Abstract—every baby that is born prematurely is at risk for retinopathy of prematurity (ROP), a disease affecting the growth of blood vessels in the retina. The SD-OCT is a printable scanner that allows for faster, more accurate imaging of babies eyes, allowing for faster diagnosis and less discomfort of the patient and their family.

I. INTRODUCTION

Retinopathy of prematurity is a disease that can affect premature babies. It is an abnormal growth of the blood vessels in the retina of the eye. In a normal baby the blood vessels of the eye don’t stop growing until about a month after birth, so in a premature baby, the blood vessels are not yet developed, or finished growing before they reach the edge of the retina. Doctors believe the retina sends out signals to other areas of the retina for oxygen and nourishment causing abnormal growth of vessels. These new vessels are fragile and can easily begin to bleed, causing scaring. When the scars shrink, it pulls on the retina, often times causing it to detach. There are five stages of ROP, ranging from minor abnormalities in vessels which often resolve on their own with no vision impairment, to significant abnormalities which can lead to detached retinas, causing severe vision impairment or even blindness. The SD-OCT is the newest way to effectively scan preemies eyes to detect if they have ROP.

II. METHODS

The SD-OCT or Spectral Domain Optical Coherence Tomography is the newest version of the OCT. The SD-OCT uses narrow beams of light to penetrate the deep tissues of the eye, allowing for clear 3D images. The SD-OCT was developed at Duke University, and is one hundred times faster than the OCT, taking 40,000 images every second, allowing for the clearest picture of the eye yet. It also uses TruTrack technology, which tracks the eyes movement throughout the scan, allowing for detection in change during the scan. It also offers cross-sectional images, for better visualization.

III. RESULTS

The SD-OCT has been found to be 100 times faster than the original OCT, and takes 40,000 pictures per second, making for clearer pictures as well. The SD-OCT speed and accuracy allows for faster and more accurate diagnosis.

IV. DISCUSSION

The use of the SD-OCT has many advantages to the traditional eye exam, or even the OCT. With the SD-OCT, a diagnosis will come much fast, and more accurate, because of its use of the TruTrack technology, and the multiple wavelengths of light. Another advantage of the SD-OCT is that it allows for the babies to stay in their incubator while the test is being performed. The SD-OCT costs about 100,000 dollars to buy, which compared to many other devices is not that costly. This should make it more easily accessible for all hospitals, allowing more preemies to have early detection for ROP.

REFERENCES


