

Abstract

Purpose: To report visual acuity and anatomical outcomes, as well as complications, of management of rhegmatogenous retinal detachment (RRD) using pars plana vitrectomy (PPV) as the initial surgery, and to investigate clinical features associated with anatomical results, visual acuity outcomes and postoperative complications: PVR and macular pucker.

Design: Retrospective, noncomparative, consecutive case series.

Methods: The study reviewed 512 eyes of 488 patients who underwent PPV as the initial surgery for RRD between June 1994 and July 2003 at the Department of Ophthalmology, Charité Medical University Hospital Benjamin Franklin in Berlin. Patients with a history of uveitis, diabetic retinopathy, RRD secondary to ocular trauma, and a follow-up period of less than 3 months were excluded. The main outcomes measures included best and final visual acuity at any and last time during the follow-up period, initial and final anatomic success rate, postoperative occurrence of PVR and macular pucker. Data relating to 46 pre-, per-, and postoperative variables were studied. For the statistical univariate and multivariate analyses we used Pearson chi-square or Fisher two-tail exact test and stepwise logistic regression test respectively.

Results: The study included 512 eyes of 488 patients, with a median age of 60 years and a median follow-up of 14.8 months. The retina was reattached in 362 (70.7%) eyes after single operation and 499 (97.5%) after one or more operation. Postoperative new breaks (32%), PVR (16%) and reopened breaks (11.3%) were the major causes of initial retinal redetachment. The predictors for postoperative retinal reattachment included specialist, high intraocular pressure and no inferotemporal RD. Factors significantly associated with final success rate were refraction, amblyopia and macular disease and additional scleral buckle procedure. The retinal survival time significantly declined in eyes with postoperative macular pucker ($p < 0.001$) and cataract surgery ($p < 0.001$), and in eyes which cataract was operated in 3~6 months after PPV operation, as followed in 6~12 months and 1~2 years ($p < 0.001$).

Visual acuity of 0.1 or better was achieved in 459 (89.6%) and 424 (82.8%) eyes at any and final visit postoperatively; 0.4 or more better in 310 (60.5%) and 247 (48.2%) eyes at any and final visit postoperatively. Postoperative final visual acuity improved in 236 (46.1%) eyes, remained stable in 211 (41.2%), worsened in 65 (12.7%) eyes. Seven variables were independently correlated with final VA of 0.4 or better: pseudophakic or aphakic eyes, short duration of symptoms, better preoperative visual acuity (≥ 0.1), no amblyopia, presence of vitreous haemorrhage, no use of scleral buckling and SF6 retinal tamponade. And seven factors with final VA less than 0.1: refraction more than $-10D$, bad preoperative visual acuity (< 0.1), presence of amblyopia, silicone oil tamponade, use of scleral buckling procedure, occurrence of intraoperative complications and posterior retinal breaks. The same risk factors included preoperative VA, amblyopia, vitreous tamponade and scleral buckling. Postoperative retinal redetachment (14.8%) presumed macular dysfunction (23.9%), optic nerve head atrophy and macular pucker were the major reasons for final visual acuity (< 0.1).

Postoperative PVR and macular pucker were noted in 86(16.8%) and 113(22.1%) eyes. Macular pucker peeling was performed in 44 (38.9%) of 113 eyes. The risk factors significantly correlated with macular pucker postoperatively included refraction, amblyopia, use of PFCL and endocoagulation and existence of break. For postoperative PVR, only three risk factors: specialist, preoperative PVR and use of PFCL. An additional cataract surgery was required in 218 (58%) of 376 phakic patients preoperatively because of development of postoperative cataract. Postoperative retinal redetachment was not significantly influenced by cataract surgery, however, significantly associated with the time of cataract surgery.

Conclusion: A high retinal reattachment and comparatively good final visual acuity were achieved using PPV in eyes with more complicated RRD. The risk factors for postoperative retinal reattachment included specialist, high intraocular pressure and no inferotemporal RD; for final success rate were refraction, amblyopia, macular diseases, number of break and scleral buckle procedure. A short duration of symptoms, no amblyopia, gas tamponade, younger age of patients, and lens status were most important predictive factors of final VA. The predictors for postoperative macular pucker were refraction, amblyopia, the use of PFCL, endocoagulation and existence of break. For postoperative PVR, only three risk factors: specialist, preoperative PVR and the use of PFCL.