STATE UNIVERSITY OF NEW YORK
COLLEGE OF OPTOMETRY

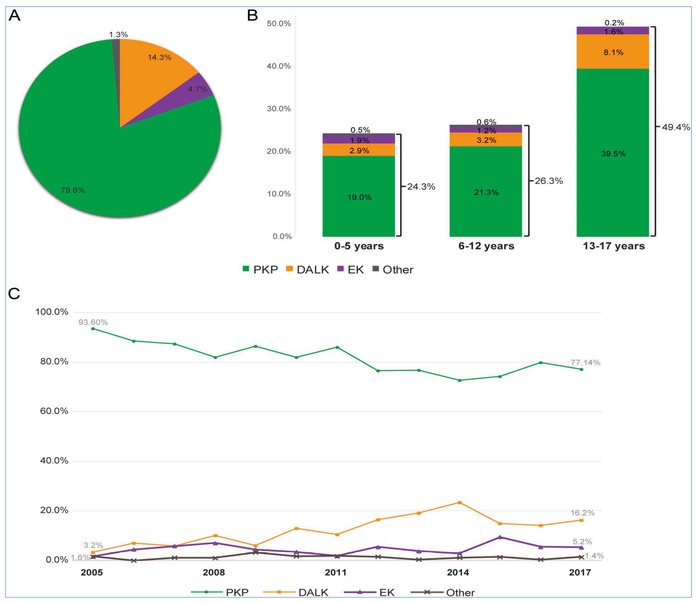
The Beauty You See Inside, Reflected on the Outside

A Case of Pediatric Prosthetic Lens Fitting

Julie Song BS, Joann J. Kang MD, Kent Uehara BS, Sharon P. Keh OD, FAAO

INTRODUCTION

In the United States, around 160 cases of pediatric Penetrating Keratoplasties (PK) are performed each year[5]. Due to the higher likelihood of post-PK complications in pediatric cases when compared to adult ones[3], special consideration needs to be given to these patients due to an increased risk of herpes simplex virus (HSV) reactivation, graft rejection, ocular inflammation, and/or ocular hypertension/glaucoma[1,2,4].



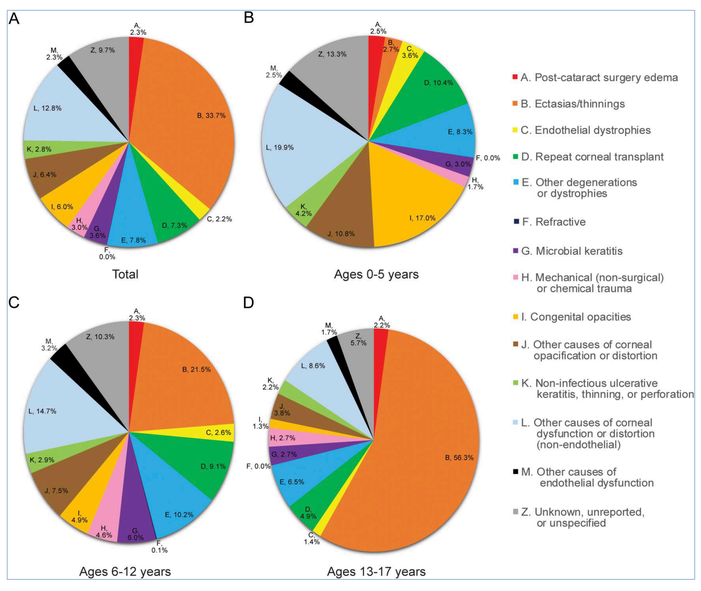


Figure 1: Frequency and Indications for Corneal Transplants in Pediatric Populations
Source: Zhu, et al.

Prosthetic lenses may be a temporary or permanent solution for poor surgical candidates suffering from leukocoria. Intervening with a prosthetic lens, particularly in girls, may help the development and maintenance of a healthy body image and strong self-esteem.

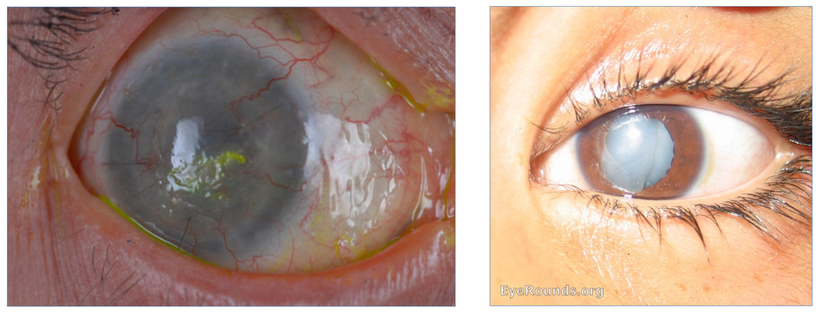


Figure 2: Corneal Opacification with Neovascularization and Traumatic Cataract
Source: University of Iowa Health Center and lasikcomplications.com

