

A Comparative Study of Elongation of Earlobe Following Two Different Modalities for Repair of Posttraumatic Split of Earlobe: Simple Side-to-Side Closure and Closure with Anterior Posterior Flap Modification

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Abstract

Context: Ear piercing is a common practice in women seen in the Asian and African subcontinents. Traumatic elongation of ear lobe cleft is seen following long-standing use of heavy jewellery on the ear, or a tug on the earring. These inadvertent tears of the lobe have resulted in patients seeking earlobe repairs, which are routinely performed as an outpatient procedure. Various surgical methods exist for earlobe repair from the simple closure to modified flaps and Z-plasty. Certain methods with excessive tissue loss can result in elongation of the earlobe postprocedure. **Aims and Objectives:** This study aimed to compare the elongation of earlobe post repair with simple side-to-side closure versus closure with anterior–posterior flap modification. **Settings and Design:** A cohort study conducted at the outpatient department in a tertiary care hospital of Mumbai. **Materials and Methods:** A total of 30 women with bilateral, equal, or almost equal earlobe clefts were enrolled in this study. After informed consent, simple side-to-side closure was performed on one earlobe and closure with anterior–posterior flap modification was carried out on the other side in the same patient under strict aseptic precautions. Patients were followed up two weekly till 12 weeks postoperative for any possible elongation of earlobe. **Statistical Analysis Used:** The data were analyzed using Statistical Package for the Social Sciences (SPSS, IBM, New York, USA) software package for windows, version 20.0. Quantitative and qualitative variables were presented as mean \pm standard deviation (SD) and as frequency with percentages. The comparison was done with paired *t*-test. **Results:** It was seen that earlobe repairs led to significant elongation of the lobe with simple closure, which did not occur with flap modification irrespective of cleft sizes. **Conclusion:** It is imperative to choose a correct method to avoid postprocedure elongation of earlobe.

Keywords: Cleft, ear lobe, elongation, flap, modification, repair

INTRODUCTION

Ear piercing is a worldwide practice. It was done with an aim to create a hole in the pinna for the insertion of earrings, the history of which dates back to centuries, when earrings were worn in Rome by slaves.^[1] Piercing nowadays is being done on almost any part of the body. The ear is still the most common part that is pierced and provides the user with a whole range of styles.^[2]

Anatomically, the pinna is a resilient structure, which is thrown into several folds by the contour provided to it by

cartilage. On the contrary, the lobe is made up of fibrofatty tissue, making it easy to pierce.^[3]

Elongation post earlobe piercing is a common condition faced by the dermatologic surgeons. Pierced earlobes may encounter trauma from either heavy earrings, a sudden

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How to cite this article: Hemdani R, Chatterjee M, Markanday K. A comparative study of elongation of earlobe following two different modalities for repair of posttraumatic split of earlobe: Simple side-to-side closure and closure with anterior posterior flap modification. *J Cutan Aesthet Surg* 2020;13:5-10.

Access this article online

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10.4103/JCAS.JCAS_92_19

pull on the earring, chronic friction from use of headgear, or telephones while wearing earrings, or simply because of a poor piercing technique. Several retrospective studies have reported a 1%–2% incidence rate of torn earlobes in patients wearing earrings.^[4]

Torn earlobes, or cleft earlobes, may be classified as either a complete or partial. A complete cleft usually occurs when the earring is acutely pulled out of the original pierced hole of the earlobe forming a divided medial and lateral limb. A partial cleft occurs when the piercing canal is elongated or deformed, but has not severed through the earlobe. Blanco-Davila and Vasconez^[5] have reported a subclassification for partial clefts based on the distance between the original piercing and the inferior margin of the earlobe.

Several studies describe various techniques for surgical correction of an elongated earlobe, which include partial cleft repair, side-to-side closure with cold steel, side-to-side closure with punch biopsy technique, side-to-side closure with Z-plasty, and purse string closure among many others.

The aim of our study was to assess the elongation of the earlobe post repair and compare the outcomes of the two different repair modalities: simple side-to-side closure versus closure with anterior–posterior flap modification.

SUBJECTS AND METHODS

This was a prospective cohort study conducted in the Department of Dermatology in a tertiary care hospital in Maharashtra, India, after approval by the Research/Ethics committee.

The study was conducted over a period of 1 year from June 2017 to May 2018. Sample size calculation and randomization was not done as patients were taken as per the eligibility criteria during the study period.

