3. Introduction

The surgical procedure of “Pars plana vitrectomy” (PPV), pioneered and introduced by Robert Machemer in 1971 [64], has revolutionized the field of ophthalmic surgery. On the basis of this development, a whole new subspecialty termed “Vitreoretinal Surgery” has evolved over the past 30 years. With PPV, a variety of advanced and mostly devastating diseases of the posterior segment can now be treated, resulting in preservation and restoration of visual function in a large proportion of previously inoperable cases. Among these, complicated types of rhegmatogenous retinal detachment (RRD) from the beginning have been and still are one of the most important and common indications for PPV worldwide.

With the evolution of the technical aspects of PPV and the rapidly growing experience with this technique, individual surgeons in the 1980s began to expand its indications in into less complicated situations of RRD which traditionally are treated by scleral buckling surgery (SBS) [26, 51, 99]. This trend has gained a tremendous momentum in recent years [67]; in some centers, especially in Europe and Japan, PPPV has become the method of choice in the majority of patients with RRD [19, 68, 69, 75] and the question is raised whether it is “time to call time on the scleral buckle?” [67].

However, the trend towards “Primary vitrectomy” (PPPV) is accompanied by great controversies regarding the “right choice” of operating methods. Some authorities think that the increasing number of PPPV might lead to worse results and SBS should remain the preferred option in the majority of RRD patients [54, 63]. In addition, both operating methods can be performed in a large variety of different ways and in a significant proportion of cases are even combined with each other. As a consequence, the role, indications and technique of PPPV in the treatment of RRD are currently only vaguely defined.

In this work, PPPV is assessed as a surgical method in the treatment of RRD. Although some of this work will primarily focus on previously published studies of the applicant, some yet unpublished data will also be shown, if appropriate. All data will be presented within the respective scientific context. The applicants contributions to this analysis are listed in chapter 13: Participation in the analysis of the “Recruitment Study” (paper submitted for publication) [28], review of the literature [43, 91], analysis of the results of PPPV performed at the CCBF [39, 44] and risk factors associated with an unfavourable outcome [44], morphological and clinical studies of dry eye symptoms following vitreoretinal surgery [40, 42] and the design of the SPR Study [41].