CASE REPORT

A 9-year-old Asian female was referred for a cosmetic, prosthetic contact lens fitting status-post a failed repeat penetrating keratoplasty following Herpes Simplex Virus (HSV-1) keratitis OS. As the infection and surgeries had taken place in prior years, with the most recent PKP occurring in 2018, she had developed a subsequent dense amblyopia OS. Further surgical complications include a traumatic cataract and angle-closure OS. IOP was well-maintained with Latanoprost 1 gt OS and Dorzolamide / Timolol 1 gt BID OS. She was thrilled that her initial visit was on a school day as she was concerned about the appearance of her opacified cornea in front of her classmates.

Manifest Refraction

OD:	+0.50sph	20/15
OS:	plano	HM, pinhole: NI

Slit Lamp Examination:

	OD	OS
Lids	1+ scurf	1+ scurf, protective ptosis
Conj	White and quiet	White and quiet
Cornea	Clear	s/p PK – opacified, superior ”Munson’s sign”, 3-4+ corneal edema, resolving bullae, dense stromal neovascularization, 2 buried sutures superonasally
Pupil	Unremarkable	Iatrogenic polycoria with atrophy
AC	Deep and quiet	Peripheral anterior synechiae
Lens	Clear	4+ cataract

CONTACT LENS FITTING

Despite numerous devices and multiple attempts, corneal topographies could not be obtained on the affected eye. Instead, a diagnostic fitting was initiated. Due to her dark iris color, a tinted lens was trialed first.

Due to the patient’s irregular corneal shape and small HVID, all in-office trials exhibited extreme fluting. A trial lens was ordered with steeper base curve radius, larger diameter, high plus power, and an iris diameter/color to match her right eye.



Trial #	POWER	Color	Brand	Type	Base Curve (mm)	Iris Diameter (mm)	Overall Diameter (mm)
1	plano	Walnut #3	Alden	HP 49 Sphere	8.6	11.0	14.5
2	plano	Walnut #3	Alden	HP 49 Sphere	8.0	11.0	13.8
3	-4.75-5.00x160	Clear	Alden	NovaKone Toric	7.8	N/A	15.0
FINAL	+6.00	Walnut #3	Alden	HP49 Sphere	8.0	11.0	15.0



With the help of the consultation department, the patient’s initial lens was immediately dispensable and finalized at the follow-up. She only wears the lens to school on a daily wear schedule and replaces it quarterly.

CONCLUSIONS

Among the indications for pediatric corneal transplantation, HSV keratitis is the most common cause of acquired, non-traumatic corneal scarring requiring surgical intervention[4]. Pediatric PK patients have varied rates of graft rejection (22-43%) due to their hyperactive immune systems[2]. In addition, anatomical differences in a child’s sclera may result in crimpling of the eyeball during surgery and subsequent forward displacement of iris diaphragm and lens[2]. Patients can be left with a myriad of surgical complications including significant irregular astigmatism and a topography similar to that of primary corneal ectasias. When fitting specialty soft lenses, numerous parameters can be customized including: material, base curve, power, diameter, center thickness, iris color, pupil details, etc. By working closely with her cornea specialist, we were able to find a well-fitting contact lens to meet her cosmetic needs for improved self-image, confidence, and social acceptance.

REFERENCES

1. Jabbehdari, Sayena, et al. “Update on the Management of High-Risk Penetrating Keratoplasty.” Current Ophthalmology Reports, vol. 5, no. 1, 2017, pp. 38–48., doi:10.1007/s40135-017-0119-2.
2. Limaiem, R., et al. “Pediatric Penetrating Keratoplasty: Indications and Outcomes.” Transplantation Proceedings, vol. 43, no. 2, 2011, pp. 649–651., doi:10.1016/j.transproceed.2011.01.055.
3. Lin, Qi, et al. “Visual Outcomes and Prognostic Factors of Successful Penetrating Keratoplasty in 0- to 7-Year-Old Children With Congenital Corneal Opacities.” Cornea, vol. 37, no. 10, 2018, pp. 1237–1242., doi:10.1097/ico.0000000000001689.
4. Vanathi, M., et al. “Pediatric Keratoplasty.” Survey of Ophthalmology, vol. 54, no. 2, 2009, pp. 245–271., doi:10.1016/j.survophthal.2008.12.011.
5. Zhu, Angela Y., and Christina R. Prescott. “Recent Surgical Trends in Pediatric Corneal Transplantation.” Cornea, vol. 38, no. 5, 2019, pp. 546–552., doi:10.1097/ico.0000000000001900.