We included 30 women with equal or almost equal bilateral earlobe clefts. After routine pre-operative investigations, a written and informed consent was taken from the patients prior to undergoing the procedure.

One side earlobe was repaired with simple “side-to-side closure” technique and the other with “closure with anterior posterior flap modification.” The repairs were performed under local infiltration anesthesia with 2% lignocaine and adrenaline mix and following strict aseptic precautions. The patients were followed up on the 2nd and 12th postoperative week.

PROCEDURE

Side-to-side closure

It involved freshening of the cleft with the help of cold steel and thereafter suturing the two freshened edges side-to-side [Figure 1A].

Closure with anterior–posterior flap modification

In this repair technique, we raised two flaps: one anteriorly on one side of cleft and one posteriorly on the diagonally opposite side to the previous flap. These two flaps then function as salon doors [Figure 1B], which are pulled through the cleft to cover the defect anteriorly (posterior flap comes over anterior defect) and posteriorly (anterior flap goes through the cleft to cover posterior defect).

Any elongation of the earlobe postoperative was noted and measured for each patient. All the collected data were entered in Microsoft Excel Sheet (Microsoft Corporation, NewYork, USA). The data were then transferred and analyzed using Statistical Package for the Social Sciences software, version 20.0. Quantitative and qualitative variables were presented as mean ±standard deviation (SD) and as frequency with percentages. The comparison was done with paired *t*-test.

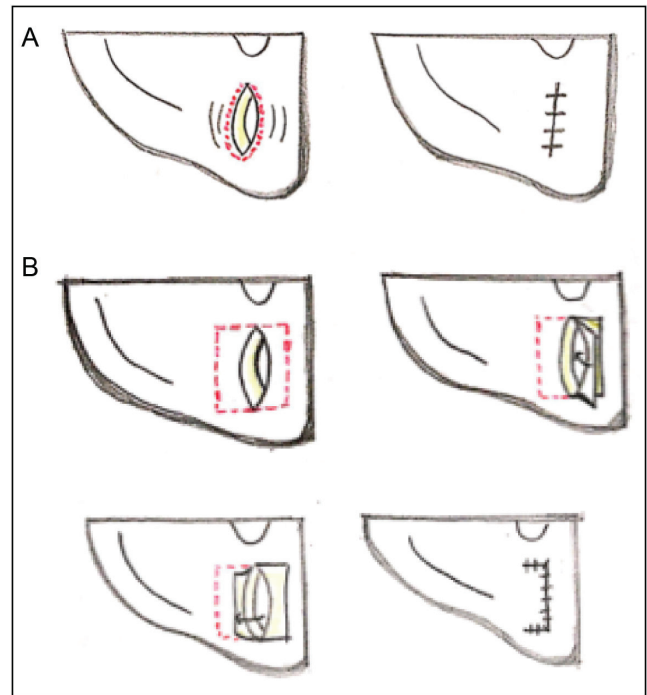


Figure 1: (A) Side-to-side closure. (B) Anterior posterior flap modification

		N	Mean	Std. deviation	Paired differences		t	df	P value
					Mean difference	Std. deviation			
Pair 1	Side-to-side elongation (mm)	30	2	0.8094	1.85	0.6967	14.545	29	<0.001
	Flap elongation (mm)	30	0.15	0.4183					

RESULTS

In our study, we chose 30 women with bilateral earlobe clefts. They underwent surgical repair in both ears, which was assessed for any lobe elongation postoperative. The results are as follows:

On comparing the mean values of elongation(mm), it was seen that the mean value were higher with side-to-side closure than with flap modification technique, with a overall difference of 1.85 mm [Table 1 and Figure 2], which was statistically significant with at $P < 0.001$, as compared to the flap modification technique.

On comparing the elongation with respect to various age groups [Table 2 and Figure 3], it was observed that all the three chosen age groups (21–35, 36–50, >50 years) showed a statistically significant elongation with side-to-side closure than with flap modification.

