



Ten-year outcomes of corneal neurotization in adult and paediatric patients

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Introduction

Neurotrophic Keratopathy (NK) is a degenerative disease of the cornea caused by impairment of trigeminal innervation, resulting in loss of corneal sensation, impaired epithelial healing, and progressive corneal breakdown.

Conventional treatments protect the ocular surface but do not restore corneal innervation

Corneal Neurotization (CN) is a surgical treatment that restores corneal sensation by transferring healthy donor sensory nerves to the anaesthetic cornea.

Objectives

- Evaluate long-term corneal sensory recovery following CN
- Assess ocular surface stability after reinnervation
- Determine changes in best-corrected visual acuity (BCVA)
- Characterize complications and donor-site morbidity

Methods

Study Design

Prospective interventional case series
Single surgeon (E.W)
June 2015 – June 2025

Participants

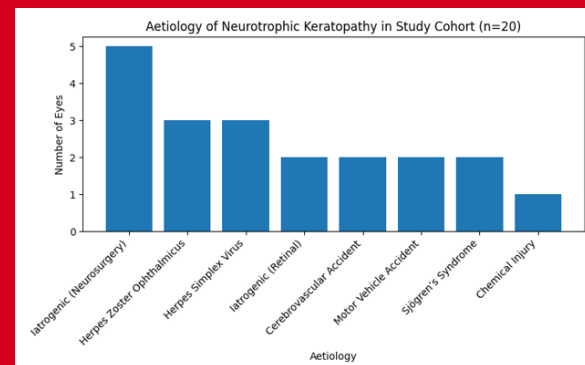
20 eyes with severe, treatment-refractory NK
Adults and paediatric patients included
All eyes classified as advanced disease (Mackie stage III or higher)

Inclusion Criteria

Severe NK with corneal sensory loss
Failure of maximal medical and surgical therapy
Minimum follow-up of 6 months

Results

- All 20 eyes (100%) had previously undergone at least one temporary or permanent tarsorrhaphy that failed to maintain long-term stability
- Median corneal sensation based on our three-score scale improved from 0.0 pre-operatively to approximately 1.0 at 12 months and remained stable at final follow-up, with no evidence of late sensory decline among eyes with recovered sensation
- At 12 months after CN, 80% of patients (16/20 eyes) demonstrated improvement in BCVA, defined as a gain of at least one ETDRS line compared with baseline.



Strengths and Limitations

Strengths:

- All patients were diagnosed and treated within Alberta by the same ophthalmologist
- Long duration of follow up

Limitations:

- Small sample size of a rare disease
- Wide array of aetiology and comorbidities.
- 2 paediatric patients

Conclusion

Further supports the role of CN as a mainstay of the management algorithm for NK

Consistent sensory recovery with safe visual outcomes

