

**ASSESSMENT OF DIABETIC RETINOPATHY  
PROGRESSION IN EARLY POSTOPERATIVE  
PERIOD AFTER PHACOEMULSIFICATION**

THESIS

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Ophthalmology

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### **Abstract:**

Diabetes is the commonest risk factor for cataract. The aim of this study was to detect any progression of diabetic retinopathy following phacoemulsification in cataractous diabetic patients and to determine whether opening of posterior capsule during surgery affects the progression of diabetic retinopathy. Seventy cataractous diabetic patients were included in this study and were divided into three groups. Group A Included thirty patients with diabetic retinopathy and exposed to uncomplicated phacoemulsification surgeries. Group B Included thirty patients with diabetic retinopathy and exposed to phacoemulsification surgeries with accidental rupture of posterior capsule during surgery. Group C (control group) included ten patients without diabetic retinopathy and exposed to uncomplicated phacoemulsification surgeries. Fundus examination, FFA and OCT were done to all cases preoperatively, one month and 6 months postoperatively. The results obtained show that, in diabetic patient, posterior capsule tear leads to more progression of diabetic retinopathy. This may be related to interruption of blood retinal barrier.

**key words:**

diabetic retinopathy, phacoemulsification, central macular thickness, macular oedema, fluorescein angiography.

# LIST OF ABBREVIATIONS

**BRB:** Blood retinal barrier

**CMT:** Central macular thickness

**CSME:** clinically significant macular edema

**DCCT:** Diabetes control and complications trial

**DME:** Diabetic macular edema

**DR:** Diabetic retinopathy

**ETDRS:** Early treatment diabetic retinopathy study

**FA:** Fluorescein angiography

**FAZ:** Foveal avascular zone

**Hb:** Haemoglobin

**IDDM:** Insulin dependent diabetes mellitus

**IL:** Interleukin

**IOL:** Intraocular lens

**IRMA:** Intraretinal microvascular abnormalities

**NIDDM:** Non Insulin dependent diabetes mellitus

**NPDR:** Non proliferative diabetic retinopathy

**NVD:** Neovascularization at disc

**NVE:** Neovascularization elsewhere

**OCT:** Optical coherence tomography

**PDR:** Proliferative diabetic retinopathy

**PG:** Prostaglandin

**PMMA lens:** Polymethylmethacrylate lens

**PRP:** Panretinal photocoagulation

**RPE:** Retinal pigment epithelium

**TNF:** Tumor necrosis factor

**VA:** Visual acuity

**VEGF:** Vascular endothelial growth factor

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# **INTRODUCTION & AIM OF THE** **WORK**

# **INTRODUCTION**

Diabetic retinopathy is a microangiopathy affecting the retinal precapillary arterioles, capillaries and venules. However, larger vessels may also be involved. Retinopathy has features of both microvascular occlusion and leakage (**Kanski, 2007**).

Cataract is one of the commonest causes of loss of useful vision, with an estimated 16 million people worldwide affected. Several risk factors have been identified as increasing age, genetic composition, exposure to ultraviolet light and diabetes (**Asbell, 2005**).

Significant diabetic ocular pathology should be treated before consideration of cataract surgery. Visual acuity after cataract surgery in diabetics can be impaired by severe fibrinous uveitis, capsular opacification, anterior segment neovascularisation, macular edema and progression of retinopathy ( **Devgan, 2010**).

**Squirrell et al (2002)**, stated that uncomplicated phacoemulsification does not cause acceleration of diabetic retinopathy postoperatively and any progression that is

observed probably represents the natural course of the disease. Although macular edema is common after cataract surgery, it may follow a benign course and in many patients the development of clinically significant macular edema postoperatively probably represents natural progression rather than being a direct effect of surgery.

**Chung et al (2002)**, stated that diabetic retinopathy can progress after cataract surgery. The presence of preoperative macular edema and poor renal function increased the progression of retinopathy postoperatively.

Diabetic patients with visually significant cataract pose unique challenges during surgery, and they may be prone to a more difficult postoperative recovery. However, with careful pre-treatment of the diabetic retinopathy, atraumatic surgical techniques and appropriate medications postoperatively, these patients can do very well with excellent visual recovery just like other cataract patients **(Devgan, 2010)**.

## **AIM OF THE WORK**

The aim of this study is to detect any progression of diabetic retinopathy in the early postoperative period after phacoemulsification in cataractous diabetic patients and to determine whether complicated cases of phacoemulsification with opening of posterior capsule during surgery affects the progression of diabetic retinopathy.