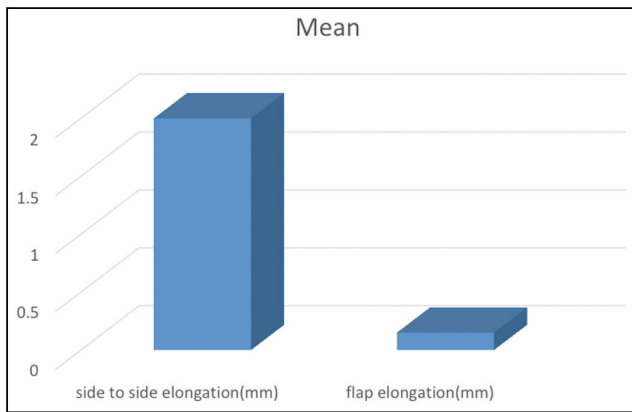


Figure 2: Comparison of the mean values of earlobe elongation with both the techniques

On comparing the elongation with respect to the length of the clefts, it was seen that elongation with side-to-side closure was more than flap modification in all three size range values of cleft (4–6, 7–9, and 10–12 mm) and statistically significant in each size range, as seen in Table 3 and Figure 4.

Table 4 (added as additional data) shows the mean, standard deviation, and median values of elongation overall with the two techniques.

DISCUSSION

Bilateral clefts occur commonly as earrings are worn in both ears as observed in our study. Various configurations of surgical flaps have been described in an effort to improve cosmesis, decrease scar formation, and preserve or create an earring hole.

McLaren^[6] first reported a simple linear closure for partial earlobe clefts by de-epithelializing the partial cleft scar with a scalpel and closing the margins in a straight-line. This technique removes the entire partial cleft without

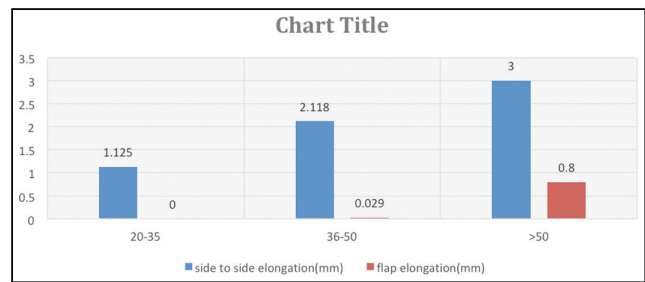


Figure 3: Comparison of the earlobe elongation with respect to various age groups

Table 2: Comparison of earlobe elongation post two techniques as per the age groups using paired t-test

Age	N	Mean	Std. deviation	Paired differences		t	df	P value	
				Mean difference	Std. deviation				
20–35	Side-to-side elongation (mm)	8	1.125	0.6409	1.125	0.6409	4.965	7	0.002
	Flap elongation (mm)	8	0	0					
36–50	Side-to-side elongation (mm)	17	2.118	0.5163	2.0882	0.5073	16.972	16	<0.001
	Flap elongation (mm)	17	0.029	0.1213					
>50	Side-to-side elongation (mm)	5	3	0.3536	2.2	0.5701	8.629	4	0.001
	Flap elongation (mm)	5	0.8	0.7583					

Table 3: Comparison of earlobe elongation post two techniques as per the length of the defect using paired t-test

Cleft size	N	Mean	Std. deviation	Paired differences		t	df	P value	
				Mean difference	Std. deviation				
4–6	Side-to-side elongation (mm)	10	1.25	0.677	1.25	0.677	5.839	9	<0.001
	Flap elongation (mm)	10	0	0					
7–9	Side-to-side elongation (mm)	15	2.167	0.488	2.1333	0.4806	17.193	14	<0.001
	Flap elongation (mm)	15	0.033	0.1291					
10–12	Side-to-side elongation (mm)	5	3	0.3536	2.2	0.5701	8.629	4	0.001
	Flap elongation (mm)	5	0.8	0.7583					

incising through the inferior aspect of the earlobe. As seen in our study, on comparing the results of side-to-side closure with anterior-posterior flap modification, it was observed that postoperative elongation was lesser in the ears which received the flap modification with an average difference of 1.85 mm. This is ascribed to the fact that side-to-side closure entails tissue loss resulting in earlobe elongation visible immediately following surgery [Figure 5], whereas anterior posterior flap modification involves creation of flaps alone, thereby avoiding tissue loss and hence theoretically, no lobe elongation occurs [Figure 6 (A,B,C) and Figure 7 (A,B)].

