

# Earlobe Keloid: A New Classification System

Oshiozimedede Quincy AIGBONOGA

Plastic and Reconstructive Unit, Irrua Specialist Teaching Hospital, Irrua/Ambrose Alli University,  
Ekpoma/ADIZA Hospital, Jattu, Edo State, Nigeria.  
ORCID ID: <https://orcid.org/0000-0003-0352-403X>

**THEOREM:** Earlobe keloid can be clinically classified into five (5) major categories based on the surface of the earlobe, nodularity, planarity, helical rim extension and laterality. The main categories, except for the type 3 are further subdivided based on the degree of involvement.

**METHOD:** This classification system was an observational finding among 48 earlobe keloids managed in consecutive 45 patients seen by me between 2017 and 2018 in the plastic surgery clinic of Irrua Specialist Teaching Hospital (ISTH), Edo state, Nigeria. The data were obtained from the documented clinical records and preoperative clinical photographs. The proposed classification system was devised from review of the clinical documentations and photographs. Ethical approval for the study was obtained from the ISTH Research and Ethics committee and informed consent was taken from patient recruited for the study. The 48 earlobe keloids were managed by intralesional excision biopsy, adjuvant intralesional triamcinolone injection and topical silicone gel application.

**RESULTS:** The classification system was successfully devised and applied in the categorization of 48 earlobe keloids in 45 patients with adequately documented clinical data and clinical photographs.

**CONCLUSION:** The classification system is a simple but useful tool in the categorization and choosing appropriate surgical options of management of earlobe keloids.

Date of Submission: 02-04-2023

Date of Acceptance: 13-04-2023

## I. PREAMBLE

The functions of the earlobe include aesthetics, site of adornment and erogenous function. It is the commonest site for keloid formation. In most cases, this results from secondary earlobe piercing in susceptible young females. The need to create an acceptable classification system for surgical diseases first arose in the early 1970s.<sup>1</sup> A classification system comprises of a set of concepts linked by semantic relationships.<sup>1</sup> The Chang-Park morphological classification system is the only classification system in literature with an attempt to link the semantic relations in earlobe keloids.<sup>2</sup> The proposed classification system is a simplified and detailed description with emphasis on the location of the earlobe keloid, nodularity, planarity, laterality and helical rim involvement.

## RELEVANT ANATOMY

The earlobe (lobulus auriculae) is the soft, fleshy part of the outer ear. It contains a rich plexus of blood supply and nerve endings and has two surfaces; lateral (outer) and medial (inner) surfaces. However, unlike other parts of the external ear, it is devoid of cartilaginous support. The human earlobe can be described as 'free' (hanging directly from the ear) and 'fixed' (attached to the head).



Figure 1: Surface anatomy of the ear

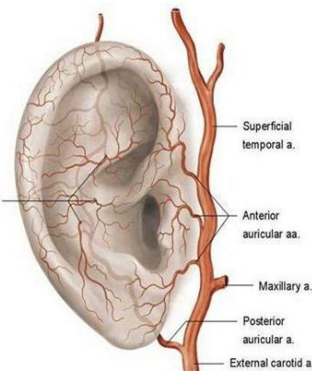
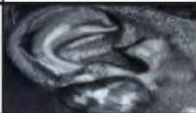








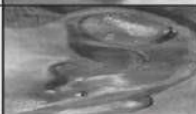



Figure 2: Blood supply to the ear

**CLASSIFICATION SYSTEM**

The proposed classification system applies numeral and alphabets in typifying the earlobe. The numerals 1-5 are used in describing the earlobe surface involved, helical extension and laterality; while the alphabets represent the extent of involvement and severity of the earlobe keloid.

