

## Sutureless Electrocautery-Assisted Excision of a Recurrent Giant Earlobe Keloid Following Piercing: A Case Report

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### Abstract

**Background:** Auricular keloids represent challenging fibroproliferative scars frequently induced by ear piercing and are characterized by a high recurrence rate, especially following repeated surgical interventions. In cases of recurrent earlobe keloids, minimizing further trauma and wound tension is critical to reducing the likelihood of subsequent recurrence.

**Case illustration:** A 22-year-old woman presented with a recurrent, giant keloid on the right earlobe subsequent to ear piercing. The lesion had progressively enlarged over a 10-year period, despite four prior surgical interventions and corticosteroid injections. Clinical examination identified a firm, raised, pinkish keloidal mass measuring 7 × 5 × 3 cm. Electrocautery-assisted excision and debulking were performed under local and tumescent anesthesia. The wound was deliberately left unsutured to prevent additional puncture trauma, foreign-body reaction, and wound-edge tension. Postoperative care included local wound management, topical antibiotic and tulle dressings, and pressure therapy, facilitating healing by secondary intention.

**Discussion:** Electrocautery enabled controlled tissue removal with simultaneous hemostasis and minimal manipulation of surrounding skin. Avoiding primary suturing was considered important because suture-related dermal trauma and tension may reactivate abnormal fibroblast activity in keloid-prone tissue. Combined with pressure therapy, this sutureless approach supported gradual wound remodeling.

**Conclusion:** Electrocautery-assisted sutureless excision, followed by secondary intention healing and pressure therapy, may serve as an alternative strategy for selected cases of recurrent giant earlobe keloids. No clinical recurrence was observed at 12-month follow-up.

**Keywords:** *auricular keloid, electrocautery, earlobe keloid, secondary intention healing, sutureless excision.*

### Background

Keloids are pathological scars characterized by persistent fibroproliferation, excessive extracellular matrix deposition, and scar growth beyond the original wound boundary.<sup>3,5,12,13</sup> Unlike hypertrophic scars, keloids rarely regress spontaneously and may continue to enlarge over time, causing pruritus, pain, cosmetic disfigurement, and psychological distress.<sup>5,7,8,13</sup> The ear is a common site for keloid development because piercing, local infection, inflammation, and repeated mechanical irritation can serve as initiating or perpetuating triggers.<sup>9,10,16</sup>

Management of auricular keloids remains challenging, especially when lesions are large, recurrent, or situated in cosmetically sensitive areas. Surgical excision alone is associated with high recurrence rates, and current strategies often prioritize multimodal interventions for recurrence prevention, such as pressure therapy, silicone therapy, intralesional agents, or radiation in selected cases.<sup>3,4,6,9,11,15,17</sup> Treatment should be tailored to lesion morphology, patient preference, available resources, risk tolerance, and feasibility of follow-up.

This report presents the case of a 22-year-old woman with a recurrent giant right earlobe keloid following ear piercing, managed with electrocautery-assisted sutureless excision and debulking, postoperative local wound care, and pressure therapy. A notable aspect of this case is the intentional omission of primary suturing and intralesional corticosteroid injection, resulting in complete secondary intention healing and no clinical recurrence after one year. The case is documented in accordance with the CARE case report framework.<sup>1,2</sup>

### Case illustration

A 22-year-old woman presented with a progressively enlarging, recurrent mass on the right earlobe at the site of a previous ear piercing, persisting for 10 years. She had undergone four prior surgical procedures for keloid removal by a plastic surgery team and had received corticosteroid injections; however, the lesion did not improve and continued to enlarge. The lesion initially manifested as localized thickening and crusting around the piercing tract, subsequently enlarging into a clinically prominent auricular mass. The patient expressed cosmetic concerns, local discomfort, and apprehension regarding further enlargement or recurrence. The primary precipitating factor was prior ear piercing, with repeated local irritation at the same site. No systemic symptoms indicative of infection or malignancy were documented in the available clinical records.

