CASE REPORT

# Combined excision and punch punctoplasty for peripunctal nevus: a report of three cases

*Stella Weng Chi Sio*[1,2], *MBBS; Andre Ma*[1,2], *MBBS, BA(Cantab), AFCOphth (HK); Hunter Kwok Lai Yuen*[1,2], *MBChB, FRCOphth, FRCS(Ed), FCOphth (HK), FHKAM (Ophthalmology), DipClinDerm (London)*
[1] *Department of Ophthalmology, Hong Kong Eye Hospital, Hong Kong SAR, China*
[2] *Department of Ophthalmology and Visual Sciences, The Chinese University of Hong Kong, Hong Kong SAR, China*

*Correspondence and reprint requests:*
*Dr Hunter Kwok Lai Yuen, Department of Ophthalmology, Hong Kong Eye Hospital, Hong Kong SAR, China.*
*Email: hunterklyuen@gmail.com*

## Abstract

We describe a safe, effective, and minimally invasive procedure that combines excision and punch punctoplasty for treatment of peripunctal nevi in three patients. The peripunctal lesions are removed, and the punctal opening and canaliculus are expanded using a standardized Kelly punch, while minimizing the risk of postoperative punctal stenosis. No temporary stents are needed, eliminating the risk of related complications. At the 2-month follow-up, all three patients had fully recovered and had visibly well-patent puncta.

*Key words:* *Conjunctival neoplasms; Nevus*

## Introduction

Peripunctal nevi, also known as circumpunctal nevi, are a rare type of conjunctival nevi. However, they are the most common peripunctal lesion, with an incidence of 38% to 79%.[1-3] These benign, pigmented, dome-shaped lesions predominantly affect the lower puncta and have no evidence of melanoma transformation. Their swollen punctal lips create a slit-like punctal orifice.[4] Peripunctal nevi differ from juxtapunctal nevi, which develop at the eyelid margin and adjacent to, rather than surrounding, the punctum. Differential diagnoses include papillomas, cysts, pyogenic granulomas, malignant melanomas, basal cell carcinomas, and oncocytomas. Most patients present with a long history of an asymptomatic, gradually enlarging mass that has not affected the lacrimal drainage system. However, some develop epiphora due to punctal displacement, distortion, or intracanalicular extension.[5,6]

Although the treatment goal is to remove the lesion with a clear margin and maintain a sufficient punctal opening for tear drainage, there is no consensus on the optimal approach in the literature (Table).[1,3-9]

Excision alone can lead to epiphora and punctal stenosis from the healing wound, potentially requiring a follow-up punctoplasty. Shave excision with the temporary placement of a silicone punctal plug[4] and ablation with a $CO_2$ laser and the use of a temporary stent[3] have been suggested to prevent scarring and stenosis. At the Hong Kong Eye Hospital, we primarily use punch punctoplasty with a Kelly punch, which is a successful first-line treatment for epiphora associated with punctal stenosis and eliminates the need for temporary intubation.[10] We describe a combination of excision and punch punctoplasty for treatment of peripunctal nevi in three patients.

## Case presentations

Patient 1: In July 2019, a 58-year-old Asian woman presented with a peripunctal mass on the lower lid of her left eye. The mass had not changed in size or color for 10 years. Slit-lamp examination revealed a lightly pigmented, raised mass surrounding the punctum, measuring 3×4 mm, with an elongated, slit-like punctal opening (**Figure 1a**).

 

It was initially misdiagnosed as a papilloma by her family doctor, but histopathology confirmed the mass to be a nevus, characterized by an intradermal cyst with proliferated nevus cells and occasional melanin pigments. No significant nuclear pleomorphism or mitotic figures were observed.

Patient 2: In March 2022, a 55-year-old Asian woman presented with a peripunctal mass on the lower lid of her right eye. The mass had not changed in size for over 20 years. The raised, dome-shaped, moderately pigmented mass, measuring 3×5 mm, encircled the punctum (**Figure 1b**).

