

CASE SERIES

Surgical repair of cleft earlobes caused by pressure necrosis: A patient record review describing clinical and operative characteristics at a tertiary referral hospital in Abuja, Nigeria

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Abstract

Plastic surgeons encounter cleft earlobes as either congenital or acquired lesions. This retrospective report details the cases of 12 patients with earlobe clefts, only 1 of which was a congenital cleft, managed at a teaching hospital in Abuja, Nigeria, over 18 months. Nine patients in this series were children ≤ 2 years of age, and 3 were adults in their 20s or 30s. Eight patients presented with pressure necrosis from gold-plated stud earrings, and 3 patients had traction injuries from hoop earrings. According to the Blanco-Dávila and Vásconez classification system, 1 patient had a type I cleft, 6 patients had type II clefts, and 5 patients had type III clefts. The corrective techniques employed were the Pardue method (n=2), Z-plasty (n=5), and a combination (n=5) of the Pardue and Z-plasty methods. Immediate surgical outcomes were favourable; however, all patients were lost to follow-up.

Keywords: cleft earlobe, pressure necrosis, earlobe repair, Nigeria

Introduction

Body piercing, a method of body adornment well recognized since antiquity,^{[1],[2]} is most commonly seen in the form of earlobe piercing. This procedure, although widespread, is not without potential complications, including some that are life-threatening.^[3] Acquired cleft earlobe is an uncommon complication of ear piercing,^{[4],[5]} but its incidence has increased as the practice of ear piercing has continued to be fashionable.^{[6],[7]} Acquired cleft of the earlobe is commonly caused by sudden traction on the earlobe or the wearing of heavy earrings.^[6] Pressure necrosis has rarely been reported as a cause of cleft earlobe.^{[8]-[10]} Nnadozie et al.^[8] alluded to aseptic ear-piercing practices being the primary cause of cleft earlobe secondary to necrotizing soft tissue infection. A cross-sectional survey conducted by Gabriel et al.^[5] determined a low incidence of infection (13.4%) and cleft earlobes (8.5%) as complications of earlobe piercing, though the majority of their respondents had their ears pierced at home with no specific attention to asepsis. Most patients present as chronic cases,^[6] though some may present as acute cases.^[5]

Acquired cleft of the earlobe is classified as complete or incomplete, each of which could be unilateral or bilateral, as per the classification outlined by Blanco-Dávila and Vásconez.^[7] Complete tears usually result from sudden traction on the earlobe, while partial tears are more common in older women due to the chronic use of heavy earrings.^{[11],[12]} Clefts of the earlobe are further subclassified into 3 types: type I (boundaries of the cleft hole extending less than half the distance between the original piercing and the inferior margin of the earlobe), type II (boundaries of the cleft hole extending more than half the distance), and type III (also known as complete cleft of the earlobe) where the cleft hole completely splits the earlobe.^{[11],[13]}

Various methods of repair have been described for the various grades from ancient times^{[1],[11]} to many other methods by recent authors.^{[3],[6]-[11]} The repair methods are classified into straight-line or broken-line repair.^[14] Most of these are fraught with recurrence or cosmetic dissatisfaction.^{[6],[15]}

We report 12 patients with acquired cleft earlobe who were operated on in our plastic surgery unit.

Table 1. Characteristics of patients who underwent cleft earlobe repair over 18 months at a teaching hospital in Abuja, Nigeria (N=12)

Variable	n
Age	
9 months	2
10 months	2
12 months	3
14 months	1
24 months	1
26 years	1
37 years	2
Cleft laterality	
Left	6
Right	6
Pathogenesis	
Congenital	1
Pressure necrosis from stud earrings	8
Traction injury from hoop earrings	3
Blanco-Dávila-Vásconez cleft type^[7]	
I	1
II	6
III	5
Repair type	
Pardue	2
Z-plasty	5
Pardue + Z-plasty	5

Methods

In this retrospective review of patient records, data were collected for all patients who underwent surgical repair for cleft earlobes during an 18-month period.

