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Vital Dyes in Vitreoretinal Surgery

Chromovitrectomy

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Preface

Indocyanine green (ICG) has a high affinity to the internal limiting membrane (ILM) of the retina. However, its potential toxicity to the retina and unclear side effects opened a wide discussion on the benefit and complications of any vital dye in vitreo-retinal surgery (chromovitrectomy). This book highlights the major clinical and experimental results with currently used novel vital dyes in modern vitreoretinal surgery. The first three chapters describe the transparent structure of the vitreous body and summarize historical considerations to visualize its structure by optical coherence tomography, dye injections or autologous cells during surgery for diagnostic purposes. The following three chapters describe the advantages and disadvantages of ICG during vitreoretinal surgery and experimental applications. Alternative approaches by recently approved vital dyes such as trypan blue, patent blue and brilliant blue are evaluated in the subsequent three chapters. The last three chapters give an outlook on novel vital dyes, which are currently under evaluation, as well as alternative enzymatic approaches to remove the vitreous from the retinal surface.

Chromovitrectomy is a novel approach to visualize the vitreous or retinal surface during vitreoretinal surgery. Numerous vital dyes have been applied in experimental settings with promising or devastating results. The widely used ICG has made the surgical maneuver of ILM peeling tremendously safer and efficient. However, its 'off-label' application and ongoing reports on possible side effects make the search for a safer approach necessary. Several alternative vital dyes have already been approved by the industry for vitreoretinal application, while additional dyes are still under evaluation. The authors would like to thank the international research community, governmental funding and private organizations as well as our industrial partners,
who have supported this ongoing research over the past decade. The future will show which dye allows the safest approach with possibly no side effects, a high specific affinity for the ILM or other vitreoretinal tissues and the best visual outcome for our patients.

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