Patient 3: In May 2024, an 81-year-old Asian woman

**Table. Literature review of peripunctal nevi treatments.**

| Study | No. of patients | Patient sex/age, y | Surgical technique | Stent removal | Location of nevus | Follow-up |
|---|---|---|---|---|---|---|
| Scott et al,[4] 1989 | 6 | M (n=2), F (n=4)/12-75 | Shave excision with silicone punctal plug insertion | 3 weeks | RLL (n=3), LLL (n=3) | 3 months to 5 years |
| Rumelt et al,[6] 2005 | 7 | M (n=6), F (n=1)/54-76 | Excision only or with silicone tube insertion | - | RLL (n=2), LLL (n=3), LUL+LLL (n=1), RUL (n=1) | 3 to 5 years |
| Hwang et al,[9] 2011 | 1 | M/37 | Shave excision only | - | LLL | 1 month |
| Chang et al,[7] 2013 | 1 | - | Excision with perforated plug insertion | 2 months | RLL | 2 months |
| Nair et al,[1] 2022 | 19 | 12-76 | Excision only or with mini-Monoka stent insertion | 3 months | - | 3 months to 10 years |
| Chen et al,[3] 2022 | 17 | - | $CO_2$ laser ablation with silicone stent insertion | 1 month | - | 1 to 3 months |
| Ali and Jakati,[5] 2024 | 1 | M/62 | Excision only | - | LUL | - |
| Custer and Council,[8] 2024 | 13 | - | Shave excision only | - | UL (n=5), LL (n=8) | No routine follow-up |

Abbreviations: LL=lower lid, LLL=left lower lid, LUL=left upper lid, RLL=right lower lid, RUL=right upper lid, and UL=upper lid

