boo-Chai technique leaves a large hole, which tends to become infected. Furthermore, the small rod left at the apex of the suture creates a very high earlobe hole. The Pardue technique is even more complex and was designed to avoid cleft recurrences. The Pardue flap fixes the position of the hole and gives it a firm bottom edge, also producing a large hole. Given these drawbacks, some authors advise against maintaining the earring hole². The Effendi technique causes a trapdoor deformity both vertically and horizontally, which may leave a notch at the bottom edge of the earlobe².

The technique used by the author (McLaren technique) is simpler than the Pardue technique and more advantageous than the Boo-Chai excision, enabling placement of a new hole anywhere in the earlobe. However, the technique precludes the immediate use of earrings³.

In the present study, no earlobe was repierced. However, when this is requested, the earlobe should be pierced when soft, without notches or linear white scars (thickness < 1 mm), and always after 90 postoperative days (POD)³. The McLaren technique allows symmetric placement of holes and anywhere in the ear lobe.

Repiercing anywhere along the repair line is unjustifiable considering the increased risk of cleft recurrence² because the scar has reduced tensile strength^{12,13}. The rate of TEL recurrence in repierced earlobes has been reported to range from 0 to 14.7%^{2,3,6,9}. The technique used in the present case series provides time for the wound to heal; thus, in case of earlobe repiercing along the scar, the new hole becomes more stable and less prone to stretching and laceration³.

The overall rate of complications observed in the present study was 33.3% for repaired earlobes (9 of 27 earlobes) and 13.9% for the resulting scars (5 of 36 scars). Flattened earlobes (14.8%; 4) resulted from the inevitable removal of epithelialized edges of clefts along with a small flap of surrounding tissue. Notching occurred in 11.1% of cases (3) that were treated with new excision and simple suturing, without using cyanoacrylate; all cases resolved (Figure 6).

Notching and earlobe flatness are common complications when using wedge excision with linear repair, even if the result of surgery is considered satisfactory^{4,7}. In other studies, the occurrence rates of flatness and notching have been 22% and 5.8%, respectively; these rates are slightly higher than observed herein^{2,3}.

After reconstructing the earlobe, most authors performed Z-plasty at the earlobe edge to prevent notching^{2,5}. However, Z-plasty requires precise incisions and angles, increases the scar size, and is difficult to perform where there is lack of tissue, as occurs in the cleft earlobe^{2,7}.

In the present study, 7.4% (2) repaired earlobes became stretched. This problem has been reported in 0 to 1.5% of cases^{2,3}. The repair of incomplete earlobe clefts by edge deepithelialization and direct suturing may result in abnormal earlobes, either pointed or downward elongated¹.

The methods of Boo-Chai, Pardue, and Hamilton and LaRossa are satisfactory for earlobe clefts with adequate volume. However, if any of these methods

is used to reconstruct small earlobes, they will become thin and stretched. Furthermore, if the patient continues to wear heavy earrings, the cleft will reoccur⁹.

In the present study, the incidence of hypertrophic scars (height > 1 mm) was 5.6% (2 of 36 scars), 5.6% for depressed scars (depth > 1 mm), and 2.8% (1) for enlarged scars (width > 1 mm). No patient perceived such scars as unaesthetic or requested treatment. Hypertrophic scars resulted from earlobe dehiscence; other cases of unsightly scars were attributed to individual predisposition because they occurred spontaneously, with no detectable relationship to complications. The incidence of unsightly scars in the treatment of TEL has not been reported by other authors¹⁻¹¹.

The advantages of cyanoacrylates include the bactericidal effect, avoiding the use of dressings, cost-effectiveness, absence of suture marks, safety, ease, and speed of use. Therefore, use of cyanoacrylate glue is currently the skin closure method that pleases most users¹⁴⁻¹⁶.

In the present case series, there were 2 complications of dehiscence related to using tissue adhesive (5.6%), resulting from the inadvertent early removal of the adhesive film by the patients, leading to partial opening of the wound and hypertrophic scarring (Figure 7).

Dehiscence has been considered the most common complication from the use of cyanoacrylates (0.3% to 26%), and primarily occurs in wounds located in taut skin areas. The use of cyanoacrylates is particularly indicated for small, linear, low-tension repairs, including TEL closure, because the adhesive only provides a tensile strength similar to that of a 5-0 nylon suture^{14,15}.

In our country, the main obstacle to the use of tissue adhesives is the high cost^{15,16}. However, the method reported herein is cost-effective because it requires the use of only one tube of cyanoacrylate, which increases the cost of the procedure by \$ 25.00.

The assessment of cosmetic results showed a satisfactory rate (92.6%; 25), similar to that reported in the literature (91%; 100%)^{1-3,5,7,9,17}. These good results were attributed to the reduced extent of surgery, simplicity of the technique, and reduced rate of complications perceived by patients.

CONCLUSIONS

The use of simple excision and direct closure using cyanoacrylate for TEL proved safe, and had satisfactory cosmetic results (92.5%) in this group of patients.

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COLLABORATIONS

SCS Data analysis and/or interpretation; statistical analysis; final manuscript approval; study design; conducting operations and/or experiments; manuscript writing or content review analysis.

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*Corresponding author:

Sandro Cilindro de Souza

Rua Conselheiro Correa de Menezes, 182 - Horto Florestal - Salvador, BA, Brazil

Zip Code 40295-030

E-mail: sandrocilin@gmail.com