

## Original Research Article

# Incomplete ear lobe cleft repair with 100% trichloroacetic acid

Kumaresan Muthuvel<sup>1</sup>, Shanmuga Sekar<sup>1\*</sup>, Deepa M. S.<sup>2</sup>

<sup>1</sup>Department of Dermatology, PSG hospitals, Coimbatore, India

<sup>2</sup>Department of Dermatology, Cutis Skin Clinic & Cosmetology Center, R. S. Puram, Coimbatore, India

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### \*Correspondence:

Dr. Shanmuga Sekar,

E-mail: drshanmugasekar@gamil.com

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## ABSTRACT

**Background:** The aim of the present study was to assess the efficacy of 100% trichloroacetic acid (TCA) for the incomplete ear lobe cleft repair.

**Methods:** A total of 30 females with bilateral incomplete ear lobe cleft were included in the study group. Under local anaesthesia, 100% TCA was applied to the abraded surface with the help of toothpick till frosting was achieved and the wound was closed with a micropore tape. Patients were reviewed weekly and 100% TCA was applied until frosting was achieved, without abrasion on the edges of cleft once a week till complete closure of the ear lobe cleft.

**Results:** Out of 30 patients 28 (93.33 %) had complete closure of cleft. Two patients (6.66%) had incomplete closure even after four application of TCA. Temporary post inflammatory pigmentation was seen in 22 (73.33%) patients which subsided one week after the last TCA application. Minimum number of sittings required was one and maximum required for complete closure was 3 sessions.

**Conclusions:** Multiple applications, temporary post inflammatory pigmentation, inward rolling of edges, mild scarring as a result of secondary healing of the wound and failure to repair the bigger clefts were the disadvantages of this technique.

**Keywords:** Earlobe, Cleft repair, TCA

## INTRODUCTION

Repair of partial or incomplete ear lobe cleft is a common request in cosmetic surgery. Due to the upsurge in ear lobe piercing, more patients present with complications like ear lobe cleft dilatation, complete tear and mutilation. Many factors such as facial aging, local trauma and mechanical effects of the ear ring contribute to ear lobe clefts. Ear lobe clefts are generally classified as complete or incomplete. Complete clefts are usually unilateral and caused by trauma. Incomplete clefts are usually bilateral, seen in women who use heavy ear ring for a prolonged period. A partial cleft occurs when the piercing canal is elongated or deformed, but has not severed through the earlobe.

There are many surgical and non-surgical techniques described for ear lobe cleft repair.<sup>1-5</sup> Removal of the scar epithelium and approximation of the edges form the basis of these techniques. Phenol and trichloroacetic acid (TCA) has been used in non-surgical closure of ear lobe clefts.<sup>3</sup> We conducted a study to assess the efficacy of TCA in incomplete ear lobe cleft repair.

## METHODS

This study was conducted at department of dermatology, PSG hospitals for a period of one year from June 2014 to June 2015. A total of 30 females with bilateral incomplete ear lobe cleft were included in the study group. Patients with keloidal tendency, pregnant and

lactating females were excluded from the study group. Patients with complete clefts and those who had already undergone any surgical or non-surgical method for ear lobe cleft were also excluded from the study. Under local anaesthesia the edges of the cleft was initially abraded with number 11 surgical blade and 100% TCA was applied on the abraded surface with the help of toothpick till frosting was achieved as shown in Figure 1. The edges were approximated and the wound was closed with a micropore tape. No neutralization was needed. Patients were reviewed weekly. During the follow up visits the ear lobes were examined for any residual clefts. In case of any residual clefts 100% TCA was applied without abrasion on the edges of cleft once a week till complete cicatricial closure of the ear lobe cleft was seen. No oral or topical antibiotics were prescribed. Patients were asked to rate the results as excellent, good or poor.



**Figure 1: Frosting following 100% TCA application after abrading the cleft edges.**

## RESULTS

Out of 30 patients 28 (93.33 %) had complete closure of cleft as given in Figure 2-4. Two patients (6.66%) had incomplete closure even after four applications of TCA. The age group ranged from 25 to 54 and the mean age was 35.56. Immediate complications such as erythema and swelling were observed in 20 (66.66%) patients. Temporary post inflammatory pigmentation was seen in 22 (73.33%) patients as in Figure 5 which subsided one week after the last TCA application. Minimum number of sittings required was one and maximum required for complete closure was 3 sessions with an average of 1.9 applications as given in Table 1. Nine (30%) patients had inward rolling of the edges which healed with subsequent TCA applications. Two patients (6.66%) who had incomplete closure rated results as poor, 20 (66.66%) rated good and 8 (26.66%) rated results as excellent as seen in Figure 6. No long term complication such as keloid formation or recurrence of ear lobe cleft were observed during the follow up period of one year after the procedure.



