Background: During the first 3 years after implantation of an everolimus-eluting poly-l-lactic-acid (PLLA) scaffold (Absorb BVS, Abbott Vascular), the polymeric struts are progressively hydrodized and subsequently replaced by proteoglycan. Eventually, the provisional matrix becomes cellularized by smooth muscle cell or connective tissue. Previous preclinical studies demonstrated that Optical Coherence Tomography (OCT) by visual assessment is unable to distinguish polylactide from polylactide-co-glycolide (PLA-G) scaffolds. Eventually, the provisional matrix becomes cellularized by smooth muscle cell or connective tissue. Previous preclinical studies demonstrated that Optical Coherence Tomography (OCT) by visual assessment is unable to distinguish polylactide from polylactide-co-glycolide (PLA-G) scaffolds.

Methods: In the ABSORB Cohort B2 trial, 17 patients underwent serial frequency-domain OCT post procedure, at 1 year and at 3 years. Corresponding struts in corresponding cross-sections at different times were detected by using anatomical landmarks. The region of interest (ROI) encompassing the corresponding struts was selected visually; two different intensity assessments were performed. One was “Area assessment” for measuring the mean intensity value of the strut area line and the other was “Line assessment” for measuring the peak intensity value along a single scan line. Results: A total of 172 corresponding struts were sequentially analyzed. The results are shown in the table. (Figure)

Conclusions: The mean and peak light intensity of corresponding struts increased steadily from baseline to 3 years, suggesting that this quantitative method of OCT assessment might be valuable for monitoring the resorption process of polymeric biodegradable scaffolds.