

# Lacrimal duct reconstruction with Nunchaku® silicone tubes in the setting of periorbital destruction by traumatic and tumorous lesions

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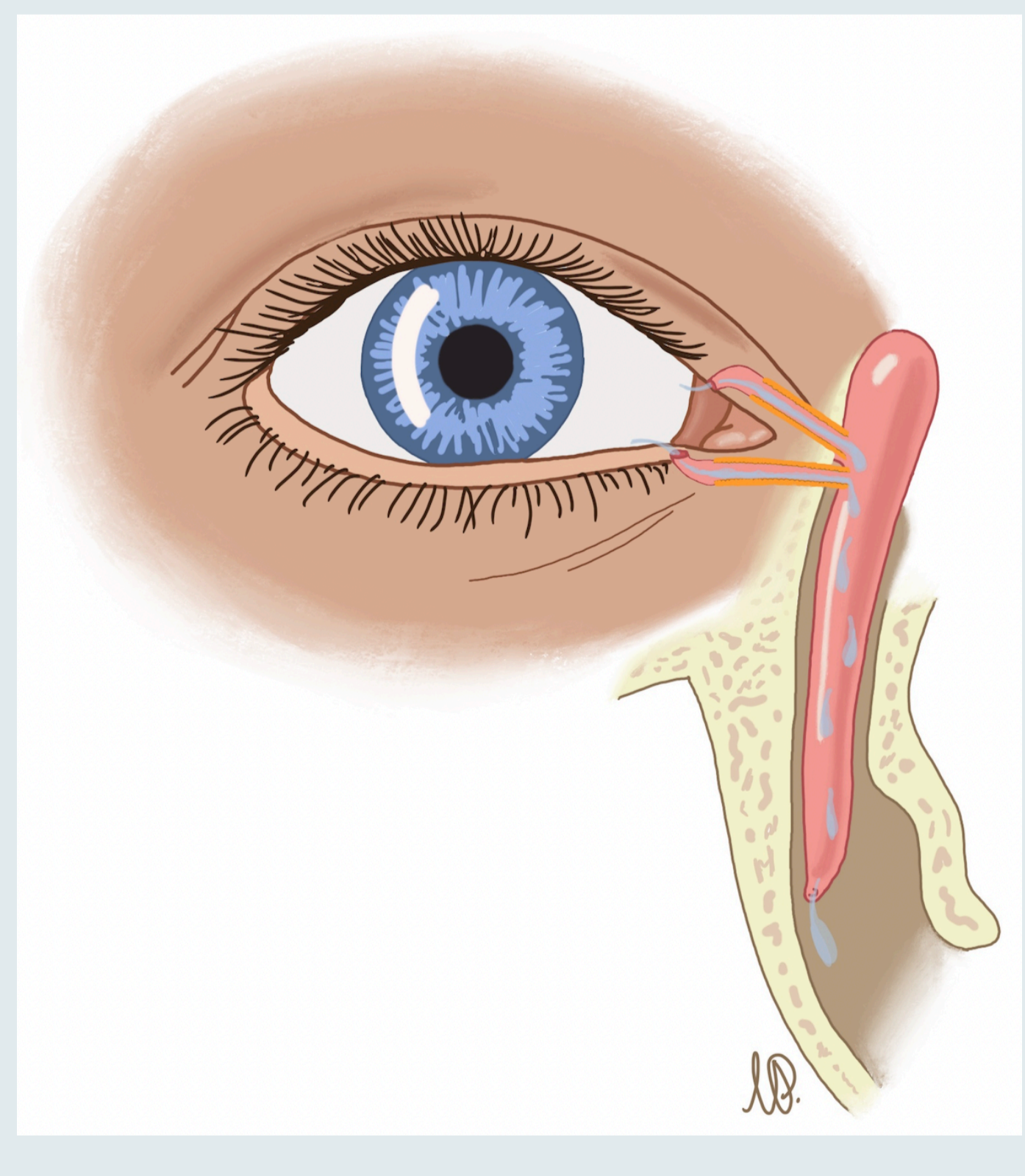
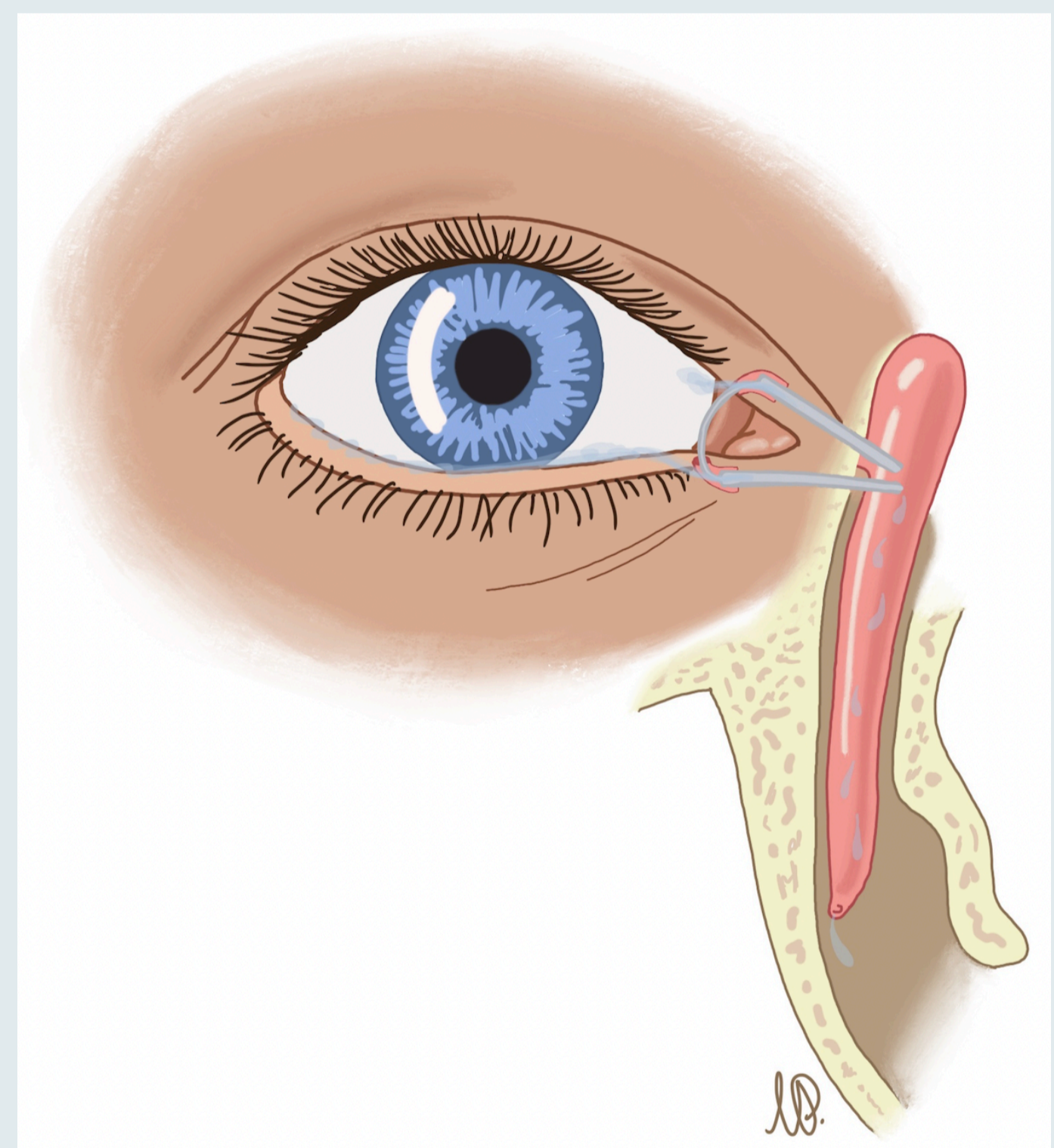