Clinical examination and serial photographs revealed a firm, raised, skin-colored to pinkish, smooth, dome-shaped to pedunculated keloidal mass originating from the right earlobe and extending beyond the presumed site of the original piercing injury. Preoperative images demonstrated a large, rounded, giant auricular keloid. No evidence of acute cellulitis, purulent drainage, or regional inflammatory spread was observed in the available photographs.

The diagnosis was established clinically, based on the presence of a scar-like mass extending beyond the original piercing injury, progressive enlargement, recurrent behavior, and characteristic auricular keloid morphology. The differential diagnosis included hypertrophic scar, epidermal inclusion cyst, dermatofibroma, pyogenic granuloma, adnexal tumor, dermatofibrosarcoma protuberans, and other soft-tissue tumors. The absence of rapid destructive changes, persistent

bleeding, irregular pigmentation, or infiltrative features further supported the diagnosis of recurrent auricular keloid. The lack of histopathological confirmation is recognized as a limitation in the diagnostic assessment.

After informed consent, electrocautery-assisted excision/debulking was performed under local/tumescent anesthesia. The available operative note documented the use of lidocaine and epinephrine diluted in 0.9% NaCl. The goal of the procedure was to remove the bulky keloid mass, obtain meticulous hemostasis, and avoid additional tissue injury that could increase recurrence risk.

The lesion was prepared using an aseptic technique. Electrocautery was used to remove/debulk the keloid in a controlled manner while minimizing unnecessary injury to surrounding uninvolved skin. Hemostasis was achieved intraoperatively. The wound edges were intentionally not approximated with sutures. This sutureless strategy was selected to reduce puncture trauma, suture-related foreign-body reaction, and wound-edge tension, all of which are clinically relevant considerations in keloid-prone tissue.<sup>3,6,8</sup> A 7 × 5 × 3 cm keloid mass was successfully removed.

Postoperatively, the wound was managed conservatively without primary suturing. Local wound care consisted of wound dressing and topical antibiotics. Pressure therapy was applied as an adjuvant mechanical strategy to support remodeling and reduce recurrence-promoting tension. The wound was allowed to heal gradually by secondary intention until complete clinical improvement was achieved. No intralesional corticosteroid injection was administered at any point in the postoperative regimen.

The early postoperative course was uneventful. The wound showed progressive granulation and epithelialization with improvement in contour and no documented infection, bleeding, or uncontrolled pain. The patient was instructed to avoid further piercing, local trauma, friction, and manipulation of the treated site. At the most recent 12-month follow-up, the treated right earlobe remained clinically stable with no evidence of recurrent keloid. The absence of recurrence over 1 years is clinically meaningful because keloids may recur after apparent early healing, especially after surgical manipulation.<sup>6,9,11,17</sup> Continued long-term observation was recommended because recurrence risk may persist beyond the initial postoperative period.

The patient expressed concern before treatment regarding cosmetic deformity and the possibility of repeated recurrence. After treatment and follow-up, she reported satisfaction with the improvement in appearance and the absence of recurrent enlargement during the 1-year observation period. Written informed consent was obtained from the patient for publication of this case report and accompanying clinical images.



**Figure 1.** Preoperative clinical appearance of a recurrent giant right earlobe keloid measuring 7 × 5 × 3 cm.



**Figure 2.** Excised keloid tissue and postoperative wound bed after electrocautery-assisted excision.



**Figure 3.** Clinical appearance one week after electrocautery-assisted sutureless excision.



**Figure 4.** Clinical appearance at 12-month follow-up showing a stable healed earlobe scar without keloid recurrence.

## Discussion

Keloid is a benign fibroproliferative disorder characterized by excessive collagen deposition that extends beyond the boundaries of the original wound. Auricular keloids, particularly those involving the earlobe, are frequently associated with ear piercing and remain therapeutically challenging because of their high recurrence rate, cosmetic impact, and potential symptoms such as pain, pruritus, tenderness, and psychological distress.<sup>5,7,8,13</sup> The earlobe is a common site of keloid formation because piercing creates direct dermal injury, and repeated irritation, infection, tension, or additional trauma may further stimulate abnormal wound healing.<sup>3,5,12,13</sup> In recurrent cases, treatment becomes more complex because the tissue has already undergone previous inflammation, fibrosis, and surgical manipulation.

