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Successful treatment of eyebrow intradermal nevi by shearing combined with electrocautery and curettage: Two case reports

Liu C *et al.* Successful treatment of eyebrow intradermal nevi

Abstract

BACKGROUND

An intradermal nevus is a common skin tumour, and the classical method of removal has a risk of recurrence and scarring. It is a challenge for dermatologists to treat eyebrow intradermal nevi quickly and efficiently. This study focused on investigating the efficacy and safety of shearing combined with electrocautery and curettage in the treatment of eyebrow intradermal nevi.

CASE SUMMARY

We describe two adult patients with eyebrow intradermal nevi treated by shearing combined with electrocautery and curettage. Both patients were followed up regularly after surgery. At follow-up, no recurrence of eyebrow intradermal nevus and no obvious scars or hypopigmentation were found in either patient. The results indicated that shearing combined with electrocautery and curettage could remove eyebrow intradermal nevus without side effects and confirmed the efficacy and safety of this modality for treating these skin lesions.

CONCLUSION

Shearing combined with electrocautery and curettage has superior merits, including simple operation, good cosmetic effects, and high patient satisfaction, presenting great application potential for treating intracutaneous nevus.

Key Words: Eyebrow; Intradermal nevus; Combined treatment; Thermal diffusion; Aesthetic surgery; Case report

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Core Tip: An intradermal nevus is a common skin tumour. This study aimed to evaluate the efficacy and safety of using shear combined with electrocautery and curettage for removing eyebrow intradermal nevi. In this work, we present two cases of eyebrow intradermal nevi that were treated by shearing combined with electrocautery and curettage and followed up regularly. The results showed no recurrence of the eyebrow intradermal nevus, no obvious scars or hypopigmentation, and high patient satisfaction. The study indicates that shearing combined with electrocautery and curettage is a safe and effective treatment option for intracutaneous nevus removal, presenting great potential for wider application.

INTRODUCTION

Melanocytic nevi are common benign skin tumours that arise from the proliferation of melanocytes^[1]. According to the position of nevi cells in the skin, melanocytic nevi can be classified into three types: Junctional, compound, and intradermal nevi. Intradermal nevus is the most prevalent type and is characterized by the presence of nevocytes in the deep layers of the dermis. These nevi are characterized by skin-coloured, brown, or black papules, nodules, and domes that protrude from the skin surface; some of these lesions have hair growth on the surface^[2]. Most melanocytic nevi are benign and safe. How to remove an intradermal nevus is a matter of controversy and depends on several factors, including the size, location, risk of degeneration, psychological burden, and anticipated postoperative aesthetic effects. Currently, there are numerous treatment methods for removing facial pigmented nevi, such as cryotherapy, chemical etching, electrodesiccation, carbon dioxide laser, or Erb:YAG laser therapy^[3]. Notwithstanding, it is noteworthy that intradermal nevi are commonly situated in the upper dermis, and the conventional methods of removal can result in postoperative scarring, alterations in skin texture, and frequent pigmentary changes or recurrence^[4]. In some cases, such changes may even lead to malignant transformation. Excision is currently the standard therapy for intradermal nevi, and while this treatment can completely remove them, it can also leave scars^[5-7]. Furthermore, removing an intradermal nevus from the

eyebrows is not only challenging to perform but also carries a chance of changing the shape of the eyebrows. As a result, there is a need for new and effective methods for treating these skin conditions. In this paper, we report two cases of intradermal nevi located in the eyebrow region that were successfully treated by shearing combined with electrocautery and curettage. Additionally, we investigated the mechanism by which this method removes intradermal nevi.

CASE PRESENTATION

Chief complaints

Case 1: A 35-year-old Chinese male presented with a slowly increasing grey-brown papule that had been located on the brow arch for 15 years.

Case 2: A 43-year-old female patient complained of the presence of hemispherical papules that were located on the right eyebrow and had persisted for 30 years.

History of present illness

Case 1: At the age of 17, the patient developed a greyish-brown papule on the left eyebrow arch, with multiple hairs growing above it. The papule gradually increased in size over time. In November 2020, the presence of a hemispherical grey-brown circular tubercle on the left eyebrow arch, measuring 13 by 10 mm in size and concomitant with several hairs, was observed.

