Chapter 12
Slit Lamp Examination on Pediatric Patients

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ABSTRACT

Slit lamp examination is an important component of a pediatric eye exam. The slit lamp instrument, also known as a biomicroscope, is used to provide a stereoscopic magnified view of the ocular structures. The slit lamp facilitates the examination of both the anterior segment as well as the posterior segment of the eyes. For posterior segment examination, handheld lenses are used in conjunction with the slit lamp. Different tools and examination techniques are often needed to examine infants, toddlers, and other pediatric patients who cannot be positioned in the slit lamp. This chapter discusses the techniques and equipment used to facilitate the ocular health examination, including anterior segment structures, posterior segment structures, and intraocular pressure measurements in the pediatric population.

INTRODUCTION

Performing a thorough ocular health examination on pediatric patients is critical for the appropriate diagnosis, treatment and management of any ocular findings they may have. While slit lamp examination, also known as biomicroscopy, is one of the most used tools for ocular health examination, it is not always possible to examine pediatric patients with this piece of equipment. Different tools and examination techniques are often needed to examine infants, toddlers and other pediatric patients who can not be positioned in the slit lamp.

For pediatric patients who can be positioned in the slit lamp, using this piece of equipment allows the clinician to examine all anterior segment structures with a magnified view. Hand held lenses are used in conjunction with the slit lamp to examine the posterior pole of the eye as well as the mid-periphery.

Tonometry is another important exam component that will be discussed in this chapter. There are a number of different methods available for obtaining an intraocular pressure reading whether it is using a Goldmann applanation tonometer or one of the many handheld device options available.

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The goal of this chapter is to educate the reader on how to evaluate the ocular health of a pediatric patient, encompassing the anterior segment structures of the eye, portions of the posterior segment and intraocular pressure measurement.

+20D LENS WITH TRANSILLUMINATOR

Indication

A +20D lens normally used for binocular indirect ophthalmoscopy (BIO) can be used in conjunction with a transilluminator to examine the anterior segment of young patients, particularly infants and toddlers. This technique is indicated for children who are not able to have their anterior segment examination performed using a slit lamp. The +20D lens is used as the magnification source, while the transilluminator provides the light source (Figure 1).

This technique is also very useful for children of any age with special needs who are unable to be examined in the slit lamp as well as when performing bedside examinations in hospital settings.

Background

This technique allows for gross examination of the adnexa, eyelids, eyelashes, sclera, conjunctiva, lacrimal lake, cornea, iris, anterior chamber angle and lens. The +20D lens is held in front of the child's eye at a distance of less than five centimetres and the light is projected through the magnifying lens (Figure 2). Due to the close distance between the child and the +20D lens a magnified, upright, and virtual image is produced.

Clinical Pearl: *If an extra hand is needed to examine the patient for manipulation or fixation purposes, a binocular indirect ophthalmoscope (BIO) can be used as the light source instead of a transilluminator. This allows the examiner to hold the condensing lens in one hand, and have the other hand free to hold eyelids, direct fixation, or hold a toy as necessary while the BIO is worn on the examiner's head to provide the light source.*

Clinical Pearl: *A drop of sodium fluorescein can be instilled in the patient's eye to allow for further examination of the cornea and conjunctiva. Using a BIO or a direct ophthalmoscope with the cobalt filter and the +20D lens allows for examination of corneal and/or conjunctival staining patterns.*

Advantages

This technique allows the examiner to obtain a gross idea of the health of the anterior segment structures of the eye. It is beneficial to be able to look for any pathology that may need to be treated or further examined. Using the +20D lens with a transilluminator can easily and quickly detect an abnormality of the ocular adnexa, eyelids, eyelashes, sclera, conjunctiva, cornea or lens. No further equipment is needed as most clinicians will have a +20D lens for BIO examination.