COMPLICATIONS OF INTRAOCULAR LENS

Essay Presented

By

MAGED ADLY NAGUIB

(M.B.B. ch.)

Submitted for Partial Fulfillment of Master Degree

In

Ophthalmology

Supervised By

Prof. Dr. MOHAMMED HASSAN ABD EL-RAHIM

Professor of Ophthalmology

Faculty of Medicine

Ain Shams University

Dr. SAMIR KASSEM

Assistant Professor in Faculty of Medicine

Ain Shams University

Faculty of Medicine

Ain Shams University

Cairo

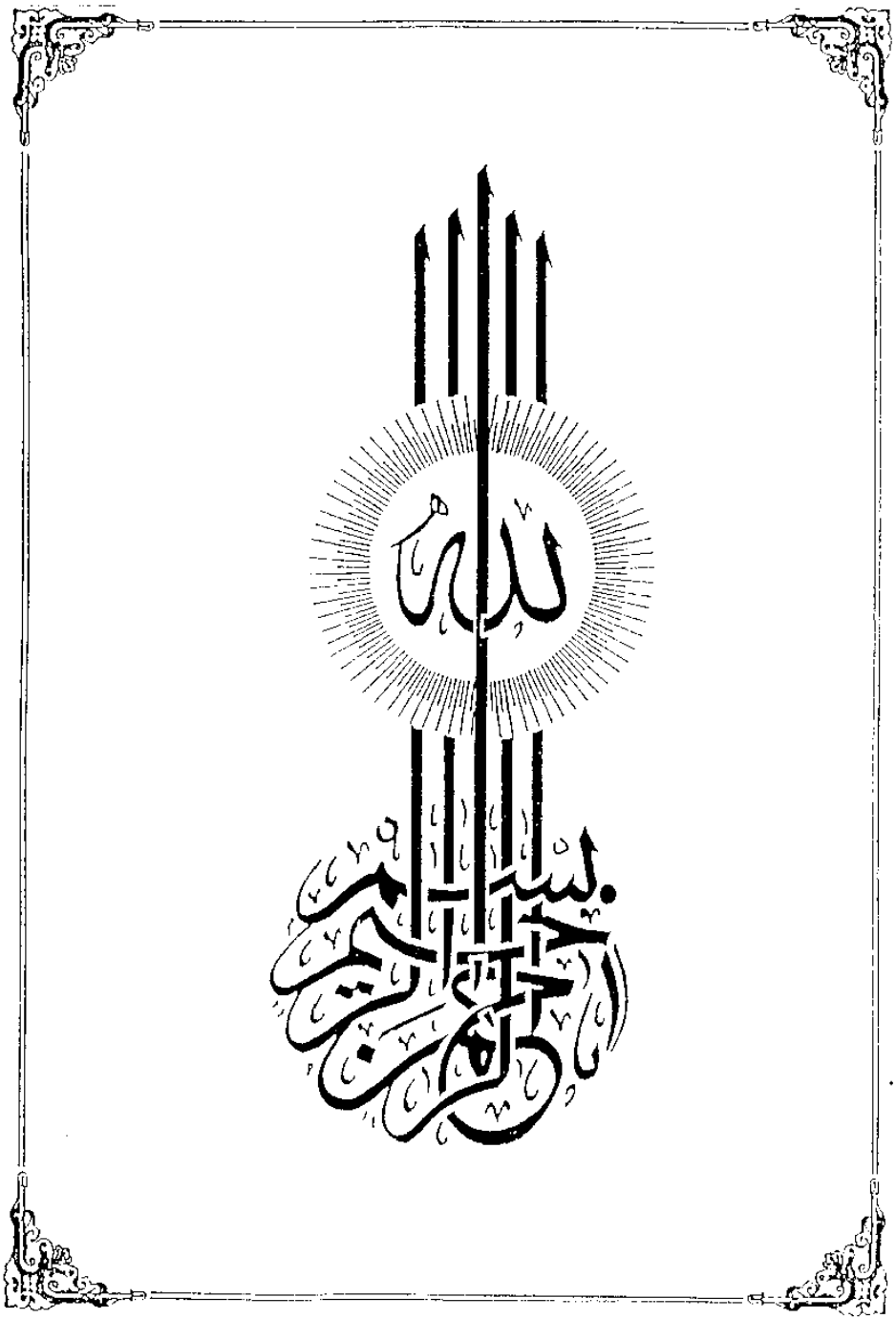
1995

ACKNOWLEDGEMENTS

I would like to express my thanks and deep gratitude to **Professor Mohammed Hassan Abd El-Rahim,** *Professor of Ophthalmology, Ain Shams University for his indispenasable help and meticulous supervision and guidance and for his constant support and encouragement.*

I will ever greatly indebted to **Assistant Professor Samir Kassem,** *Assistant Professor of Ophthalmology Ain Shams University for his excellent supervision, guidance, and valuable advice throughout the work. He has been very generous with time and effort in this work.*

I would like also to extend my grateful thanks to all Professors of the Department of Ophthalmology, Ain Shams University for teaching me all I know about the research work and ophthalmology, without their unlimited help and guidance this work could have never been accomplished.



CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATIONS USED

IOL. : Intraocular lens.

AC. : Anterior chamber.

P.C. : Posterior chamber.

AC. IOL. : Anterior chamber intraocular lens.

PC. IOL. : Posterior chamber intraocular lens.

ECCE. : Extracapsular cataract extraction.

ICCE. : Intracapsular cataract extraction.

IOP. : Intraocular pressure.

PMMA. : Polymethylmethacrylate.

HEMA : Hydroxyethylmethacrylate.

BSS. : Balanced salt solution.

GBR. : Glutathione bicarbonate - Ringer's Solution.

Nd - YAG.: Neodymium Yttrium Aluminum Garnet laser.

CME. : Cystoid macular oedema.

UGH. : Uveitis glaucoma hyphaema syndrome.

INTRODUCTION

Attitudes and practice related to intraocular lenses have undergone dramatic changes in the last ten years. The use of intraocular lenses as a routine part of the surgical management of cataract has gained widespread acceptance. This has been achieved by the helpful development of new lens styles and surgical techniques which have combined to improve the results and at the same time lower the incidence of complications which can reasonably be attributed to the intraocular lens.

Despite this welcome achievement, one needs to be constantly aware that this type of surgery does carry a complication rate, mean that we need an up-to-date appreciation of the situation so that appropriate clinical judgment can be exercised, patients can be correctly advised on risk/benefit ratios and further research and development can be stimulated.

We will concentrate upon complications attributable to the intraocular lens rather than those attributable to the surgery .Bad surgery will always have a higher incidence of problems for which the implant should not be blamed.

Intraoperative difficulties and complications of intraocular lens implantation and it's management:-

1- Corneal complications

a- Detachment of Descemet's membrane

b- Endothelial cell damage from mechanical trauma at the time of surgery.

2- Iris complications

a- Small pupil

b- Excessive pupillary dilation

c- Iridodialysis

d- Prolapse of iris

e- Iris sphincter damage

3- Lens complications

a- Tears of anterior capsule

b- Rupture of posterior capsule.

c- Rupture zonules

4- Excessive bleeding and hyphaema.

Early postoperative complications of intraocular lens implantation and it's management.

A- Complications caused and aggravated by the use of viscoelastic material may cause transient ocular

hypertension.

b- Complications not influenced by the use of viscoelastic materials as:-

1- Corneal endothelial decompensation

2- Shallow or flat anterior chamber

3- Uveitis and vitritis (Acute non infective anterior uveitis)

Early or late complications

- Endophthalmitis.
- Secondary glaucoma.
- Malposition and dislocation.
- Pseudophakic cystoid macular oedema.

Late complications of intraocular lens implantation and it's management.

1- Opacified posterior capsule.

2- Pupillary Fibrin membrane.

3- Intraocular lens precipitates.

4- Retinal detachment.

5- Recurrent hyphaema, uveitis glaucoma hyphaema syndrome and iris chafing syndrome.

6- Pseudophakic bullous keratopathy.

7- Refractive errors and optical problems.

TYPES OF INTRAOCULAR LENS

History of intraocular lens implantation:

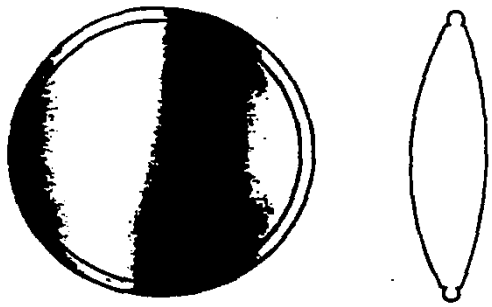
Casamata was propably the first person to attempt the implantation of a lens in 1769. However, his glass lens fell immediately to the bottom of the eye (Munchow 1964).

The true credit for intraocular lens (I.O.L) implantation belongs to Ridley, who inserted his first lens in 1949.

From the time of Ridley's first lens to the present day evolution of intraocular lens can be divided into five generations, which are not strictly sequential because an overlap occurred in the introduction time of various lens designs.

