1. INTRODUCTION
Glaucoma is characterized by the gradual loss of vision and is second only to cataract as the most common cause of blindness [1]. Elevated intra-ocular pressure (IOP) is known to be a risk factor and cause of glaucoma. Blindness may result due to the damaged retinal ganglion cell (RGC) axons that pass through a mesh like structure, called lamina cribrosa (LC), within the optic nerve head and the optic nerve that delivers visual information to the brain. The normal structure and function of LC is vital for the health of RGC axons [2]. In this study, effect of increased IOP on the LC was visualized by detecting second harmonic generation (SHG) signal from the endogenous collagen fibers.

2. METHODS
The anterior side of LC was accessed by mounting freshly obtained porcine eye globes in a customized chamber. The LC pores were subjected to a simulated IOP of up to 40 mm of Hg, representing an acute value of glaucoma in clinical settings. To visualize the complete lamina cribrosa field (Fig. 1), it was imaged at six different locations with a 10x/NA0.45 objective in a customized SHG microscope [3]. The collagen fibers in the LC were excited by 800 nm light from a 110 femto-second pulse laser. The back-scattered SHG signal was collected with a cooled PMT from the unstained tissue. Each sub image of the collage in Fig.1 consists of a stack of 7 images representing a 60µm depth, taken in steps of 10 µm.

3. RESULTS
SHG microscopy was used to visualize collagen in the lamina cribrosa of porcine eyes. With a rise in IOP, the pores of LC enlarge and their cross-sectional profile deforms to assume an increasingly circular shape. The pores in the temporal sector of the lamina appear to be more susceptible to elevated IOP as compared to the nasal section.