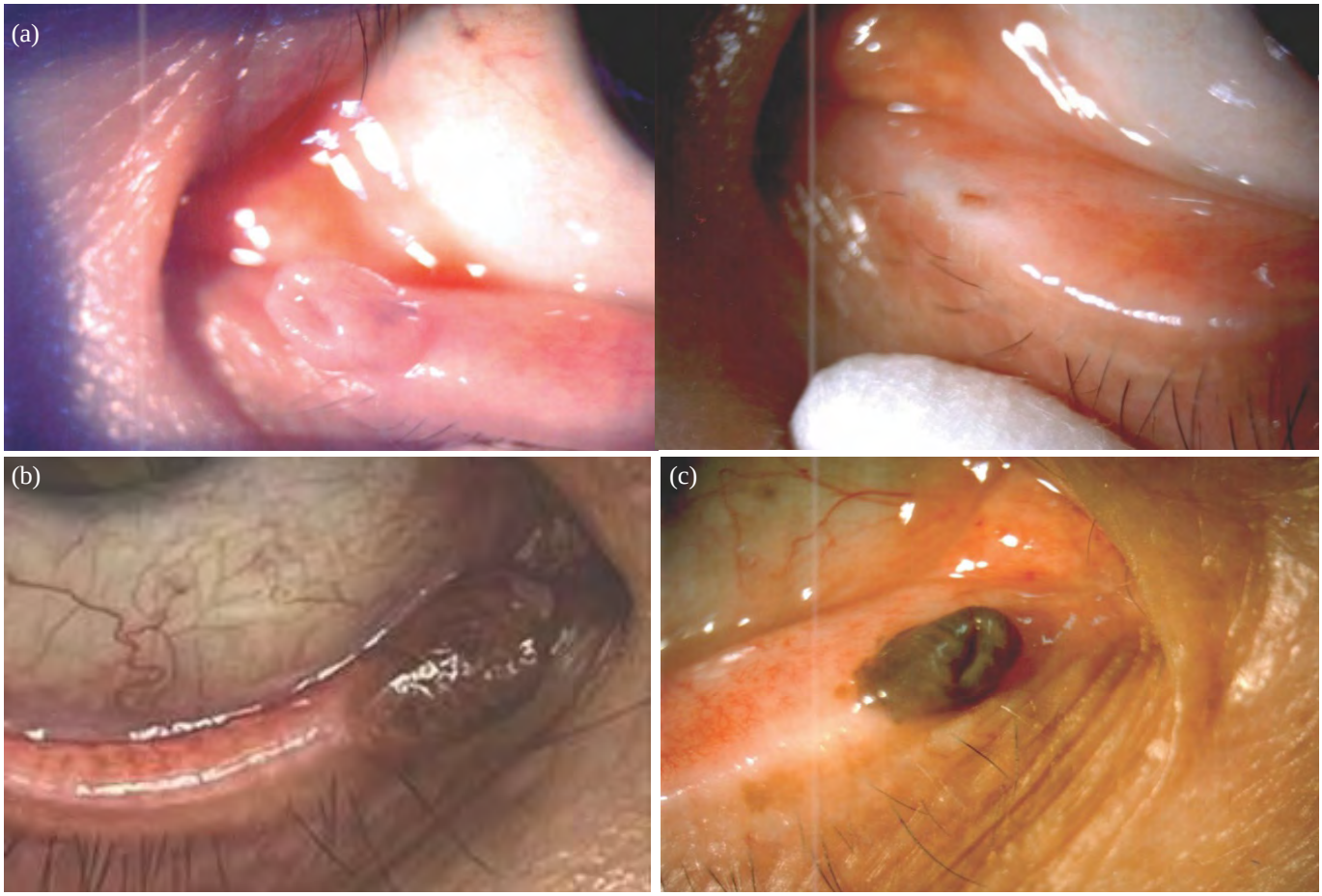


**Figure 1. (a) Patient 1: an elevated, lightly pigmented peripunctal nevus surrounding the left lower punctum with an elongated, slit-like punctal opening (upper). At 3.5 years postoperatively, a visibly well-patent punctum and smooth lid margin are seen (lower). (b) Patient 2: a raised, dome-shaped, moderately pigmented mass encircling the right lower punctum. (c) Patient 3: a raised, heavily pigmented mass encircling the right lower punctum with puffy lips at the surface.**

presented with a peripunctal mass on the lower lid of her right eye. The mass had developed 5 years earlier and had been growing gradually over the past 2 years. The raised, heavily pigmented mass, measuring 2.5×3.5 mm, encircled the punctum and had puffy lips on the surface (**Figure 1c**).

None of these patients reported epiphora, bleeding, discharge, redness, or pain. Preoperative syringing confirmed patent lacrimal systems in all cases.

The three patients underwent combined excision and punch punctoplasties between July 2021 and July 2024. Before surgery, topical antibiotics and anesthetic eye drops were given. Then, 2 mL of 2% lidocaine with adrenaline (1:200 000) was injected into the affected eyelid, and a corneal protector was inserted. The peripunctal lesion was carefully excised using forceps and curved scissors (**Figure 2**). We aimed to completely excise the mass with a clear border, while minimizing depression in the eyelid margin. Next, the punctal opening was expanded circumferentially using a punctal dilator. A prophylactic punch punctoplasty was performed using a standardized Kelly Descemet's membrane punch, which was inserted into the ampulla to undertake posterior ampullectomy. The punctal tissue was generally resected up to 2 to 3 mm beyond the vertical segment into the horizontal segment of the canaliculus to enlarge both the punctal opening and canaliculus to counteract subsequent wound contraction. Cotton buds soaked in 2.5% phenylephrine eye drops were used to compress the wound and reduce bleeding and scarring. An irrigation test was carried out using a syringe to ascertain the patency of the lacrimal drainage system. After surgery, topical antibiotic ointment was applied, and the patients were discharged with 2-week supply of steroid and antibiotic eye drops.

Histopathological examination of the excised lesions revealed intradermal nevi. At the 2-month follow-up, all three patients had patent puncta and nasolacrimal drainage systems, with smooth eyelid margin contours; they were satisfied with the aesthetic outcome. Throughout the mean follow-up duration of 17 (range, 2-42) months, there was no recurrence or any malignant transformation or punctal stenosis. None of the patients reported epiphora or dry eyes.

## Discussion

Peripunctal nevi are often misdiagnosed clinically as papillomas, malignant melanomas, or basal cell carcinomas, particularly when the lesion presents as an amelanotic nevus. In Asian populations, 59% to 79% of all peripunctal lesions are peripunctal nevi,[2,3] which differ from benign eyelid tumors, of which squamous papilloma is the most common. Incidence of peripunctal nevus is similar among men and women, consistent with the overall prevalence of melanocytic nevus. Indications for excision include epiphora secondary to displaced and everted puncta, lacrimal pump failure, or cosmetic concerns. It is essential to remove any elevated pigmented conjunctival lesions to rule out potential malignancies such as melanoma.[4] Instances of nevus extension into the canaliculus causing obstruction or recurrence are rare, particularly when clear margins are excised.