Table 1 showing pictorial representation of the different types of earlobe keloid

TYPE	SUBTYPE	DESCRIPTION	CLINICAL PHOTOGRAPH
1. Uniplanar	a.	Outer surface involvement	
	b.	Inner surface involvement	
	c.	Located on the inferior pole of the earlobe (Pendulum type)	
2. Biplanar	a.	Outer surface mass > inner surface mass	
	b.	Inner surface mass > outer surface mass	
	c.	Equal size	
3. Panlobular		Obliterated earlobe	
4. Helical rim extension	a.	Helical rim extension <50%	
	b.	Helical rim extension >50%	
	c.	Earlobe keloid unconnected to ipsilateral helical rim keloid	
5. Bilateral		Bilateral earlobe involvement	

- TYPE 1: Uniplanar.

In type 1, the patient has a uninodular or multinodular swelling on either of the surface of the earlobe keloid and this swelling can be unimodular or multinodular. The 1a subtype represents the subtype with a swelling or swellings that involves the outer surface only (Table 1), in the type 1b, the inner surface is involved (figures 3 and 4), while the 1c have the point of attachment at the inferior aspect of the earlobe thereby giving it a pendulous appearance.



Figure 3: Type 1b earlobe keloid

Type 1 and its subtypes is surgically treated by intralesional excision leaving behind a thin rim of the keloid and the resultant defect is closed using a fillet skin flap. The aim of this technique is to hide the scar along the native lines and preserve the anatomical appearance of the earlobe (figures 5).



Figure 4a: Type 1b earlobe keloid



Figure 5: Immediate postop appearance after intralesional excision biopsy of type 1b earlobe keloid

- TYPE 2: Biplanar (Dumbbell Type)

Type 2 earlobe keloid involves both surfaces of the earlobe with preservation of the earlobe outline. In most cases, they are multinodular. However, there is preservation of the earlobe outline. The biplanar morphology gives the swelling a dumbbell shape, hence also referred to as the “dumbbell” type. In type 2a, both surfaces of the earlobe are involved but the mass on the outer surface is larger in size than that on the inner surface; while the reverse is the case for the type 2b. However, type 2c has masses with approximate equal sizes on both surfaces of the earlobe (figure 6). The surgical approach is as is applied to the type 1. However, the line of closure of the wound after excision is adjacent to each other with the skin flap of the anterior wound along the helical groove while that of the posterior wound is placed along the inner aspect of the earlobe. This is to conceal and mask the resultant scar.



Figure 6: Type 2c earlobe keloid with approximately equal size mass on both surface of the earlobe.

- TYPE 3: Obliterated Earlobe

In the type 3, the keloidal mass involves the whole of the earlobe with complete obliteration of the lobular outline (figure 7). In this type, the biplanar keloid has involved the whole earlobe keloid with complete distortion and obliteration of the earlobe tissue. The swellings can be uninodular or multinodular, small or large in size and causes complete distortion of the earlobe morphology. The aim of surgical treatment is to recreate the earlobe to as close to its original anatomical morphology as much as possible and this can be achieved by radical keloidectomy with earlobe reconstruction.<sup>3,4</sup>



Figure 7: Type 3 Earlobe keloid with obliteration of the earlobe morphology.

TYPE 4: Helical rim involvement

Type 4 earlobe keloid has grown beyond the 25% of the anatomical allocation of the earlobe to involve the cartilaginous helical rim. In type 4a, there is <50% involvement of the helical rim, while type 4b (figure 8) represents >50% extension into the helical rim; the 50% landmark for the earlobe is estimated to be the level of a transverse line drawn from the root of the helix across the helical rim. The presence of an earlobe keloid coexisting with an unconnected ipsilateral helical keloid is classified as a type 4c (figure 8).





Figure 8: Type 4b and 4c earlobe keloid

**TYPE 5: Bilateral earlobe disease**

The type 5 earlobe keloid describes the involvement of both earlobes (figure 9). For precise description of this class, each earlobe should be classified independently to give a clear description of the extent of the keloid on each earlobe, and their surgical treatment tailored as such.