Surgical excision is often considered for large, symptomatic, or cosmetically disturbing keloids.

However, excision alone is generally not recommended because keloid recurrence may occur at a high rate. This is mainly because surgery itself creates a new wound, which may act as a fresh stimulus for fibroblast activation, prolonged inflammation, and excessive extracellular matrix production. Therefore, the main principle in keloid surgery is not only to remove the existing lesion but also to minimize additional trauma and reduce postoperative wound tension. This principle is especially important in auricular keloids, where the tissue is thin, curved, and cosmetically sensitive.<sup>9,16</sup>

In the present case, electrocautery-assisted excision was selected as the main surgical approach.<sup>6,15</sup> Electrocautery provides several advantages in the management of auricular keloids. First, it allows controlled tissue dissection with simultaneous hemostasis, resulting in a relatively clean operative field. Good hemostasis is important because hematoma and prolonged local inflammation may contribute to delayed healing and recurrence.<sup>3,6,8</sup> Second, electrocautery may reduce the need for extensive mechanical manipulation of the tissue, thereby limiting additional trauma to the surrounding normal skin. Third, in a lesion located on the earlobe, where preservation of contour is important, electrocautery enables precise removal of abnormal fibrotic tissue while maintaining adequate control over bleeding and tissue shaping.

A key consideration in this case was the decision not to perform primary suturing after excision. In conventional surgery, primary closure is commonly performed to approximate wound edges. However, in keloid-prone patients, each suture bite represents a new puncture injury to the dermis. Sutures may also create local tension, ischemia, foreign-body reaction, and prolonged inflammation along the wound edge. These factors are clinically relevant because keloid formation is strongly associated with repeated trauma and persistent inflammatory stimulation.<sup>3,8,12</sup> Therefore, in this case, avoiding sutures was considered a strategic effort to reduce new dermal injury and minimize the possibility of triggering another cycle of keloid recurrence.

The concern regarding suturing is particularly important in recurrent earlobe keloids. Recurrent lesions indicate that the patient's wound-healing response is already predisposed toward excessive scar formation. When a recurrent keloid is excised and then closed under tension, the newly created wound edges may again become a site of abnormal fibroblast activity. In addition, suture tracks can become separate foci of scarring, especially in areas with high mobility or thin tissue such as the earlobe.

For this reason, a sutureless approach may be considered in selected cases when the wound bed is suitable for secondary intention healing and when adequate postoperative wound care can be ensured.<sup>6,15</sup>

Secondary intention healing was chosen in this patient to allow gradual wound contraction and epithelialization without adding suture-related trauma. Although this method may require a longer healing period compared with primary closure, it has potential advantages in selected keloid cases. It avoids excessive approximation tension, reduces foreign-body reaction, and allows careful postoperative monitoring of the wound surface. In the auricular region, where contour preservation is important, secondary healing may also permit gradual remodeling of the tissue. In this case, the postoperative wound was managed with gentamicin-based dressing, tulle dressing, and pressure therapy until adequate secondary healing was achieved. This conservative postoperative strategy aimed to maintain a moist and protected wound environment, prevent secondary infection, and reduce mechanical irritation during the healing phase.