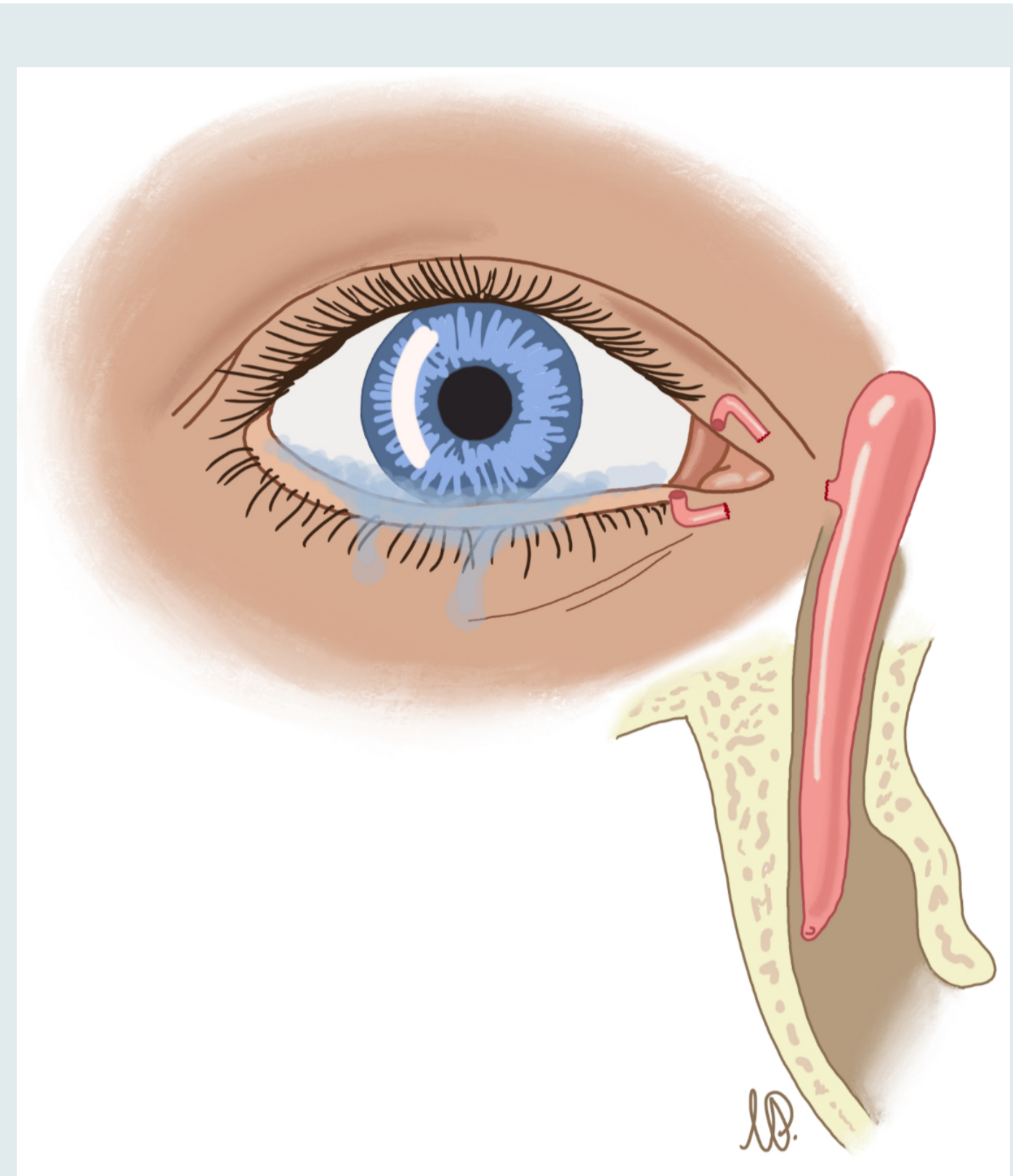
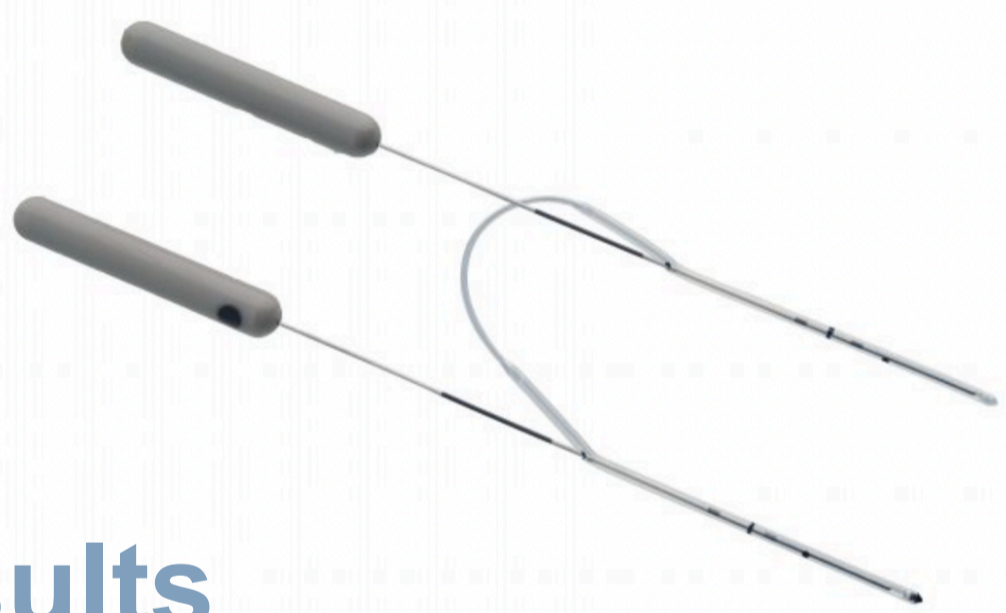
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## Background