Figure 9: Type 5 (Bilateral) earlobe keloid

**II. Discussion**

The purpose of this literature is to propose a simple, detailed but easy to remember classification system for earlobe keloid. The commonly referenced classification system for this condition is the Chang-Park's.<sup>2</sup> However, some types seen in our study (for instance, type 4 earlobe keloid with helical rim involvement) were not captured in the Chang-Park's classification. Therefore, this new classification accounts for such types thereby filling existing gap in knowledge. It is also intended to give better morphological description of the varied presentations of earlobe keloid and help in documentation, communication among surgeons, and choice of surgical options of treatment.

No single surgical technique has been agreed upon as the gold standard for the treatment of earlobe keloid; the choice is based on the surgeon's preference and experience. However, the guiding principles of all

opted surgical options should include excision of the abnormally excessive keloidal tissue, restoration of the normal outline and configuration of the earlobe, preservation of the earring hole, and preservation of the helix (figure 10).

Surgical excision remains the traditional treatment for keloids.<sup>5,6</sup> It has been a well- established treatment modality of earlobe keloid with a goal of either complete resection or reduction in keloid mass.<sup>7,8</sup> The surgical technique described in the literature include standard keloidectomy, radical keloidectomy, keloidectomy with core extirpation, intralesional excision and a combination of these.<sup>2,9,10</sup> Intralesional excision has been favoured for treating earlobe keloids where traditional scar revision may distort anatomic structures.<sup>6</sup> All the patients seen in this study all had intralesional excision biopsy of the keloidal mass as the surgical component of the triple therapy offered to the patients.



Figure 10: shows the post-operative appearance of a patient who had type 4b managed by intralesional excision and the resultant wound was closed along the posterior aspect of the earlobe and helical rim to hide the scar.

The surgical method that utilizes keloidal tissue enucleation and earlobe reconstruction with a fillet flap was performed for all patients involved in this study.<sup>7</sup> It is a known fact that total excision of a keloid may stimulate excessive collagen synthesis that can lead to early recurrence and formation of keloid that is larger than the previous one.<sup>8,11</sup> Thus, the technique of intralesional excision biopsy that leaves a tiny rim of keloidal skin for closure is encouraged. The benefits of this technique include primary closure, no distortion of anatomic landmarks, preservation of important structures, avoidance of injury to neighboring non- keloidal skin and the deep layer of the dermis, and removal of the most proliferative fibroblastic group as well as a debulking effect to facilitate the administration of injectable steroid.<sup>6,8</sup> This surgical technique is known to stimulate a recurrence similar to residues from the site of excision stimulating the naïve keloid regrowth.<sup>11,12</sup> The excessive skin flap raised during core extirpation of the keloid was trimmed to appropriate size and the surgical margins closed using Prolene 4/0 in a simple interrupted fashion.

### **III. Conclusion**

This proposed new classification system divides earlobe keloid into five types and subtypes. It is a simple but detailed proposal intended to account for all known morphological variations of earlobe keloids encounter in our centre. Intralesional excision biopsy, core extirpation of the keloid tissue with reconstruction of the earlobe using skin flaps employed in the surgical aspect of management of patients seen in this study gave excellent results and patient satisfaction.

### **Acknowledgement**

I want to thank Dr F.O. Abikoye, Dr O.O. Awe and Dr E.E. Esezobor who supervised the dissertation original work from which this classification was birthed. Profound appreciation to Dr E.E. Enobakhare who did the fine drawings of the earlobe keloids. Special thanks to Dr A.A. Okomayin who helped to proofread and made suggestions and corrections to the write- up. My UTMOST gratitude goes to God Almighty for the inspiration granted to conceive this contribution to science and to humanity.

CONFLICT OF INTEREST: Nil

FUNDING: No funding was received by the author for this work.

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Oshiozimedede Quincy AIGBONOGA, et. al. "Earlobe Keloid: A New Classification System." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 22(4), 2023, pp. 49-55.