



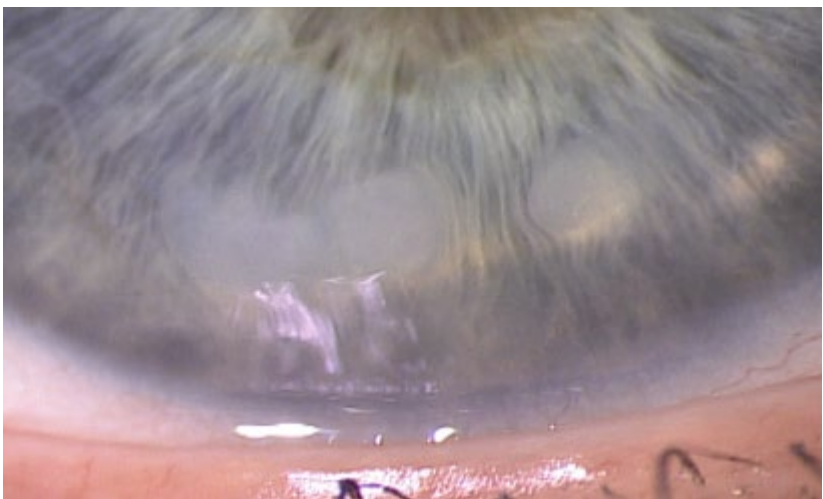
Unconventional applications: Managing dry eye disease secondary to Salzmann’s nodular degeneration with scleral lenses



Nitya Murthy, MS
Kentucky College of Optometry, 2020

Background

Salzmann’s nodular degeneration is a rare, progressive condition in which raised nodules protrude through the corneal epithelium as a result of disruptions to the structural integrity of the corneal epithelium basement membrane. Its etiology remains unclear; however, it has been shown to be associated with dry eye disease secondary to epithelium basement membrane dystrophy, phlyctenular disease, vernal conjunctivitis, contact lens wear and meibomian gland dysfunction. These bluish-whitish nodules often occur in the corneal mid-periphery and can present as single or multiple nodules that may be associated with an iron line.



Patients report symptoms that are commonly associated with dry eyes: decreased vision in the affected eye, light sensitivity and foreign body sensation. Conservative treatment options include management with viscous artificial tears and topical NSAIDs in order to manage irritation and discomfort. More advanced cases may indicate surgical treatment such as superficial keratectomy (SK) and phototherapeutic keratectomy (PTK). However, many times the corneal surface can still remain irregular and vision is diminished to sub-optimal standards. In these cases, a scleral lens may be well-suited for the patient in order to achieve better acuity and improved comfort.

Case Description

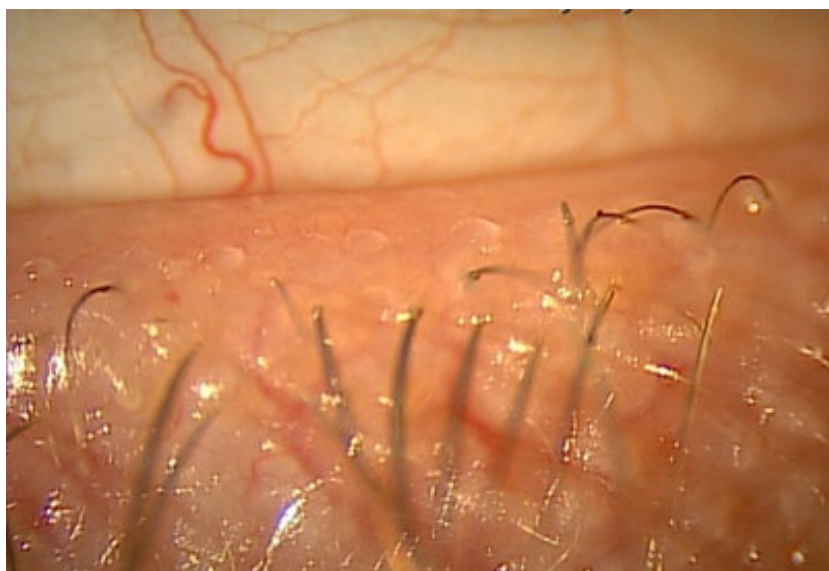


Figure A. Prominent lower lid telangiectasia and capped meibomian glands present indicating presence of blepharitis.



Figure B. Demodicosis and upper lid telangiectasia present, contributing to increased tear film debris and chronic ocular surface irritation.



Figure C. Salzmann nodules evident along limbal periphery.

KS, a 53-year-old Caucasian woman presented to clinic with a history of Salzmann’s nodular degeneration and multiple corneal scrapings in both eyes, and bacterial infection in the right eye with subsequent corneal scarring. She had severe complaints of dryness and irritation at all times with her glasses and was intolerant to soft contact lenses. KS also had a history of Sjogren’s syndrome, hypothyroidism and seasonal allergies. She reported improved vision since having PTK in both eyes, but was still highly uncomfortable with her dry eyes. At the time she was using Xiidra, artificial tears and had punctal plugs in both lower eyelids.

