Anterior Segment OCT in glaucoma filtering blebs management

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Introduction
Trabeculectomy by Cairns represents, after more than 40 years, the gold standard in glaucoma surgery. Antimetabolites play a important role in intraoperative phases and during the follow up, giving a great contribute to improve success rate. The resulting conjunctival bleb is the anatomical site responsible of success or failure of surgery from the first post operative day to several decades after the procedure. His management represents one of the most important challenge of glaucoma surgeon. Anterior Segment OCT was born for the study of cornea and his relationships with iridoangular structures. He has a definition of 18 microns using an interferometer of 1310 nm of wavelength. It’s a no contact technology that allows examinations of eyes in the first postoperative day, visualizing superficial layers of eyeball (i.e. conjunctiva, tenon capsule, sub conjunctival space, sclera, sovrachoroidal space and choroid).

Materials and Methods
We examined 46 eyes of 39 glaucomatous patients who underwent glaucoma filtering surgery, 25 male and 14 female. 13 eyes had Ex Press P200™ implantation, 33 eyes had a trabeculectomy. In all cases was used intraoperative Mitomycin C (0.2-0.3mg/ml for 2-3 minutes). Minimum follow up one day post op, maximum 48 months post op. All patients were examined with Anterior Segment OCT using horizontal scans passing from optic axis, scans oriented in limbal parallel or radial sense passing from bleb and scleral flap area.

Results
Working filtering blebs (IOP>20mmHg without medical therapy) were 36, non filtering 10. Among the 10 non working blebs, 8 had a homogeneous hyperreflectivity, only two were hyporeflective. In group of working filtering blebs, 27 were diffusely hyporeflective, in three cases of them we remarked a cystic aspect with hype-reflective spaces. 8 cases were hyperreflective.

Conclusions
Glaucoma filtering surgery involves anterior segment and ocular structures in different times and ways. Until today diagnostic devices were focused on study of ocular surface and iridocorneal angle on site of trabeculectomy ostium or trabeculodescemetetic window. Use of Ultrabiomicroscopy (U.B.M.) allowed the shift of observation upon deeper structures even maintaining limits linked to resolution (25 micron) and need of contact with the eyeball. The introduction of AS OCT gives the opportunity of a no contact method with higher resolution that allows to obtain great quality and repeatable images.

References

Analysis of bleb morphology after trabeculectomy with Visible anterior segment optical coherence tomography