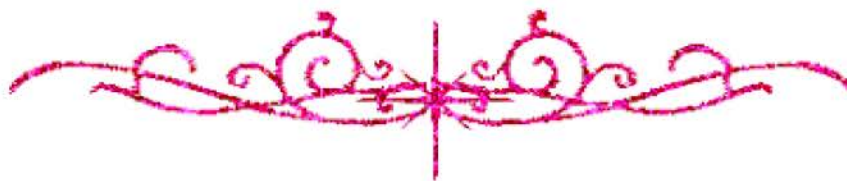


بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

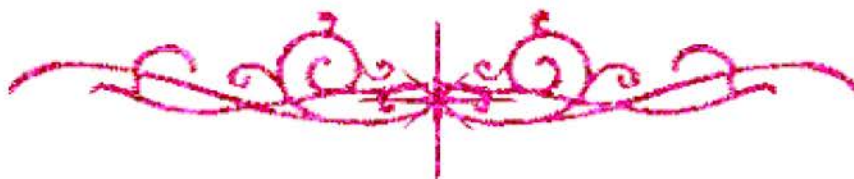
قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغييرات



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار





Analysis of Ocular Cyclotorsion in Lying Position after Peribulbar Block

Thesis

*Submitted for Partial Fulfillment
of Master Degree in Ophthalmology*

By

Jack Mikhael Zaki Mikhael

M.B.B.Ch

Faculty of Medicine, Ain Shams University

Under Supervision of

Prof. Dr. Ahmed Hassan Samir Assaf

Professor of Ophthalmology

Faculty of Medicine - Ain Shams University

Prof. Dr. Mona Mohammad El Fiky

Assistant Professor of Ophthalmology

Faculty of Medicine - Ain Shams University

Dr. Mohmmad Abd El Fattah Qabeel

Lecturer of Ophthalmology

Faculty of Medicine - Ain Shams University

Ophthalmology department

Faculty of Medicine, Ain Shams University

Cairo, Egypt

2020

Acknowledgments

*First and foremost, I feel always indebted to **GOD** the Most Beneficent and Merciful.*

*I wish to express my deepest thanks, gratitude and appreciation to **Prof. Dr. Ahmed Hassan Samir Assaf**, Professor of Ophthalmology, Faculty of Medicine, Ain Shams University, for his meticulous supervision, kind guidance, valuable instructions and generous help.*

*Special thanks are due to **Prof. Dr. Mona Mohammad El Fekky**, Assistant Professor of Ophthalmology, Faculty of Medicine, Ain Shams University, for her sincere efforts, fruitful encouragement.*

*I am deeply thankful to **Dr. Mohammad Abd El Fattah Qabeel**, Lecturer of Ophthalmology, Faculty of Medicine, Ain Shams University, for his great help, outstanding support, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Jack Mikhael Zaki Mikhael

List of Contents

Title	Page No.
List of Tables	4
List of Figures	5
List of Abbreviations.....	7
Introduction.....	- 1 -
Aim of the Work	10
Review of Literature	
▪ Applied Anatomy	11
▪ Peribulbar Anaesthesia.....	20
▪ Toric IOL.....	29
Patients and Methods	48
Results.....	54
Discussion.....	62
Summary and Conclusion.....	67
References	69
Arabic Summary	

List of Tables

Table No.	Title	Page No.
Table (1):	Demographic data of the study group	55
Table (2):	Percentage of Cyclotorsion movement among study group	58
Table (3):	Comparison between no cyclotorsion, incyclotorsion and exyclotorsion regarding degree Of cyclotorsion.	59

List of Figures

Fig. No.	Title	Page No.
Fig. (1):	Anatomy of the superior rectus muscle.....	12
Fig. (2):	Anatomy of the inferior rectus muscle	13
Fig. (3):	Anatomy of the superior oblique muscle	15
Fig. (4):	Anatomy of the inferior oblique muscle	17
Fig. (5):	Peribulbar block: alternative injection sites	24
Fig. (6):	Peribulbar local anaesthesia, inferotemporal site.....	26
Fig. (7):	Peribulbar local anaesthesia, superior nasal site.....	27
Fig. (8):	Peribulbar local anaesthesia, medial site	28
Fig. (9):	The AcrySof toric IOL	32
Fig. (10):	A Mendez ring	33
Fig. (11):	AcrySof toricIOL implanted into the eye	34
Fig. (12):	Subjective direct visual marking technique (bevel knife tip).....	39
Fig. (13):	Horizontal slit beam marking technique	40
Fig. (14):	The use of two preoperative markers	40
Fig. (15):	Preoperative marking being done.....	41
Fig. (16):	ToriCAM Application.	43
Fig. (17):	iToric smartphone App.....	45
Fig. (18):	Verion digital marker (green).....	47
Fig. (19):	Freehand Perilimbal Marking	50
Fig. (20):	Using iToric Patwardhan smartphone app.	51
Fig. (21):	Peribulbar anaesthesia	52
Fig. (22):	Initiation of new marks.....	53
Fig. (23):	Measuring the degree and direction of cyclotorsion.	53
Fig. (24):	Results regarding age of the study group.	56

List of Figures cont...

