ANAESTHESIA
in
OPHTHALMIC SURGERY

ESSAY

Submitted in Partial Fulfilment of the M.S. Degree
in
Ophthalmology

By

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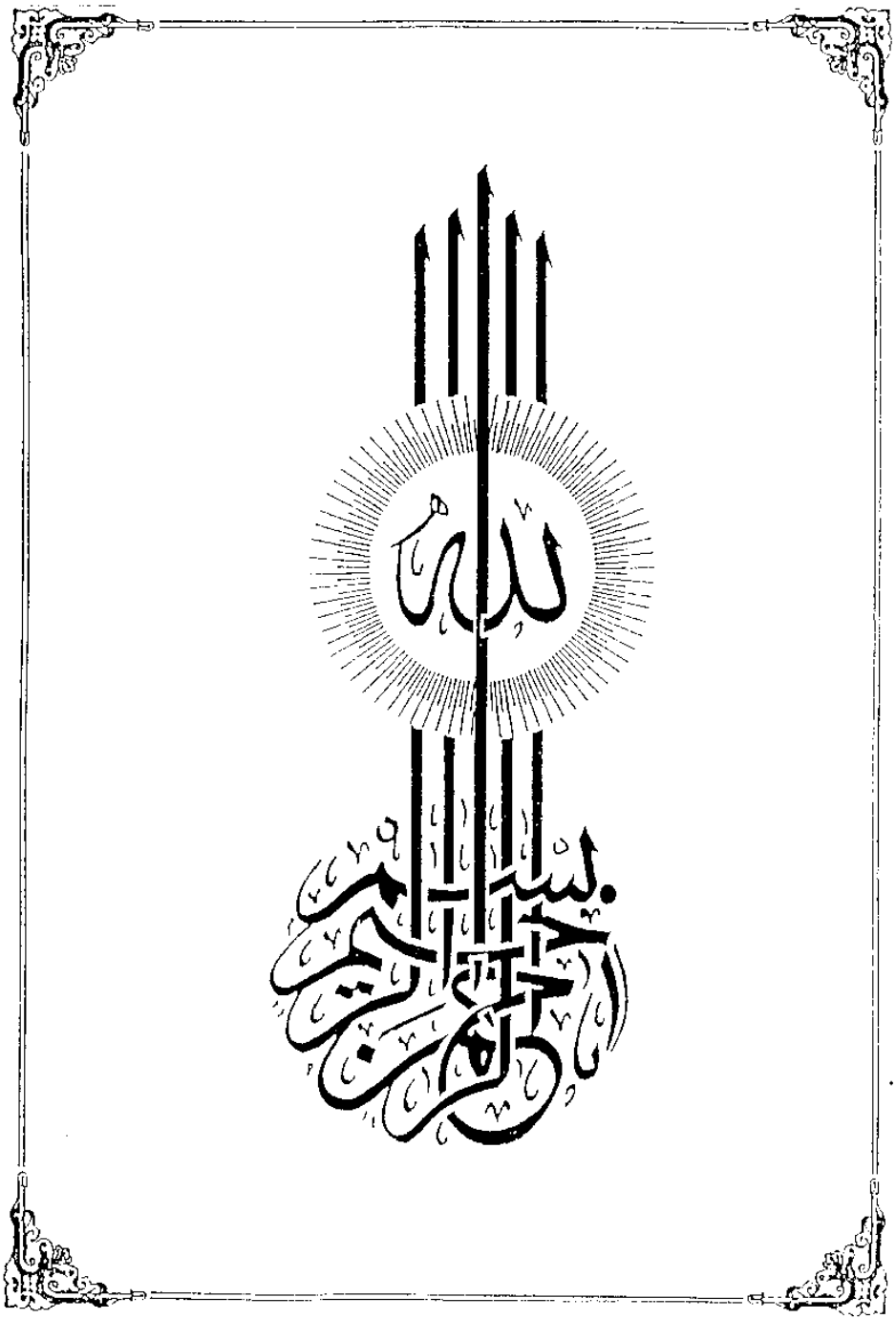
Cairo

1995

بسم الله الرحمن الرحيم

« قالوا سبحانك لا علم لنا إلا ما علمتنا
إنك أنت العليم الحكيم »

صدق الله العظيم



To

the spirit of my father

to whom I owe

my deepest gratitude

&

my wonderful family

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to ***Dr. Hoda Saber Naeim, Assistant Professor of Ophthalmology, Faculty of Medicine, Ain Shams University,*** *for her most valuable supervision and instructive guidance throughout this work.*

I am deeply indebted to ***Dr. Sherif Elwan, Lecturer of Ophthalmology, Faculty of Medicine, Ain Shams University,*** *for his great help and encouragement in preparing this work.*

Amany El Daba
1995

LIST OF ABBREVIATIONS

CNS	Central nervous system
CVP	Central venous pressure
ECG	Electro cardiogram
IM	Intramascular
IOL	Intraocular lens
IOP	Intraocular pressure
IV	Intravenous
TRU	Turbidity reducing units

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INTRODUCTION

Introduction

Vision is the gift of God and is one of the main senses of man. So, to ensure accurate clear vision, Ophthalmology has been considered a science of great interest a long time ago.