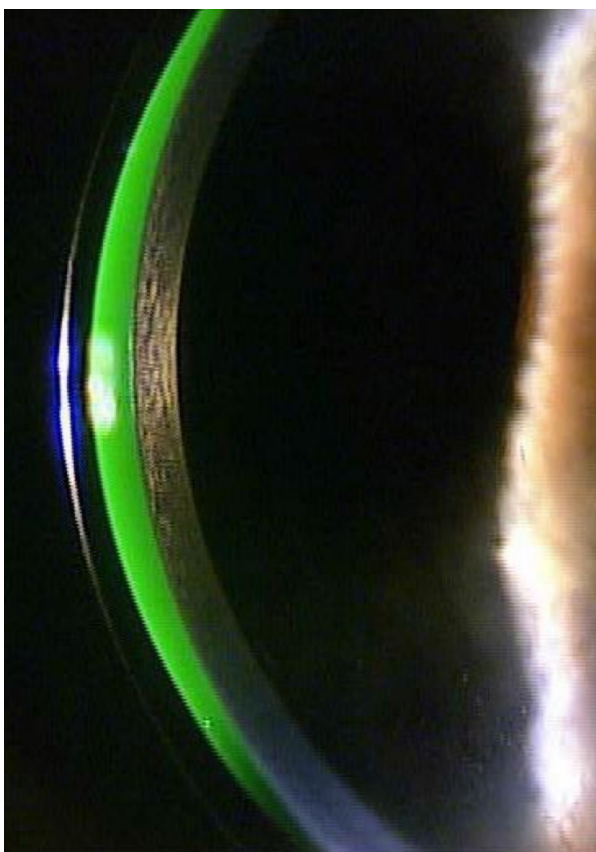


Table 1. Entrance testing for K.S.

Testing	OD	OS
BCVA with spec rx	20/30	20/60
Pupils	PERRL (-) APD	
Extraocular motility	Full and smooth	
Confrontation visual fields	Full to finger counting	
TBUT	4 seconds	4 seconds
TearLab Osmolarity	336	341
Lid margins	2+ blepharitis, telangiectatic vessels, scalloped margins OU	
Meibomian gland expression	1-2+, poor meibum quality	1-2+, poor meibum quality
Corneal staining	2+ inferior SPK	1+ inferior SPK
Conjunctival staining	1+	Trace
Korb-Blackie light testing	Negative	Negative
Cover test	Orthophoria @ D, low exphoria @ N, (-) trigeminal dysphoria	
Other anterior segment findings:	3 Salzmann nodules in infero-nasally in the right eye	2 Salzmann nodules temporally in the left eye
Other findings:	1+ NS, tr CC	1+ NS, tr CC

A dilated fundus exam was not performed at this visit.

Management

KS wished to proceed with scleral lenses and was fit with Europa 16.0 mm diameter lenses. We incorporated an aspheric design with toric peripheral curve at 12 and 6 o’clock in order to achieve a smoother landing. We also notched the right lens nasally to circumvent a pinguecula. At her initial fitting visit, she her best corrected visual acuities were 20/20 in the right eye and 20/25 in the left eye with mild lens awareness. The lens design was modified to increase peripheral clearance in order to avoid compression of the nodules by the lens. A toric peripheral curve was added at the 12 and 6 meridians. The patient expressed interest in trying multifocal lenses as well, and so a center-near multifocal design was incorporated.

Follow-up

At her dispense visit, the patient was 20/20 in both eyes at distance and was able to view her phone and read a computer screen with excellent comfort. Patient returned to clinic for an insertion and removal training and was able to handle the lenses very well. We saw her at her 3 month follow-up and patient reported great vision and drastic mitigation of her dry eye symptoms. She is able to achieve 8-10 hours of comfortable wear time each day and does not need to use reading glasses.

Conclusions

Patients with ocular surface disease secondary to corneal pathologies can greatly benefit from the relief of a scleral lens. Vaulting the nodules with a scleral lens may have mitigated K.S.’s symptoms by preventing chronic friction and irritation to the modules by the motion of the blink. We chose a scleral lens due to her dry eye complaints and Sjogrens syndrome, but it was challenging to vault each nodule after accounting for settling time. Each nodule must be vaulted fully, because compression can cause them to rupture and create much more pain and discomfort for the patient. Our final design ended up being similar to a reverse-curve design. With the modified fits and an aspheric lens design, KS is now comfortable with excellent vision at distance and near.

References

1. Das, S., Link, B., & Seitz, B. (2005). Salzmann’s Nodular Degeneration of the Cornea. *Cornea*, 24(7), 772–777. doi: 10.1097/01.icc.0000153100.74033.ef
2. Karpecki, P. M., & Shechtman, D. L. (2011). A Look at Salzmann’s. *Review of Optometry*. Retrieved from <https://www.reviewofoptometry.com/article/a-look-at-salzmanns>