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AUTOLOGOUS NEUROSENSORY RETINA FLEE FLAP TRANSPLANTATION FOR REFRACTORY HIGHLY MYOPIC MACULAR HOLES: A LONG-TERM FOLLOW-UP

Carlà M.M.*[1], Mateo C.[2]

[1]Catholic University of the Sacred Heart - Fondazione Policlinico Universitario "A. Gemelli", IRCCS ~ Rome ~ Italy, [2]Instituto de Microcirugia Ocular - IMO ~ Barcelona ~ Spain

Introduction:

In 2016, Grewal et al. described the autologous neurosensory retinal flap transplantation (ART) surgery for treating patients with refractory MHs,21 and this technique was validated in several successive investigations.22-25 A multicenter case series investigation showed that the anatomic closure rate was 87.8% in patients undergoing ART, including emmetropic and myopic eyes. Furthermore, optical coherence tomography (OCT) showed that a recover in outer retina structure could be seen with this technique, leading to better visual acuity in 52.3% of eyes with a closed MH.26 Recently, Li et al. applied the ART technique to patients with refractory MHRD and followed them for 3 months after silicone oil removal, showing an 80% success rate and good visual outcomes.27
However, research focusing on long term effectiveness of ART technique in HMMHs still lacks. Starting from this assumption, the aim of this research was to assess functional and anatomical outcomes of PPV and ART in refractory HMMHs, followed for at least 2 years. Moreover, an OCT analysis was performed to analyze postoperative complications and evolution of the ART graft.

Materials and methods:

Retrospective interventional analysis of 9 eyes with refractory HMMH undergoing ART. Best-corrected visual acuity (BCVA, Snellen) and optical coherence tomography (OCT) were performed at baseline and every follow-up visit (1, 3, 6, 12, 24 months and the most recent). Preoperatively, we collected minimum linear diameter (MLD) and basal diameter (BD). Post-operatively, central macular thickness (CMT), external limiting membrane (ELM)/ellipsoid zone (EZ) visibility, macular edema (ME) and retinal pigmented epithelium (RPE) atrophy were evaluated.

Results:

Mean follow-up duration was 46.0±19.6 months. Anatomical success was reached in 7/9 eyes (78%). At the end of the study, BCVA was improved in 4/9 eyes (44%), stable in 4/9 eyes (44%) and worsened in 1 eye (12%). However, only one eye showed a 2-lines improvement in BCVA. CMT progressively thickened in the first 6 months (177±68 μm), but then decreased to 122±50 μm at final follow-up. Merging of the graft with the surrounding retina was visible in two eyes, showing partial ELM/EZ recovery and good outcomes. Microcystic-like refractory ME (33%) and long-term RPE atrophy (22%) were reported, while delayed displacement of the graft was seen in one case 6 months after first surgery.

Conclusions:

In conclusion, we reported the results of ART in a small cohort of refractory HMMHs followed for at least two years, highlighting that, even if anatomical outcomes were acceptable in terms of closure rate, functional outcomes were not satisfactory. Moreover, myopic patients showed several adverse

effects in the post-operative period, such as HMMH re-opening and microcystic edema like-changes, while only two cases showed effective merging of the graft with the surrounding retina. Overall, in this specific subclass of patients, retinal graft offers excessively variable results, suggesting that the ideal technique has yet to be defined.

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