Introduction: Metabolic changes in diabetes mellitus lead to early liquefaction of the vitreous and cross-linking of the collagen network in a process which has been described as “diabetic vitreopathy”. This altered vitreous framework provides the scaffold for neovascularization in proliferative diabetic retinopathy (PDR). Recently, several investigators have examined the posterior vitreous using swept-source optical coherence tomography (OCT) and documented the in vivo relationships of the various posterior vitreous spaces, such as the premacular bursa, the preoptic area of Martegiani and the hyaloidal tract of Eisner, and also described the prevascular fissures (PVF) and perimacular cisterns (PC).

Nevertheless, the relationship between the retinal neovascular complexes (NVCs) of PDR, their associated possible sub-hyaloid and vitreous hemorrhages, as well as the many potential spaces in the vitreous cavity is still subject of debate. We aim to describe anatomic relationships of retinal NVCs and the posterior vitreous in proliferative diabetic retinopathy using spectral-domain OCT.

Methods: Cross-sectional study. Neovascular complexes were imaged using spectral-domain OCT in 51 eyes of 37 patients. The relationship of NVCs to the posterior vitreous cortex and posterior vitreous spaces, such as the premacular bursa, PVF and PC, were analyzed.

Results: In the 77 NVCs evaluated 61 (79%) had grown along the outer surface of the posterior hyaloid face and vitreoschisis was present in 37 (48%). The “Wolf’s jaw” configuration was present in 9% and resulted from NVC arising from the arcades and proliferating along the posterior hyaloid face.

By contrast, NVCs that invaded the bursa originated from smaller venous tributaries more distant from the arcades. The premacular bursa and PVF/PC were invaded infrequently, respectively in 15% and 38% (p=0.137).

Conclusions: Tomographic analysis of diabetic NVCs showed that most NVC arise and grow along the posterior hyaloid face and that vitreoschisis is more prevalent than what has been found in ultrasound studies. The “wolf’s jaw” configuration does not seem to result from invasion of the bursa, as previously suggested.