Case 2: The onset of a small skin papule on the right side of the patient's brow was observed at the age of 13, and the papule gradually increased in size over time. By May 2019, the papules were hemispheric and measured approximately 8 mm in diameter.

History of past illness

The past medical history was not remarkable for these two patients.

Personal and family history

The two patients had no relevant family history of cancer or chronic disease.

Physical examination

Case 1: Systemic examination revealed no obvious abnormalities. The patient had a hemispherical grey-brown circular nodule on the left eyebrow arch, approximately 13 mm × 10 mm in size, exhibiting the growth of eyebrow hair (Figure 1A).

Case 2: Systemic examination revealed no obvious abnormalities. By May 2019, the papules on the patient's right eyebrow had a hemispherical skin tone with a few black spots and a diameter of approximately 8 mm (Figure 2A).

Laboratory examinations

Laboratory examination of both patients revealed no abnormalities.

Imaging examinations

These two patients had not undergone an imaging examination.

FINAL DIAGNOSIS

Intramucosal nevus of the eyebrow.

TREATMENT

Both patients underwent shearing combined with electrocautery and curettage. Routine disinfection of the operative field was performed with complex iodine, followed by a local injection of 2% lidocaine to the base of the lesion. The surgeon's left middle finger and thumb pressed both ends of the intradermal nevus close to the patient's bone surface, and curved-tip ophthalmic scissors were used to remove the skin mass at the base of the lesion, parallel to the surrounding normal skin. Patient A underwent removal of a skin mass with a diameter of 10 mm, and the excised tissue was biopsied.

Patient B had a skin mass with a diameter of 8 mm removed. After shearing, a small amount of blood oozed from the exposed surface, which had a flesh-white surface resembling the residue of the intradermal nevus. The surgeon then used sterile gauze to compress the wound to stop the bleeding. Once the bleeding had stopped, the surgeon used electric cautery microneedles and medium-sized curettes alternately for multiple stratified gasification and curettage to remove residual intradermal nevus lesions. Cotton swabs dampened with 30% ferric chloride tincture were applied to the wound for approximately 30 s to stop the bleeding. Subsequently, a depressed, brown, dry wound formed on the eyebrows of both patients. After the operation, the topical medical healing biofilm (Velvetfeeling) was applied to the wound 3 to 5 times a day for one week. Both patients were followed for more than 1 year to determine their prognosis.

OUTCOME AND FOLLOW-UP

Case 1: Patient A presented a hemispherical grey-brown round nodule with a size of approximately 13 mm × 10 mm that was located on the left brow arch and had several hairs. During the postoperative period and up to the 1-year follow-up, the patient's wounds gradually crusted and healed. Thirteen months after surgery, there was no hyperpigmentation or depigmentation, no depressed or hyperplastic scars, and normal eyebrow hair growth in the original lesion (Figures 1B and C). The postoperative pathology was consistent with an intradermal nevus (Figure 1D). The patient was very satisfied with the results of the treatment.

Case 2: Patient B was a 43-year-old female with a hemispherical papule on the right eyebrow for 30 years. After the patient gave informed consent, shearing combined with electrocautery and curettage was performed under local anaesthesia, which took approximately 5 min. Similar to patient A, nearly four years after the operation, the skin of the original lesion was almost indistinguishable from the surrounding normal skin, and no obvious scars were visible (Figures 2B-D).

DISCUSSION

Intradermal nevus is a type of melanocytic nevus with nevus cell nests located in the dermis. According to Lea and Pawlowski^[8-10], intradermal nevi can be defined as epidermal structures surrounded by basement membrane bands located outside the nevus cell nests. At present, there are two popular methods to remove nevus cell nests, including ultrawide surgical resection of nevus cell nests, electrocauterization and use of a CO₂/erbium laser. On the one hand, the latter method uses high-temperature gasification to eliminate nevus cell nests^[3]. However, it is a challenge for dermatologists to completely remove the mole cells and not cause excessive damage to the surrounding normal tissue. On the other hand, the cosmetic effects of this method vary from person to person, and in some cases, patients might even experience disfigurement. This paper reports two cases of successful treatment of eyebrow intradermal nevi by shearing combined with electrocautery and curettage. Neither of the two patients showed any clear recurrence or scar formations, and such an outcome can further enhance patient satisfaction. This formula is effective in eradicating the lesion and the method requires less equipment, which makes it easier to be widely disseminated.