Three repair techniques were employed in the reported cases. The first, known as Pardue repair, is a straight-line method involving the excision of the cleft margins while preserving a small transpositional flap to facilitate the recreation of an earring hole at the time of the repair (Figure 1).[16] The second technique, a broken-line repair, is similar to the first but incorporates a Z-plasty, as described by Hamilton and LaRossa (Figure 2).[17] The final technique consists of Z-plasties alone, with ear piercing performed at a subsequent appointment, a method introduced by Harahap (Figure 3).[18]

Results

During the 18-month period, 12 ear clefts were repaired. The patients' ages ranged from 9 months to 37 years, with 9 of the repairs performed on children ≤ 2 years of age (Table).

The incidence of cleft earlobes was evenly distributed between the left and right ears.

All cases were acquired, with the exception of 1 congenital cleft. The most prevalent cause was pressure necrosis from stud earrings (n=8), followed by traction injury from hoop earrings (n=3). Notably, all instances of pressure necrosis occurred in children.

According to the Blanco-Dávila and Vásconez classification, type II clefts (n=6) were the most common, followed by type III (n=5), then 1 type I (n=1).

All patients with pressure necrosis had experienced 72 hours of oedema, and dark patches were observed by the caregivers before the cleft earlobes were noticed.

Pardue repair alone was performed on 2 of the patients, while Z-plasty was used for 5 of the repairs, and a combination of Pardue repair and Z-plasty was applied to the other 5 cases.

