Swept Source OCT Angiography in eyes after scleral buckling

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Purpose:
To evaluate macular microvasculature with special regard to fovea avascular zone and vessel density in eyes with rhegmatogenous retinal detachment (RRD) treated with scleral buckling.

Methods:
It is a retrospective, interventional study. Inclusion criteria were as follows: signed informed consent, scleral buckling as the only retinal surgery in the evaluated eye, swept source OCT Angiography (SS-OCT A) performed at least twice during regular follow-up controls for at least 24 months after surgery, anatomic success achieved after primary surgery. In all eyes a complete ophthalmic examination, swept source OCT and SS-OCTA were performed. We measured visual acuity, central retinal thickness, central choroidal thickness, intraretinal changes in the fovea, vessel density at the level of superficial and deep retinal plexus, area of fovea avascular zone (mm²) at the level of superficial and deep retinal plexus.

Results:
74 eyes of 72 patients (40 males, 32 female) were in the mean age of 48 years were included into the analysis. 24 eyes had a macula on RRD and were classified into group one and 50 eyes had macula off RRD and were classified into group two. Mean visual acuity was significantly better in group one (p<0.05). Mean central retinal thickness did not change significantly in any subgroup (p=0.06; p=0.2) and did not differ between them (p=0.32). There was statistically significant decrease in central choroidal thickness six months after surgery in group one (median 247μm to 216μm, p=0.047). sFAZ and dFAZ did not differ significantly at any time point for any group (p=1.0, p=0.78). One month after surgery vessel density at the level of deep retinal capillary plexus was statistically significant lower in group two- both, when compared to group one (p=0.01) or to fellow eyes (p<0.001).

Conclusions:
Patients with a macula-off retinal detachment had decreased vessel density one month after surgery, which normalized at later timepoints. This study confirms that in regard to vessels visualized with SS-OCT A scleral buckling does not seem to influence foveal choroidal vasculature in the long term. Vasculature in patients treated with a cerclage, even after a macula- off retinal detachment tend to normalize in the long-term.