**Figure 2: Ear lobe cleft before and 4 weeks after the procedure.**



**Figure 3: Ear lobe cleft before and 4 weeks after the procedure.**



**Figure 4: Ear lobe cleft before and 4 weeks after the procedure.**



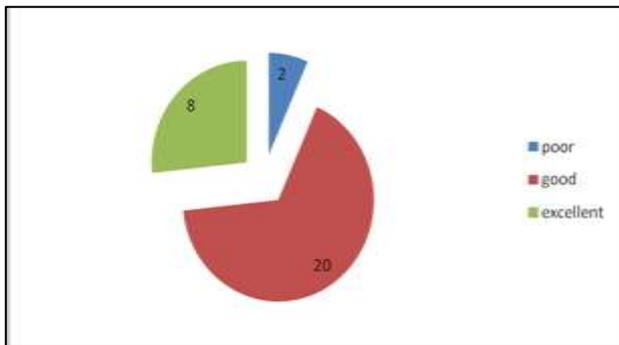
**Figure 5: Post inflammatory pigmentation after the procedure.**

**Table 1: No. of applications.**

No of patients	No of applications	Percentage
12	1	40
11	2	36.6
5	3	16.7
2	4	6.7
30	1.9	100



**Figure 6: Incomplete closure of cleft after 4 applications.**



**Figure 7: Pie chart showing improvement after TCA application.**

## DISCUSSION

Many surgical and non-surgical methods for ear lobe cleft repair has been reported in literature.<sup>1-5</sup> Each technique has its own advantages and disadvantages. Notch formations, level difference on lobe margins, cornered earlobe defect and keloid formation were some of the described consequences in the surgical methods used on earlobe cleft treatment.<sup>1</sup> TCA has been used with success in non-surgical closure of ear lobe cleft repair.<sup>3</sup>

TCA is an analogue of the acetic acid that destroys cell proteins, resulting in local inflammation and crust formation, followed by cicatricial tissue organization when applied topically.<sup>3</sup> This process leads to cicatricial tissue adhesion by secondary wound healing, explaining

the mechanism in earlobe cleft treatment.<sup>3</sup> Mild to moderate discomfort at the site of application may occur, but no systemic side effects have been reported after topical use of TCA.<sup>3</sup>

Although non-surgical closure with 90% TCA has been reported with good success, it required an average of 3.8 applications for complete closure of ear lobe cleft.<sup>3</sup> In this study we decided to abrade the ear lobe cleft edges to create a raw area first so that the subsequent 100% TCA application would facilitate a faster cicatricial adhesion of the cleft edges. Minimum number of sittings required was one and maximum required for complete closure was 3 sessions with an average of 1.9 applications in our study. Inward rolling of the edges was seen in 9 (30%) patients in our study which may be due to inaccurate approximation of the cleft edges and it healed with subsequent TCA application. Similar findings has been reported by de Mendonça et al.<sup>3</sup>

Temporary post inflammatory pigmentation was seen in 22 (73.33%) patients which subsided one week after the last TCA application. Since the skin type in our study group were Fitzpatrick skin types 4 and 5 pigmentation was expected following 100% TCA application.

Two patients (6.66%) who had incomplete closure rated results as poor. These two patients had a bigger and almost a complete cleft as presented in Figure 7. For these types of clefts surgical closure with suturing could have been a better option for complete closure. Patients were followed up for a period of one year and re piercing were advised 3 months after the cleft repair. All the patients who had complete closure got re-pierced and there were no recurrence during a follow up period of 9 months.

## CONCLUSION

This technique of abrasion of clefts with subsequent TCA application is an alternative to the various surgical and non-surgical methods of ear lobe cleft repair. Multiple applications, temporary post inflammatory pigmentation, inward rolling of edges, mild scarring as a result of secondary healing of the wound and failure to repair the bigger clefts were the disadvantages of this technique. Ease of application, as no special skills are required, ability to do the procedure as office based surgery and low costs are the advantages of this technique.

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