The field of specialty contact lens fitting is booming. Although this practice began several decades ago, it was only recently that technological improvements made the fitting of specialty contact lenses accessible to a greater number of optometry offices. With advanced training and cutting-edge technology, optometrists are in a better position than ever to enhance patients’ vision, comfort, health, and quality of life. This article describes how to meet the challenges of specialty contact lens fitting in children.

**A COMPLEX PROCESS**

Despite advances in optometrists’ understanding of and instruction on the fitting of specialty contact lenses, the fitting process is not easy. It takes a great deal of time, energy, and discipline to acquire and cultivate the skills required to become a successful practitioner of specialty contact lens fitting.

**AT A GLANCE**

- Although optometrists’ understanding of and instruction on the fitting of specialty contact lenses continues to advance, the fitting process is not easy.
- Specialty contact lens fitting gives optometrists an opportunity to specialize their practices, cultivate new skills, and—most important—help patients.
- Using advanced technology may improve the efficiency of a contact lens fitting and enhance clinical outcomes.
specialty contact lenses. Moreover, what the phrase specialty contact lenses encompasses is subjective. In general, most optometrists use this expression to refer to rigid gas permeable (RGP) lenses, scleral lenses, orthokeratology lenses, hybrid lenses, and a variety of customized soft lenses (cosmetic, aphakic, etc.).

The complexity of the specialty contact lens fitting process depends on a wide variety of factors such as the underlying reason for the fitting (a patient’s ocular and/or systemic conditions), available technologies (corneal and/or scleral topography, endothelial cell count, etc.), and dexterity (ability to insert and remove lenses). A patient’s age can also contribute to the difficulty and success of a specialty contact lens case, as the cases presented in this article show.

**CASE NO. 1**

A 4-year-old white male was referred to the specialty contact lens clinic for a consultation. The patient had a history of globe rupture in the right eye from a high-velocity wooden projectile. He had undergone surgery to remove a traumatic cataract. Additionally, a scleral buckle had been placed to repair a scleral laceration extending horizontally limbus to limbus 1 to 2 mm...
below the visual axis.

Other findings (IOPs, pupils, extraocular muscles, etc.) from the preliminary examination were within normal limits. Visual acuity testing was attempted, but an accurate measurement could not be obtained because of poor patient cooperation. For this reason, an in-office specialty contact lens fitting was not possible, and an examination under anesthesia (EUA) was imperative for a fitting to proceed. The patient’s parents agreed to have the patient undergo an EUA for a specialty contact lens fitting. A standard soft contact lens would likely have been ineffective because of the irregular astigmatism caused by corneal scarring. 

During the EUA, an impression mold was taken of the patient’s right eye using EyePrintPRO (EPP) technology (EyePrint Prosthetics). An EPP lens fitting entails applying an impression material to the ocular surface, keeping the material in place until it stabilizes, and then removing it. The process is similar to when an orthodontist takes a dental mold for a retainer. After removal of the impression, an aphakic RGP trial lens set was used to perform an overrefraction to determine the lens prescription. The EPP impression was then sent to the laboratory, where it was digitized with proprietary software to construct an RGP lens that was optimally fit to the ocular surface that it was designed to cover (ie, this patient’s right eye). The final parameters included a base curve of 9.55 mm, an overall diameter of 11.0 mm (the patient had a large cornea for his age), and a power of
The patient’s parents were both trained on appropriate RGP lens care and maintenance and given instructions on the proper application and removal of an RGP lens. The cleaning and storage of RGP lenses is typically the same for children and adults. The parents place the lens on the patient’s right eye before he wakes up and remove it after he is asleep. Wear time began with a couple of hours and has increased steadily over time.

The patient has been successfully wearing a customized EPP-designed RGP lens for 2 months. Patient cooperation during examinations continues to be a challenge, and an accurate measurement of visual acuity remains elusive. The patient’s parents, however, have reported a functional improvement in his daily activities and no noticeable level of discomfort. The patient will be monitored closely, and lens refitting will be frequently indicated as his eye grows and changes. See Strategies for Success for helpful pointers on fitting young patients.

**CASE NO. 2**

A 12-year-old white male was referred by the pediatric ophthalmology clinic for a specialty contact lens evaluation. The patient’s ocular history was significant for bilateral degenerative myopia, bilateral refractive amblyopia, and a mild variety of bilateral cone-rod dystrophy (Figure 2). He reported symptoms of minification while wearing corrective spectacle lenses and expressed a desire to engage in sporting activities at school.

Best corrected distance visual acuity was 20/125 with a manifest refraction of -17.00 -2.25 x 015º OD and 20/40 with a manifest refraction of -16.00 -1.75 x 180º OS.

Corneal topography was performed to aid the contact lens fitting (Figure 3). Despite the patient’s regular astigmatism, RGP lenses were selected because they often provide the best subjective vision to patients. The topographic images were then used in tandem with a diagnostic fitting set to find a best-fit lens. Because the corneal astigmatism was regular, the patient was fit with spherical RGP lenses. He was ecstatic with his visual outcome: Best corrected distance visual acuity was 20/70 OD and 20/30 OS. The final RGP lens parameters are shown in the Table.

The patient was mature enough to become proficient at applying and removing his RGP lenses, and he was instructed on their appropriate care and maintenance. He has been happily wearing the lenses for 6 months, and he has been playing both soccer and baseball while wearing his RGP lenses. Read Pro Tips for some additional tricks of the trade.

**WORTH THE EFFORT**

At times, fitting specialty contact lenses in children can be a frustrating and stressful process, but the experience is truly rewarding more often than not. It will give you an opportunity to specialize your practice, cultivate new skills, and—most important—help patients. Moreover, favorable outcomes are likely to win you lifelong patients. As technology advances, results will continue to improve.

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**TABLE.** Final RGP Lens Parameters in Case No. 2

<table>
<thead>
<tr>
<th>EYE</th>
<th>BASE CURVE</th>
<th>OVERALL DIAMETER</th>
<th>DIOPTER SPHERE</th>
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</thead>
<tbody>
<tr>
<td>Right</td>
<td>43.12 mm</td>
<td>9.4 mm</td>
<td>-14.50</td>
</tr>
<tr>
<td>Left</td>
<td>43.50 mm</td>
<td>9.4 mm</td>
<td>-16.00</td>
</tr>
</tbody>
</table>

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