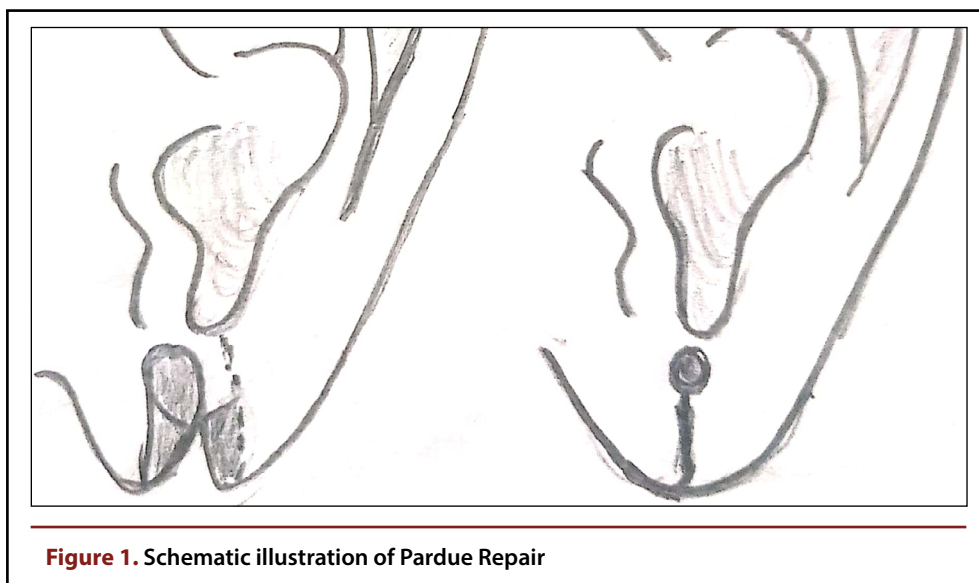


Figure 1. Schematic illustration of Pardue Repair

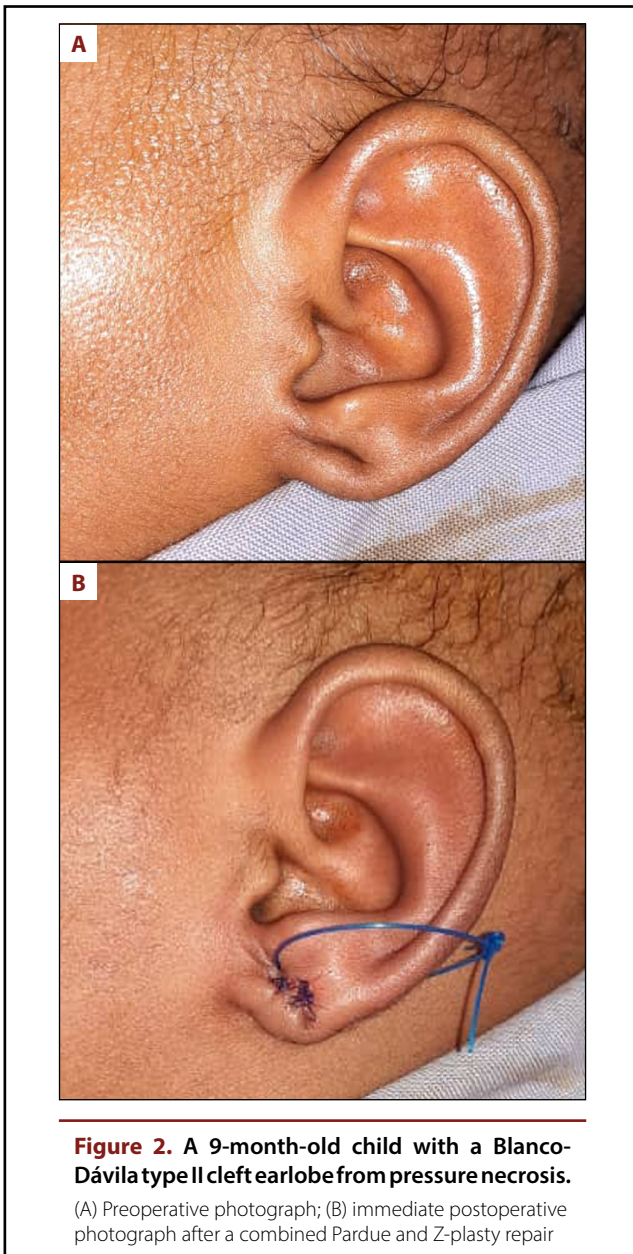


Figure 2. A 9-month-old child with a Blanco-Dávila type II cleft earlobe from pressure necrosis.

(A) Preoperative photograph; (B) immediate postoperative photograph after a combined Pardue and Z-plasty repair

All surgical repairs on children were conducted under general anaesthesia, while local anaesthesia, specifically plain lidocaine, was used for adults.

Discussion

The cleft earlobe is typically classified as either congenital or acquired.[6],[19] While acquired cleft earlobes predominantly occur in adults,[7] our series revealed a higher incidence among children under 2 years of age. Earlobe piercing is commonly performed in infancy in our context. Gabriel et al.[5] found that 66% of respondents pierced their children's earlobes within the first 4 weeks of life. This was similarly reported by Haboor and El Mustafa.[3] Although the usual causes of cleft earlobe are traction and gravity,[6],[7] our series identified a rarer cause: pressure necrosis from stud earrings. Pressure necrosis as a cause of acquired cleft earlobe was initially reported by McLaren[9], as well as Wallace and Garretts,[10] as a complication of earrings with spring clips, which, like stud earrings, can exert excessive pressure on the earlobes.[20] More recently, Nnadozie et al.[8] described necrotizing fasciitis secondary to non-aseptic ear piercing as a probable pathophysiological mechanism. Gabriel et al.[5] found that only 6% of their participants used a piercing gun, while 71% used stud earrings, and 23% used a needle and thread for piercing.[5] The earlobe's anatomy, comprising skin, fibrofatty tissue, end arteries, and nerve endings,[21] may elucidate why excessive pressure from stud earrings can result in pressure necrosis. The fact that all the affected children were ≤ 2 years old might explain why the parents did not notice the pain. As Gabriel et al.[5] found, many parents believe that children of this age group are not aware of pain in their earlobes. Nnadozie et al.[8] also observed that their patients did not display discomfort until swelling and dark patches on the earlobes were seen by the mothers. As with our series, there was an absence of discharge or systemic symptoms.