In our study, the maximum numbers of patients (17/30) with split earlobes were in the age group of 36–50 years of age. This was also seen in a study conducted in Gujarat,



Figure 5: Ear lobe elongation post simple side-to-side closure

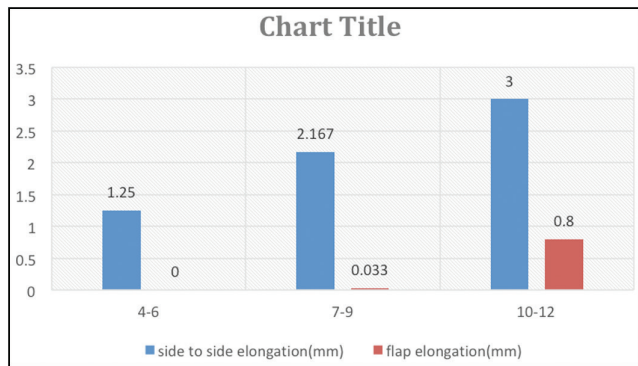


Figure 4: Comparison of the earlobe elongation with respect to the length of the clefts

Table 4: Mean standard deviation and median values

			Mean	Maximum	Median	Minimum	Percentile 25	Percentile 75	Standard deviation
Side-to-side elongation (mm)			2.0	3.5	2.0	.0	1.5	2.5	.8
Flap elongation (mm)			.2	1.5	.0	.0	.0	.0	.4
Age	20–35	Side-to-side elongation (mm)	1.1	2.0	1.3	.0	.8	1.5	.6
	36–50	Side-to-side elongation (mm)	2.1	3.0	2.0	1.0	2.0	2.5	.5
	>50	Side-to-side elongation (mm)	3.0	3.5	3.0	2.5	3.0	3.0	.4
Age	20–35	Flap elongation (mm)	.0	.0	.0	.0	.0	.0	.0
	36–50	Flap elongation (mm)	.0	.5	.0	.0	.0	.0	.1
	>50	Flap elongation (mm)	.8	1.5	1.0	.0	.0	1.5	.8
Cleft size	4–6	Side-to-side elongation (mm)	1.3	2.0	1.3	.0	1.0	2.0	.7
	7–9	Side-to-side elongation (mm)	2.2	3.0	2.0	1.5	2.0	2.5	.5
	10–12	Side-to-side elongation (mm)	3.0	3.5	3.0	2.5	3.0	3.0	.4
Cleft size	4–6	Flap elongation (mm)	.0	.0	.0	.0	.0	.0	.0
	7–9	Flap elongation (mm)	.0	.5	.0	.0	.0	.0	.1
	10–12	Flap elongation (mm)	.8	1.5	1.0	.0	.0	1.5	.8

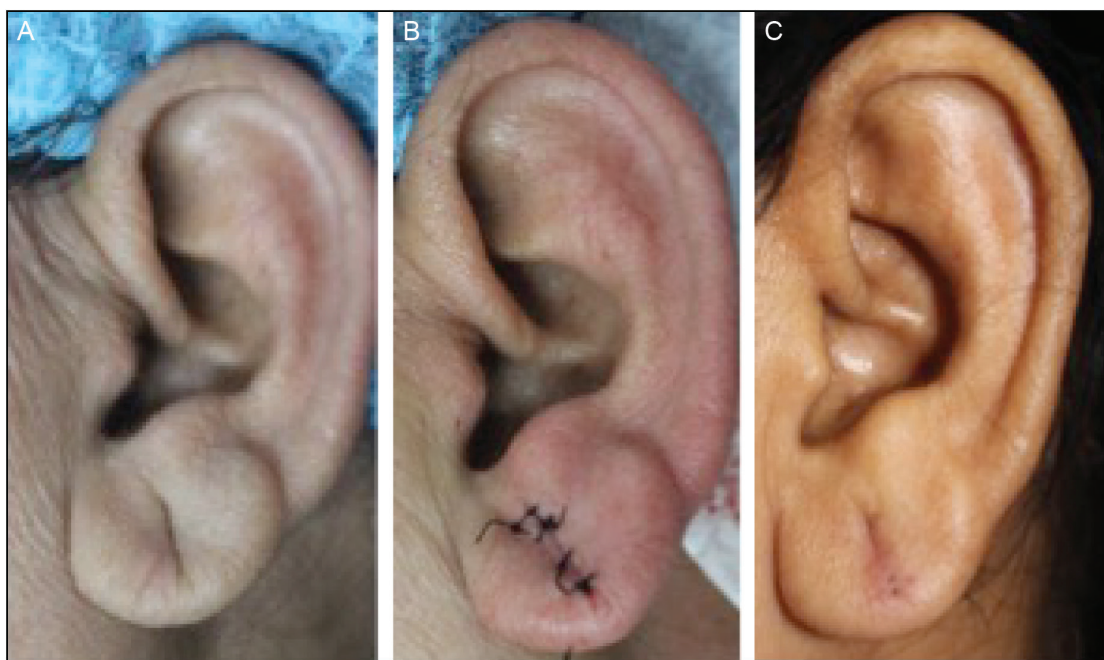


Figure 6: Anterior posterior flap modification: (A) preoperative, (B) immediate postoperative, and (C) 2 weeks postoperative