- Reconstruction of the lacrimal duct system is crucial in periorbital management following tumor resection or trauma.
- Neglecting lacrimal duct reconstruction can lead to significant complications such as epiphora and conjunctivitis.
- We report our experience with Nunchaku® stent insertion in patients during reconstructive surgery.

## Methods

The suggested reconstruction employs the Nunchaku® lacrimal stenting system, a pushed silicone self-retaining bicanalicular nasolacrimal intubation tube. The Nunchaku® stent is usually inserted into the upper and lower canaliculus and the following nasolacrimal duct. In cases with partial or full destruction of the canaliculi, the Nunchaku is placed in the surrounding (reconstructed) soft tissue with the aim to establish a fistula between the orbit and the nasal cavity for lacrimal drainage. The stent acts as a conformer, maintaining the patency of the new drainage pathway and allowing tears to drain by capillarity through the newly created fistula into the lacrimal sac and nasolacrimal duct.



## Results

Between 2023 and 2024, four patients underwent lacrimal duct reconstruction at the Cantonal Hospital Aarau. Two patients were referred for the excision of a skin cancer, while the other two required reconstruction due to complex facial trauma. Three patients underwent nasolacrimal stenting during the initial reconstructive phase and defect coverage. In the fourth patient, the reconstruction of the lacrimal drainage was performed secondarily during a revision surgery to correct ectropion and epiphora. All patients had their stents removed 2 to 4 months following insertion. Epiphora was reduced in all patients with the Nunchaku® in place. After its removal, all patients had patent nasolacrimal ducts without any symptoms of epiphora. None of the patients reported complications such as conjunctival/corneal irritation or pain.

## Conclusion

- The preservation and/or restoration of the lacrimal system is a fundamental aspect of periorbital reconstruction.
- The use of the Nunchaku® lacrimal stent after tumor excision and trauma offers a potent method to reestablish the natural lacrimal draining preventing epiphora and further sequelae.

