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# Basal cell carcinoma invasion of an ear piercing

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## Abstract

Basal cell carcinoma (BCC) development in the context of a piercing is a rare phenomenon, reported in the literature in only six instances. We present a 55-year-old woman with nodular BCC involving her auricular piercing and extending clinically onto the posteroinferior right ear lobule and right post-auricular crease. Histological analysis revealed spread of the BCC through the piercing onto the anterior lobule, with evidence that the cancer utilized the piercing as a low resistance pathway for this microscopic invasion. This case is, to our knowledge, the first report of microscopic BCC present within an auricular piercing itself. Chronic inflammation related to repeated trauma from the embedded jewelry may have played a role in its formation. A piercing may provide a path of least resistance for BCC tumor cells to invade, providing a nidus for recurrence. Careful histological examination with possible complete excision of the piercing is prudent to prevent cancer return.

*Keywords: basal, cancer, carcinoma, ear, earlobe, piercings, skin*

## Introduction

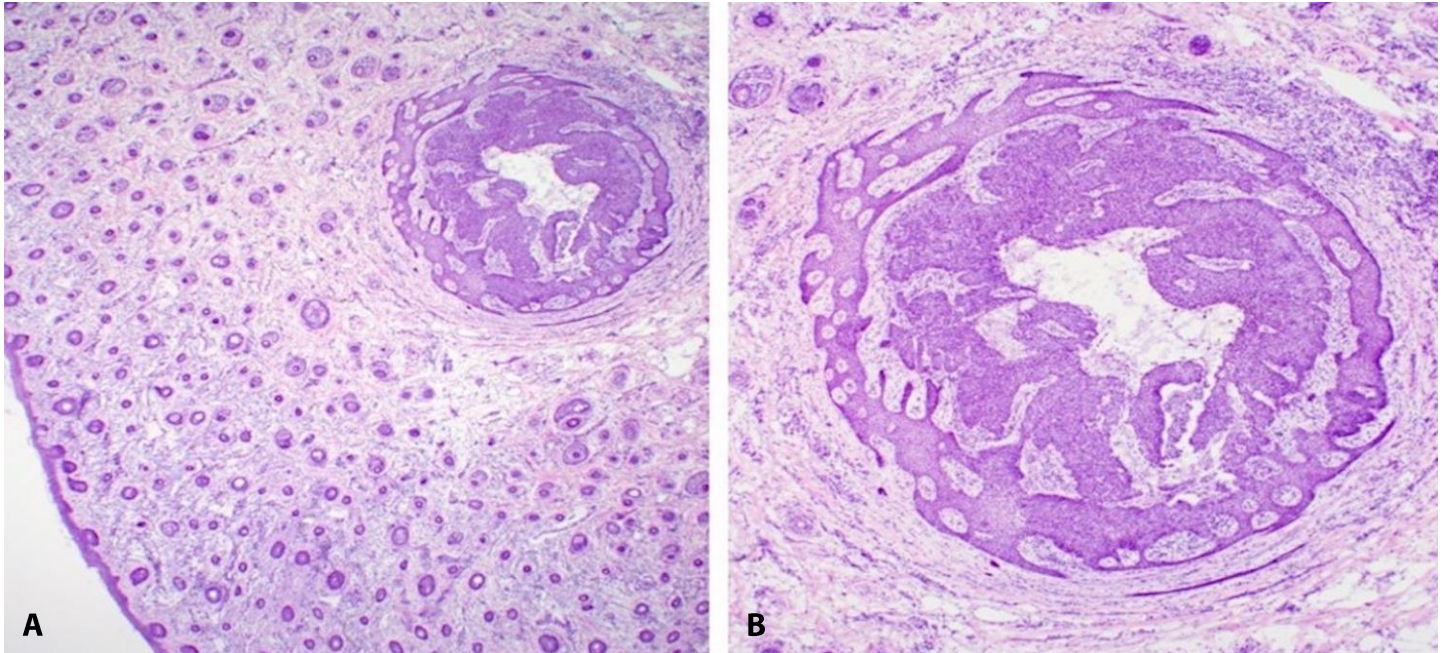
Development of a basal cell carcinoma (BCC) in the context of a piercing is very rare, reported in the literature in only six cases [1-6]. We present the case of a BCC occurring within an auricular piercing itself. Interestingly, there was also evidence that the cancer utilized the tunnel of the piercing for microscopic spread.

## Case Synopsis

A 55-year-old woman underwent Mohs micrographic surgery for a biopsy-proven, nodular BCC of seven years' duration located on the posteroinferior aspect of the right ear lobule and extending onto the right post-auricular crease (**Figure 1**). The lesion involved the auricular piercing she had received decades prior. She had no prior history of skin cancer, radiation exposure, or additional trauma to the area. Microscopic review of the first Mohs stage illustrated a basaloid proliferation consistent with BCC within the piercing of the right ear lobule (**Figure 2**), extending microscopically through the piercing onto the anterior surface of the lobule. Tumor clearance required two stages, and ultimately, the entire inferior portion of the ear lobule was sacrificed.



**Figure 1.** Biopsy-proven nodular basal cell carcinoma. An ulcerating plaque located on the patient's right post-auricular crease and extending to involve the piercing on the posteroinferior right ear lobule.



**Figure 2. A)** A basaloid proliferation consistent with basal cell carcinoma present in the right ear lobe and invading the auricular piercing. H&E, 200 $\times$ . **B)** Higher-powered view of the BCC invading the auricular piercing. H&E, 400 $\times$ .

## Case Discussion

Although BCC commonly occurs in the sun-exposed head and neck region where the majority of piercings are located, there are very few cases in the literature of BCC developing in association with piercings [1-6]. Two of the six reported cases occurred near auricular piercings [1,2]. Our case is unique in that it is the only reported case, to the best of our knowledge, that demonstrates microscopic evidence of BCC within the auricular piercing itself. One instance in which a BCC arose near an auricular piercing was in a 21-year-old woman who first developed a keloid at the piercing site; she developed a BCC two years later within the keloid [1]. The other was in a 65-year-old woman who developed a BCC at the site of multiple acupuncture treatments performed twenty years prior [2]. Our patient had experienced no additional trauma or excessive scarring at or near her piercing site.

The mechanism through which BCC arises within piercings remains elusive. However, it is believed that chronic inflammation and scarring created at sites of piercing result in a proliferative stimulus [3,6]. Repeated trauma associated with the object embedded within the piercing may exacerbate this chronic inflammation [3]. This theory is supported by

reports of BCC developing in areas affected by other types of trauma and scarring, including crush injuries and burns [7]. Secondly, some authors have suggested that jewelry can contain alloyed metals which may themselves contribute to tumorigenesis [6]. It is additionally well known that tumor cells can “shelve and skate” along paths of least resistance and a piercing can provide such an avenue [8]. In our case, the BCC likely utilized the tunnel of the piercing to spread microscopically onto the anterior surface of the earlobe. This invasion may provide a nidus for recurrence, particularly in cases in which the entire piercing is not excised.

## Conclusion

Although a rare occurrence, a new or chronic non-healing lesion in the context of a piercing should prompt consideration of BCC development [6]. Piercings are typically located on the nose, ears, and lips, which are already high-risk locations independent of whether a piercing is present. A piercing can provide a path of least resistance for BCC to invade and can result in even more risk for tumor return [8]. Careful histological examination of the piercing is prudent to prevent this recurrence.

## Potential conflicts of interest

T. Jennings servers as a consultant to Castle Biosciences.

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