An interesting phenomenon that seems to contradict the current consensus emerged in the present study. Immediately after surgery, both patients presented obvious depressed wounds, but the depressions became shallower and eventually resembled the surrounding skin, with no obvious remaining depressions. Normal skin dermal tissue contains elastic fibres, which have spring-like properties^[11]. Intradermal nevi are epidermal structures located in the dermis, with cell nests surrounded by a basement membrane. During the proliferation of melanocytes, the expanding cell nests exert pressure on the surrounding tissues, causing deformation and shortening of elastic fibres. Within a certain deformation space, if the diseased tissue can be completely removed without harming the surrounding normal tissue, the surrounding connective tissue can fill the space occupied by the diseased tissue due to the retraction of the elastic fibres. The lack of visible scarring observed in the patients after surgery may

have been due to the minimal damage to elastic fibres and the subsequent regeneration and backfilling of surrounding connective tissue.

Currently, the optimal therapeutic goal for nonsurgical excision of intradermal nevi is believed to be the complete removal of nevus nests located in the invaginated dermis, along with the surrounding basement membrane, while preserving the integrity of surrounding normal tissue. Due to thermal diffusion, it is almost impossible to precisely remove the diseased tissue by thermal effects and avoid thermal damage to the surrounding normal tissue^[12]. However, by combining mechanical energy (which has zero thermal diffusion or heat transfer) with other methods, damage to the surrounding tissue can be effectively reduced. In this study, we first used shears to remove the lesions protruding from the skin's surface. The remaining nevus cells, surrounded by a basement membrane, formed an epidermis-like structure. In the second step of the procedure, a curette was used to apply mechanical force and scrape away the remaining mole tissue by taking advantage of the differential adhesion between the intradermal nevus cells and the surrounding fibrous tissue. By applying a greater mechanical traction force than the connection force between nevus cells and the basement membrane surrounding them and the fibrous tissues, the basement membrane and nevus cell nests could be removed gradually, while the surrounding fibrous tissue remained unaffected by thermal relaxation. However, too much traction or too sharp edges of the scraping spoon can also cause mechanical lacerations to the surrounding fibrous tissue. In cases where the tight connection between the cells of the lesion is difficult to scrape away, electrocautery can be used to induce thermal relaxation, causing protein denaturation and disruption of the connection, allowing for the target tissue to be scraped away. Therefore, shearing combined with electrocautery and curettage can effectively remove the intradermal nevus without damaging the normal tissue. Bleeding from wounds can be stopped with 30% ferric chloride tincture. Postoperatively, the use of Velvetfeeling prevents extravasation of tissue fluid as well as bacterial adhesion and colonization.

There are some limitations to this study: (1) This article only reports two cases involving patients who were successfully treated with this method. Although these two patients did not have clear adverse events, relevant studies are still less reported, and a larger sample of studies is still needed to verify the long-term efficacy and potential adverse events; and (2) The efficacy of this method for giant intradermal nevus is still subject to further research.

In summary, the results of two patients who showed no residual disease, no recurrence, and no obvious scars after the procedure corroborate that shearing combined with electrocautery and curettage can produce satisfactory cosmetic results. When using this method to remove the lesion tissue in the dermis of an intradermal nevus, there is no extensive damage of the normal tissue around the lesion, so the patient can achieve satisfactory results of mole removal. However, use of this procedure does not guarantee the complete removal of mole cells, and there is still a risk of scar formation. Nonetheless, the method is simple, efficient, inexpensive, and easy to learn and master. Moreover, the technique can be utilized to treat other benign lesions in specific areas.

CONCLUSION

In this study, we report the successful removal of intradermal nevi from the eyebrow area of two patients by using shearing combined with electrocautery and curettage. The procedure resulted in the absence of any postoperative residue, significant scarring, or recurrence of the nevus. The use of shearing combined with electrocautery and curettage is deemed to be a safe and effective technique for the treatment of intradermal nevi. Furthermore, this method is comparatively simple, efficient, low-cost, and easily learnable compared to other conventional nevus removal approaches. In summary, shearing combined with electrocautery and curettage presents good application prospects for the treatment of eyebrow intradermal nevi.

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