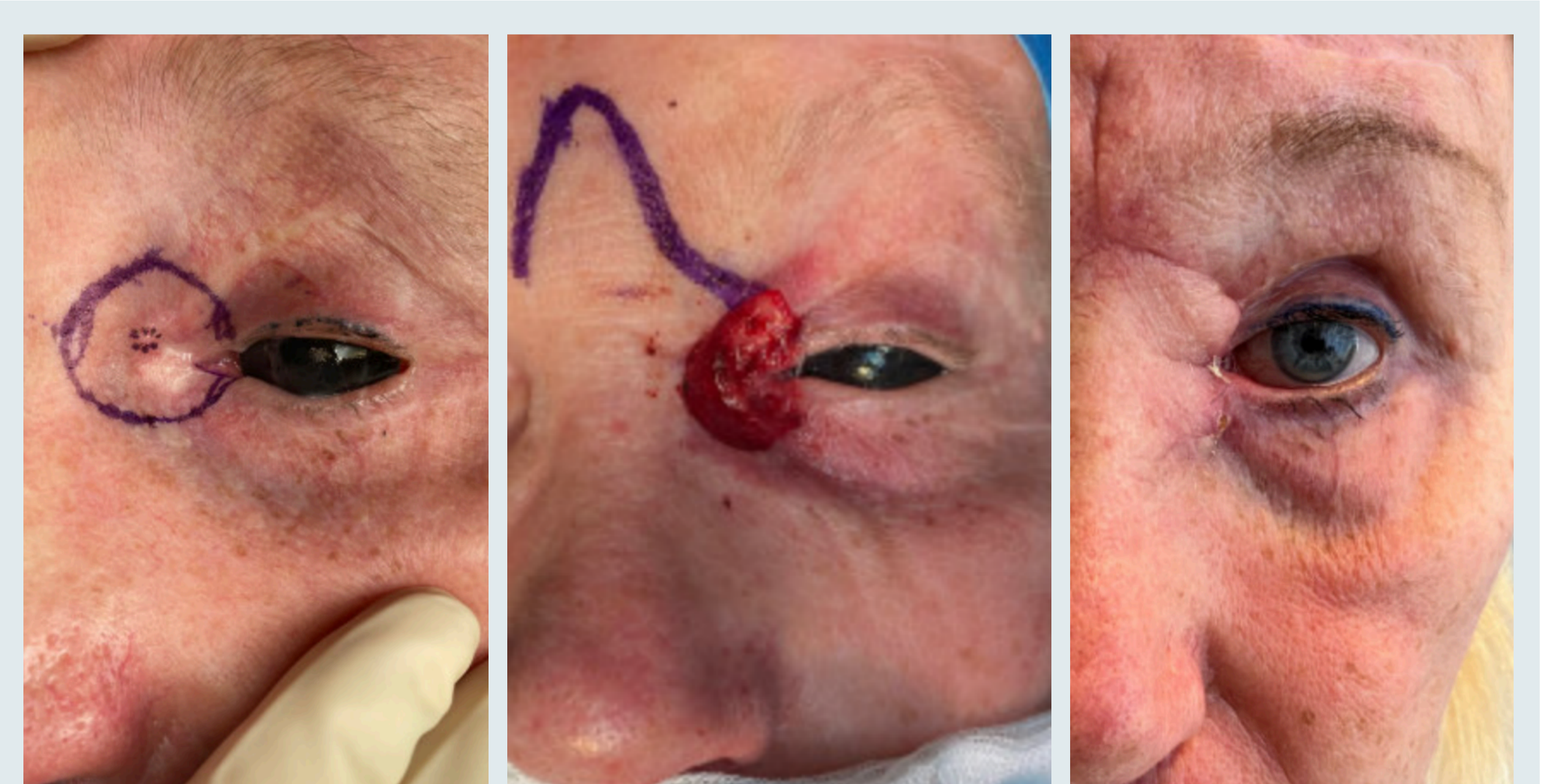
## Cases presentation

A 37-year-old female patient suffered a trauma several years ago after falling from a bicycle, resulting in, among other injuries, a degloving injury to the medial part of the right lower eyelid. She underwent multiple reconstructive treatments, including reattachment of the eyelid using the palmaris longus tendon, skin grafts, and lateral canthopexy. She presented to our clinic with persistent ectropion and significant epiphora, which were causing considerable discomfort. Ectropion was corrected using a medial tarsal strip technique. The scarred area with loss of eyelashes was reconstructed using a composite graft from the endonasal region. Upon probing the lacrimal duct through the puncta, the duct appeared disrupted. A new canal was recreated using a needle down to the bone, followed by bone perforation with a drill. The Nunchaku stent was inserted and visualized endonasally. The stent remained in place for 3 months. At the 3-month follow-up, the patient reported resolution of epiphora and a well-corrected ectropion.



Secondary lacrimal duct reconstruction following traumatic injury

A 70-year-old patient presented with a poorly differentiated squamous cell carcinoma at the medial canthus of the left eye. Surgical excision resulted in disruption of the lacrimal canaliculi, necessitating reconstruction of the lacrimal system. The Nunchaku® stent was inserted through the puncta and extended toward the nasolacrimal sac. A glabellar flap was used to cover the stent. At the 6-week follow-up, the Nunchaku® stent remained in place without causing any discomfort, and tear drainage was functioning properly despite the presence of the stent.



Primary lacrimal duct reconstruction following tumor resection.