Pressure therapy was also an important component of postoperative management.<sup>4,15,17</sup> The rationale of pressure therapy in keloid prevention is based on its ability to reduce local blood flow, decrease oxygen tension, and modulate collagen synthesis. Although the optimal pressure level and duration remain variable across studies, postoperative compression has been widely used for auricular and earlobe keloids because this anatomical site is relatively accessible for pressure devices or pressure dressings.<sup>4,11,17</sup> In this case, pressure therapy was applied after electrocautery-assisted excision and secondary intention wound care to reduce the risk of recurrent fibroproliferation. This combined strategy reflects a multimodal approach, in which surgery removes the keloid mass while postoperative pressure helps suppress recurrence.

Another notable aspect of this case is that no postoperative intralesional corticosteroid injection was administered. Intralesional corticosteroids are commonly used for keloid treatment because they can reduce inflammation, fibroblast proliferation, and collagen synthesis.<sup>4,6,14,15</sup> However, corticosteroid injection may be associated with pain, skin atrophy, telangiectasia, hypopigmentation, ulceration, and patient discomfort.<sup>6,14,15</sup> In some cases, repeated injection may not be feasible due to patient preference, lesion location, or concerns regarding local adverse effects. The favorable outcome in this patient suggests that careful surgical

technique, avoidance of suturing, secondary intention healing, and consistent pressure therapy may provide a satisfactory result in selected cases, although this cannot be generalized to all auricular keloids.

At one-year follow-up, the patient demonstrated favorable wound healing without evidence of keloid recurrence.<sup>6,9,11,17</sup> This outcome is clinically meaningful because keloid recurrence often occurs within months after treatment, although longer follow-up remains necessary. The absence of recurrence in this case may be related to several factors: controlled excision using electrocautery, minimal additional trauma to surrounding tissue, avoidance of suture-related injury, gradual secondary intention healing, and postoperative pressure therapy. The final scar appeared mature and stable, supporting the potential role of a low-trauma, sutureless surgical strategy in selected recurrent earlobe keloids.

Nevertheless, several limitations should be acknowledged. This is a single case report, and the outcome cannot be used to establish superiority of electrocautery-assisted sutureless excision over conventional excision with primary closure or other adjuvant modalities.<sup>12</sup> The success of this approach may depend on lesion size, location, wound depth, patient compliance, postoperative wound care, and individual biological tendency toward keloid formation. Furthermore, although one-year follow-up is encouraging, longer observation is still required because delayed recurrence remains possible. Future studies with larger case series and standardized follow-up are needed to evaluate whether electrocautery-assisted excision without suturing can consistently reduce recurrence in recurrent auricular keloids.

In summary, this case emphasizes that minimizing new trauma is a crucial principle in the surgical management of recurrent keloids. Electrocautery-assisted excision without primary suturing may offer a practical alternative for selected recurrent earlobe keloids by allowing precise removal, good hemostasis, reduced wound-edge trauma, and healing by secondary intention.<sup>6,9,15,17</sup> When combined with meticulous wound care and pressure therapy, this technique may help achieve favorable cosmetic and clinical outcomes while reducing the potential risk of recurrence triggered by new suture-related injury.

## Conclusion

This case highlights the successful management of a recurrent giant auricular keloid following ear piercing using electrocautery-assisted excision without primary suturing.<sup>9,15,17</sup> The wound was managed conservatively with gentamicin-based dressing, tulle dressing, and pressure therapy, allowing secondary intention healing. At one-year follow-up, the postoperative scar showed favorable healing without evidence of keloid recurrence. This approach may be considered as an alternative surgical strategy for selected recurrent auricular keloids, particularly when minimizing tissue tension and reducing recurrence risk are important treatment goals. Long-term follow-up remains essential because keloids have a high tendency to recur, especially in high-risk anatomical sites such as the earlobe.

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## Author Contributions

DARD, JF, and KT contributed to the conceptualization of the case report, the determination of the scientific focus, the development of the main ideas, format editing, and the preparation of the data for publication. All authors have agreed with the manuscript.

## Conflict of Interests

None.

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