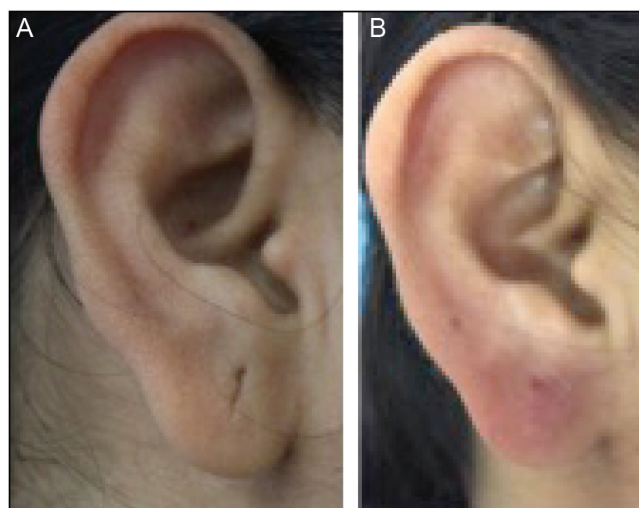


Figure 7: Anterior posterior flap modification: (A) preoperative and (B) 12 weeks postoperative

where similar conclusions were drawn regarding the patient's age.^[7]

A study by Singh *et al.*^[8] in Kanpur suggested that the best method for closure of lobe elongation was a simple side-to-side closure as compared to “V”-shaped flap approach or “L” plasty. Although anterior posterior flap modification has been used earlier in studies, it has never been compared with side-to-side closure. A study by Altıntaş *et al.*^[9] in Istanbul stated that side-to-side closure does not give satisfactory results if the defect in the earlobe is large, which is similar to our study, wherein larger defects showed better postoperative results with flap modification as compared to side-to-side closure

with significant elongation in the latter procedure. It is explainable by the fact that as the cleft size increases, the elongation of lobe also increases as freshening involves more tissue loss with larger cleft sizes.

Limitations: As per the eligibility criteria, females with equal or almost equal cleft sizes were included into the study. This comprised of only a small group and hence the small sample size.

CONCLUSION

On the basis of our results of repair of earlobe with two different techniques as described above, we propose anterior–posterior flap modification as a novel technique of earlobe repair with none to minimum elongation of earlobe post repair and hence suitable for unilateral cleft repairs where maintenance of the lobe symmetry is of prime importance.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Gabriel OT, Anthony OO, Paul EA, Ayodele SO. Trends and complications of ear piercing among selected Nigerian population. *J Family Med Prim Care* 2017;6:517-21.
2. Khemka A. Top 16 different types of ear piercing. Available at: <https://listsurge.com/top-16-different-types-of-ear-piercings/>. [Last accessed on 30 August 2017].
3. Chummy SS. *Last's anatomy. Regional and applied*. 12th ed. Ireland, Dublin: Churchill Livingstone; 2011. p. 413-4.
4. Haughie GE, Biggar RJ. Medical problems of ear piercing. *NY State J Med* 1975;75:1460-2.
5. Blanco-Dávila F, Váscquez HC. The cleft earlobe: a review of methods of treatment. *Ann Plast Surg* 1994;33:677-80.
6. McLaren LR. Cleft ear lobes: a hazard of wearing ear-rings. *Br J Plast Surg* 1954;7:162-5.
7. Khilnani AK, Thaddanee R. Clinical and demographic profile of cases requiring ear lobe repair in North Gujarat. *Natl J Med* 2013;3:140-2.
8. Singh SK, Thapliyal GK, Singh N, Shukla A. Ear lobe cleft correction by simplest technique. *Rama Univ J Dent Sci* 2015;2:54-6.
9. Altıntaş A, Çelik M, Yeğin Y, Kayabaşoğlu G. Auricular lobuloplasty. *Türk Arch Otorhinolaryngol* 2017;55:172-6.