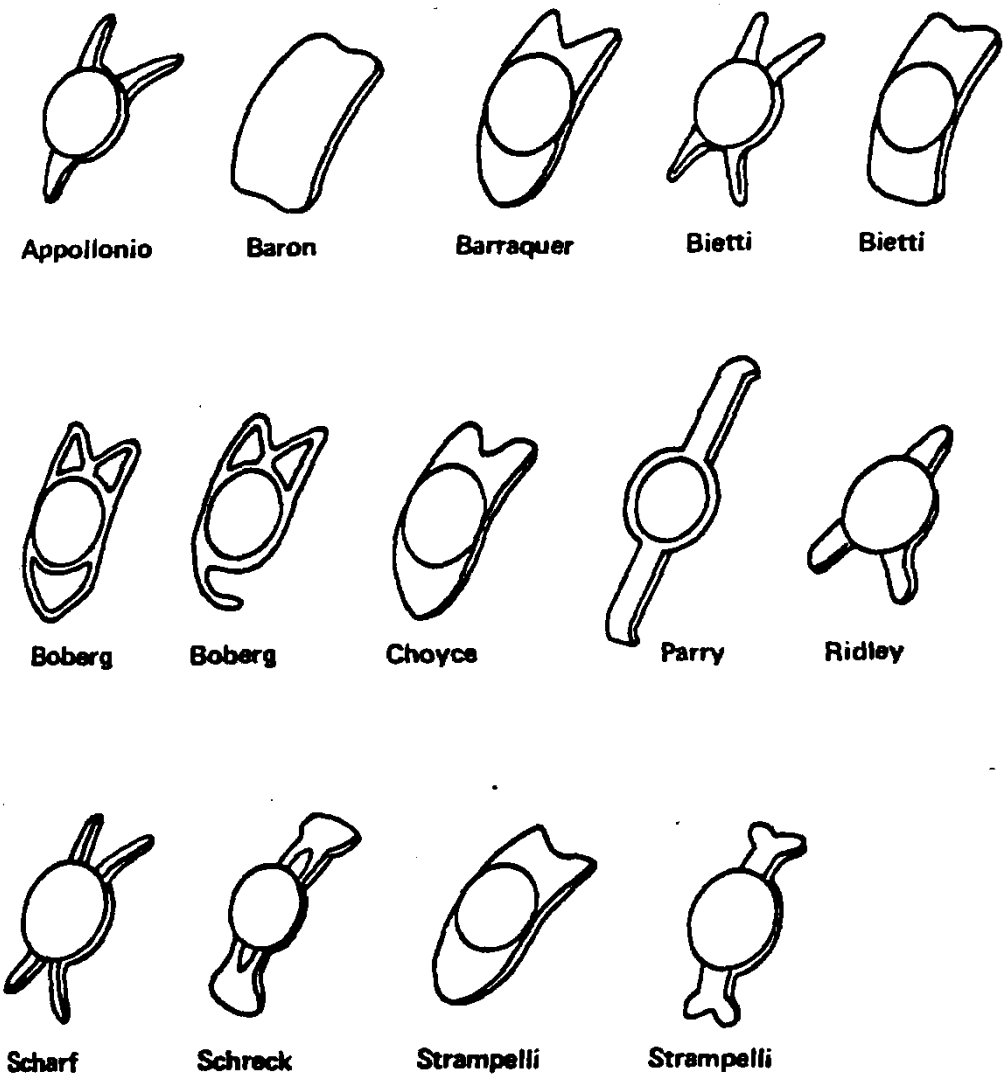
Generation I: Original Ridley posterior Chamber lens, (1949-1960):

The modern history of lens implantation began in 1949 with the attempt of Ridley, when he inserted a lens made of polymethylmethacrylate (PMMA). Fig (1) . It was already known that PMMA is well tolerated by the eye. Since during world war II, pilots with ocular prespex fragments from



(Fig. 1). *Ridley's Posterior Chamber Lens.*

(Apple et al., 1989)



(Fig.2) Early anterior chamber lens implants (Larry G.1984).

artificial windshields did not suffer eye troubles.

One of the major reasons for the withdrawal of Ridley's lens was the imperfect method of extracapsular cataract extraction (ECCE) which caused severe postoperative inflammatory reactions, high incidence of dislocation of I.O.L, glaucoma, and corneal problems (Jaffe et al., 1987).

Generation II: Early Anterior chamber lenses (1952-1962).

In 1952 Baron implanted the first anterior chamber (A.C) lens, which was modified later by Strampelli, Bietti, Scharf, Appollonio, Boberg, Brown, Parry Schreck and Choyce. Due to endothelial touch and other complications these lenses were largely discontinued. (Shepard, D.D., 1977) (Fig. 2).

The first flexible anterior chamber lens was designed by Dannheim in 1955 and modified by Barraquer (1956) who opened the loops later. Bobergan, A.S. in 1961 developed a lens with an inferior flexible leg, and it was fenestrated. (Apple et al., 1989) (Fig. 3).

The major complication of these lenses were the late development of corneal endothelial decompensation. In