Surgical intervention is of the great importance in the treatment of many ophthalmic diseases, whether urgent or elective surgery. As anaesthesia, whether local or general, usually goes hand in hand with surgery, this explains the importance of good anaesthetic technique and the demand for great progress in the field of Ophthalmic anaesthesia.

Anaesthesia for ophthalmic surgery is a delicate work as it usually deals with either the very old people with the possibility of coexisting diseases or with the very young group who require special attention for airway control and homeostatic balance.

Patients who present for urgent surgery with penetrating eye injuries represent a major problem not only because of the possibility of a full stomach but also because of the possibility of elevated IOP, expulsion of eye contents and consequent loss of vision. The same risk presents itself when the eye is opened as a part of the surgical procedure in elective surgery.

TYPES OF ANAESTHESIA

GENERAL ANAESTHESIA

General Anaesthesia

Patients undergoing eye surgery are often in the extreme age group, for example young children for strabismus surgery or examination under anaesthesia, and elderly patients for cataract extraction and other intraocular procedures. There is also an increasing frequency of chronically ill patients, such as diabetics, undergoing vitreous surgery.

a. Advantages of General Anaesthesia:

1. General anaesthesia has the major advantage of ensuring complete immobility of the eye which is essential, particularly if surgery is carried under the microscope.
2. It avoids sudden cough or sneeze.
3. It frees the surgeon from constant communication with the patient and the need for continuous reassurance.
4. It provides more ideal surgical conditions as it favours a soft eye with low IOP.
5. It is recommended for children and for highly nervous patients.
6. The more quiet atmosphere in the theatre facilitates delicate surgery.

(Atkinson et al., 1987).

b. Disadvantages of General Anaesthesia:

Most of the hazards of general anaesthesia occur in the hands of unskilled anaesthetists:-

* Straining and bucking may occur, leading to increased CVP increasing venous congestion with the final result of bloody operative field.
* There is a hazard of explosion if flammable agents are used in the presence of diathermy.
* The risk of rise of IOP due to straining or coughing which may cause vascular congestion.
* Pulmonary complications due to oversecretions may occur postoperatively.
* Delayed ambulation with increased incidence of pulmonary embolization (especially in the elderly).
* Prolonged recovery (succinyl apnea) is a rare hazard of suxamethonium ***(Atkinson et al., 1987).***
* Vomiting during the immediate post-operative period is a regular occurance that affects about half of all children undergoing strabismus surgery, it is hypothesized to result either from altered visual perception after resection or from central response arising from manipulation of the eye muscles (the so called oculo-emetic reflex) similar to the oculo cardiac reflex ***(Della et al., 1992).***

c. Specific Indications for General Anaesthesia:

In operations lasting over two to three hours, local anaesthesia is a poor choice where general anaesthesia is preferred.

Also, patients with dementia, mental retardation, uncontrolable cough, marked head tremors, uncooperativeness, and claustrophobia are poor candidates for regional anaesthesia. Local anaesthesia is contraindicated in patients with an open eye injuries, this is because a retrobulbar or a perribulbar anaesthetic injection initially increases IOP before it is ultimately lowered. This increased intraocular pressure may cause vitreous loss and exacerbation of the injury.

On the other hand, no study has documented the superiority of local anaesthesia versus general anaesthesia for ophthalmic surgery ***(Emanual, 1993).***

d. Precautions during General Anaesthesia:

When general anaesthesia is chosen, whether in pediatric patients or in older patients with arteriosclerotic or hypertensive vascular diseases, it is important to use induction- intubation techniques. During surgery, it is essential to maintain deep plane of anaesthesia and use neuromuscular relaxants judiciously.

Oxygen administration should be a routine. If a closed drop is used, connection of the anaesthesia circuit to suction

is essential to avoid carbon dioxide build-up. Monitoring is fundamental whether local or general anaesthesia, an intravenous line should be always open when performing surgery in infants or children under general anaesthesia, we must keep in mind that most eye diseases in children are of congenital nature and therefore there may be other congenital malformations. In these cases, the input of the pediatrician is of great value in order to detect or diagnose associated or non-associated congenital anomalies.

Kenneth Zahl has emphasized that because of the increased survival of premature neonates and the well known association of retinopathy of prematurity, an increasing number of these children are requiring retinal surgery at an early age. Premature infants have incompletely developed central respiratory control centers. After anaesthesia, premature infants are at risk for developing life threatening postoperative apnea ***(Benjamin, 1993).***

Physiological Consideration of the Eye, Pertainable to General Anaesthesia

The intraocular pressure:

The IOP maintains the eye ball in such a shape that it can function as an optical instrument. It is maintained by the