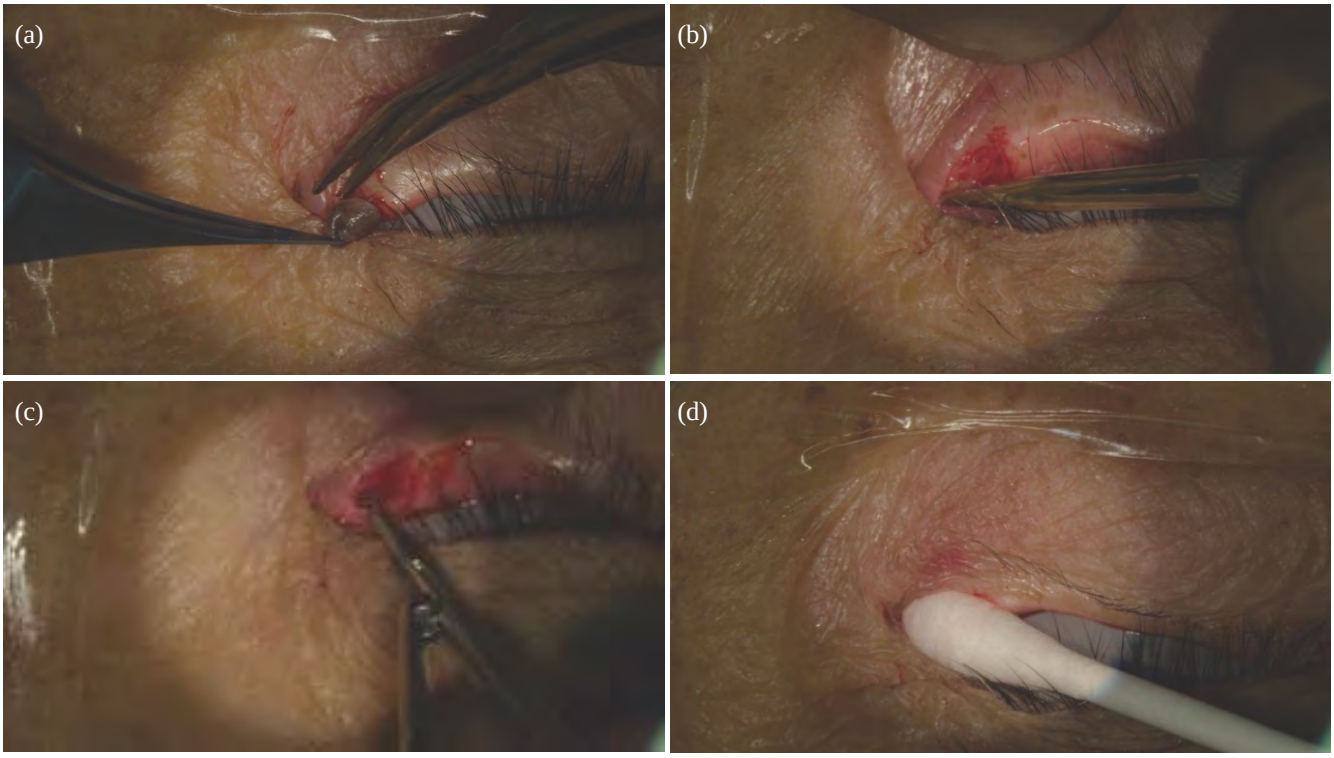


**Figure 2. (a) The peripunctal lesion is excised using forceps and curved scissors. (b) The punctal opening is expanded circumferentially using a punctal dilator. (c) A punch punctoplasty is performed using a standardized Kelly Descemet's membrane punch. (d) A cotton bud soaked in 2.5% phenylephrine eye drops compresses the wound to stop any bleeding.**

Removing growths around the punctum can result in acquired punctal stenosis and epiphora. Reportedly, 10.3% of patients who underwent excision without stent placement lost punctal visibility after the procedure.[1] The success rate is higher when excision is combined with intubation, compared with excision alone.[1] However, complications associated with stent placements may occur, including stent displacement or dislodgement, patient discomfort, chronic irritation, and infection.[3,7] Moreover, the follow-up for stent removal is an additional burden on patients. $CO_2$ laser ablation with silicone stent intubation for treatment of benign peripunctal tumors has a high success rate and satisfactory aesthetic outcomes. However, this approach requires intraoperative pathological examination, which prolongs the operating time and requires additional equipment and costs.