Fig. No.	Title	Page No.
Fig. (25):	Results regarding gender of the study group.....	56
Fig. (26):	Results regarding laterality of the study group.....	57
Fig. (27):	Percentage of Cyclotorsion movement among study group.....	58
Fig. (28):	The mean degrees of incyclotorsion and excyclotorsion.	60
Fig. (29):	Range of cyclotorsion.....	60
Fig. (30):	Range of cyclotorsion.....	61

List of Abbreviations

Abb.	Full term
<i>HCL</i>	<i>Hydrochloride</i>
<i>HS</i>	<i>Higly significant</i>
<i>IO</i>	<i>Inferior Oblique muscle</i>
<i>IOLs</i>	<i>Intraocular Lenses</i>
<i>IR</i>	<i>Inferior Rectus muscle</i>
<i>LA</i>	<i>Local Anaesthesia</i>
<i>LASIK</i>	<i>Laser In Situ Keratomileusis</i>
<i>NS</i>	<i>Non Significant</i>
<i>OR</i>	<i>Odds Ratio</i>
<i>PPV</i>	<i>Positive Predictive Value</i>
<i>PSD</i>	<i>Pattern Standard Deviation</i>
<i>ROC</i>	<i>Receiver Operating Characteristic Curve</i>
<i>S</i>	<i>Significant</i>
<i>SD</i>	<i>Standart Deviation</i>
<i>SO</i>	<i>Superipr Oblique muscle</i>
<i>SPSS</i>	<i>Statistical Package for Social Science</i>
<i>SR</i>	<i>Superior Rectus muscle</i>

INTRODUCTION

Cyclotorsions are movements of cyclotorsion of the eyes. The cyclotorsion of the human eye occurs with movement of the head and body, changing the original position of the corneal axis. A significant different range of cyclotorsion between a sitting and a supine position was previously reported as varying from 2 to 7 degrees. The measurement of the rotation raised concern among refractive and cataract surgeons especially regarding astigmatism correction where a mistake in the position of the axis will lead to a significant impact in patients visual acuity (*Kim and Joo, 2008*).

Peribulbar block is one of the techniques for anaesthesia for cataract surgery and is one of the most popular throughout the world because it is a safe procedure and it is able to warrant a cataract surgery with no pain (*Clausel et al., 2008*).

The objective is not only the analgesia but also ocular akinesia during the surgical procedure. It is believed that after the peribulbar block, the torsional motion of the eye suffers distortions, which could result in consequences if not evaluated prior to surgery procedure (*Chang, 2008*).

Toric intraocular lenses (IOLs) are spherocylindrical and correct for corneal astigmatism after cataract surgery. The orientation of the toric IOL in the capsular bag is critical because misalignment negates the desired effect of correcting astigmatism. If, for instance, a toric IOL rotates 30 degrees off

the prescribed axis of alignment, there is virtually no correction of astigmatism; if it rotates more than 45 degrees from the prescribed axis, the IOL augments the preoperative ocular cylinder (*Novis, 2000*).

AIM OF THE WORK

The aim of this prospective study is to determine the amount of ocular cyclotorsion in supine position after peribulbar block, to avoid misalignment of the toric IOL which negates the desired effect of correcting astigmatism.

Chapter 1

APPLIED ANATOMY

In humans there are three pairs of extraocular muscles in each orbit: a pair of horizontal rectus muscles (medial and lateral), a pair of vertical rectus muscles (superior and inferior), and a pair of oblique muscles (superior and inferior). The four rectus muscles come from the depth of the orbit and are attached to the sclera anterior to the equator near the cornea. The two oblique muscles approach the globe from in front, at the medial side of the orbit, and continue obliquely and laterally to insert on the sclera posterior to the equator on the temporal part of the globe (*Zoth, 1905*).

1- The superior rectus muscle:

The superior rectus muscle (SR) arises from the upper part of the annular tendon superolateral to the optic foramen and its origin is attached to the dural sheath of the optic nerve. The muscle passes forward and somewhat laterally beneath the levator muscle, at an angle of 23-25 degrees with the anteroposterior axis as shown in (Figure 1). It pierces Tenon's capsule and is inserted into the sclera about 7.7 mm posterior to the limbus by a tendon 5.8 mm long. The line of insertion is slightly curved and oblique. The fascial sheath of the superior rectus muscle and that of the levator palpebrae superioris muscle are connected by a band of connective tissue. A further slip of

fascia is also connected to the superior fornix of the conjunctiva (*Wright, 2007*).

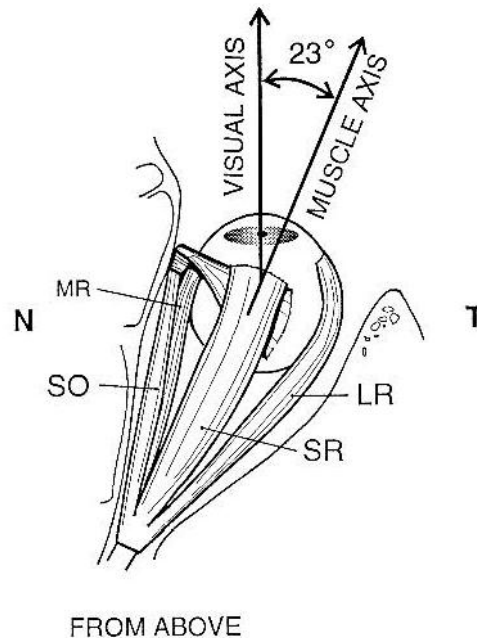


Fig. (1): Anatomy of the superior rectus muscle (*Wright, 2007*).

Action:

The primary action of the superior rectus is elevation, which increases with adduction and becomes nil in full adduction. Subsidiary actions are adduction and intorsion. These subsidiary actions are dependent on eye position. If the eye is abducted 23 degree, the muscle and visual axis will be in line. In this position it has no subsidiary actions and can only act as an elevator. If the eye is adducted 67 degree, the angle between the muscle and visual axes will be 90 degree. In this position the superior rectus acts only as an intorter (*Wright et al., 2006*).