In our series, 5 patients (42%) were adults with type III injuries, which corroborates the findings reported by Hasen,[12] whose series included 24 cleft earlobe repairs and 11 adults who underwent procedures for complete clefts (46%).

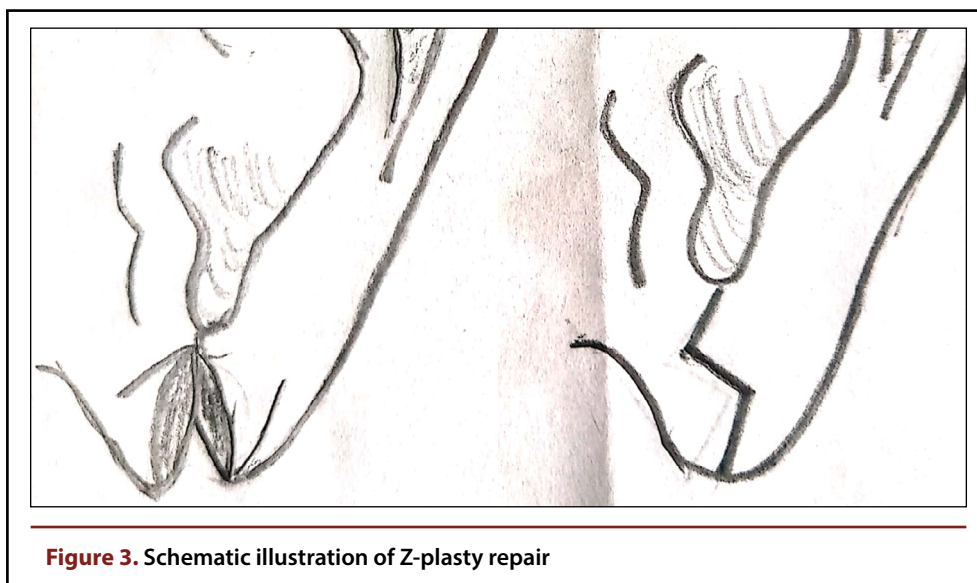


Figure 3. Schematic illustration of Z-plasty repair

Various repair methods for cleft earlobes, ranging from ancient practices[22] to modern techniques,[3]-[6],[11] have been documented over time. Furthermore, adhesive earlobe support patches, made of transparent plastic and claimed to prevent earlobe stretching and tearing, are commercially available; however, their effectiveness seems to lack supporting scientific evidence. All children in our series underwent repair under general anaesthesia, with the repair method being a combination of Pardue and Z-plasty, as described by Hamilton and LaRossa,[17] eliminating the need for subsequent ear-piercing. For patients with thinned earlobes, multiple Z-plasties were employed, and ear piercing was performed at a later date. Patients with type I cleft earlobes underwent Pardue repair.[16] The outcomes were satisfactory to the surgeons, patients, and parents, but all patients were lost to follow-up, preventing long-term assessment.

One of the main complications of repiercing the earlobe is cleft recurrence, which we did not encounter in our series. This aligns with the report by Lane and O'Toole,[23] who also noted a high rate of loss to follow-up.

Conclusions

The practice of ear piercing is common in Africa; however, to our knowledge, no previously published reports have described pressure necrosis as a complication affecting patients in Africa. Although ear piercing is predominantly performed by nonmedical professionals, it is crucial to establish guidelines to prevent and mitigate the potential complications. The mechanisms underlying pressure necrosis warrant further investigation, and parents should be educated to recognize early symptoms to prevent earlobe clefts and other complications.

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