Using a Kelly punch for punctoplasty in patients with symptomatic punctal stenosis is effective.[11] For our three patients, excision followed by punch punctoplasty resulted in minimal blood loss and hemostasis by compression with a cotton bud soaked in phenylephrine. There was no need for cauterization to minimize the risk of punctal stenosis and eyelid notching. The punctal opening and canaliculus were expanded to counteract punctal stenosis during the subsequent healing and contraction. Should a Kelly punch be unavailable, other punctoplasty techniques such as three-snip punctoplasty can be used to create a similar wedge excision extending 2 to 3 mm into the horizontal canalicular segment. Our approach eliminates the need for stent insertion and removal, thus avoiding stent-related complications while reducing the risk of additional surgery. The combined excision and punch punctoplasty produced favorable short-term anatomical and functional outcomes. Nonetheless, the long-term outcomes regarding lacrimal system patency and the optimal management strategy remain to be determined.

## Contributors

All authors designed the study, acquired the data, analyzed the data, drafted the manuscript, and critically revised the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

## Conflicts of interest

As an advisor of the journal, HKLY was not involved in the peer review process. Other authors have disclosed no conflicts of interest.

## Funding/support

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

## Data availability

All data analyzed in this study are available from the corresponding author upon reasonable request.

## Ethics approval

The patients were treated in accordance with the tenets of the Declaration of Helsinki. The patients provided written informed consent for all treatments and procedures and for publication.

## References

1. *Nair AG, Mukherjee B, Kamal S, et al. Peripunctal mass lesions: clinicopathological analysis and surgical outcomes: a multicentric series. Ophthalmic Plast Reconstr Surg 2022; 38:154-9.* Crossref
2. *Zhao Y, Hui JW, Yang LL, Zhao H, Lin JY, Pan Y. Clinical and pathological analysis of 64 patients with primary neoplasms of the lacrimal drainage system [in Chinese]. Zhonghua Yan Ke Za Zhi 2020; 56:364-9.* Crossref
3. *Chen C, Lee YK, Lai CC. Outcomes of lacrimal punctal tumors treated with a superpulse $CO_2$ laser. Lasers Med Sci 2022; 37:2287-91.* Crossref
4. *Scott KR, Jakobiec FA, Font RL. Peripunctal melanocytic nevi. Distinctive clinical findings and differential diagnosis. Ophthalmology 1989; 96:994-8.* Crossref
5. *Ali MJ, Jakati S. Punctal nevus with intracanalicular extension. Ophthalmic Plast Reconstr Surg 2024; 40:360.* Crossref
6. *Rumelt S, Pe'er J, Rubin PA. The clinicopathological spectrum of benign peripunctal tumours. Graefes Arch Clin Exp Ophthalmol 2005; 243:113-9.* Crossref
7. *Chang M, Ahn SE, Baek S. The effect of perforated punctal plugs in the management of acquired punctal stenosis. J Craniofac Surg 2013; 24:1628-30.* Crossref
8. *Custer PL, Council ML. Clinical features and management of eyelid margin nevi. Orbit 2024; 43:8-15.* Crossref
9. *Hwang CS, Lee S, Yen MT. Peripunctal melanocytic nevus. Int Ophthalmol 2011; 31:497-9.* Crossref
10. *Wong ES, Li EY, Yuen HK. Long-term outcomes of punch punctoplasty with Kelly punch and review of literature. Eye (Lond) 2017; 31:560-5.* Crossref
11. *Carrim ZI, Liolios VI, Vize CJ. Punctoplasty with a Kelly punch. Ophthalmic Plast Reconstr Surg 2011; 27:397-8.* Crossref