

Acknowledgement

*Thanks to Allah
for
accomplishment of this work*

*I would like to express my appreciation and gratitude to **Professor Dr. Hesham EL-Sagheer**, professor of Orthopaedic Surgery, Faculty of Medicine, University of Alexandria for giving me the privilege of working and for his valuable supervision, instructions and encouragement through the whole work.*

*I am indebted to **Dr. Amin Abd EL-Razek**, assistant professor of Orthopaedic surgery, Faculty of Medicine, University of Alexandria for his earnest supervision through the course of the study and kindness to review each step in this work. He liberally gave me of his time, patience and experience. His generous advice was illuminative throughout the work.*

*I would like to thank **Professor Dr. Hany Morsy**, Professor of Orthopaedic Surgery and head of the Department, Faculty of Medicine, University of Alexandria for his skilful guidance and encouragement.*

I acknowledge the help and advice of all the staff members of the department of Orthopaedic Surgery, El-Hadara University Hospital, to my colleagues and everyone who gave a hand and help for this work to appear in its present form. I'm really indebted to the radiology technicians and nurses in El-Hadara University Hospital for their co-operation.

Thanks to the patients who helped me to complete my thesis

I'm grateful to my family who encouraged me all the way.

Thanks to all those who shared either practically or morally in the accomplishment of this work.

LIST OF CONTENTS

ACKNOWLEDGMENT	i
LIST OF CONTENTS.....	ii
LIST OF TABLES.....	iii
LIST OF FIGURES.....	iv
LIST OF ABBREVIATIONS	vi
I. INTRODUCTION	1
II. REVIEW OF LITERATURE	2
III. AIM OF THE WORK.....	26
IV. PATIENTS.....	27
V. METHODS.....	30
VI. RESULTS.....	39
VII. DISCUSSION.....	63
VIII. SUMMARY.....	68
IX. CONCLUSIONS.....	70
X. REFERENCES	71
PROTOCOL	
ARABIC SUMMARY	

LIST OF TABLES

Table		page
I.	Distribution of the studied cases according to age	27
II.	Distribution of the studied cases according to sex	27
III.	Distribution of the studied cases according to side	27
IV.	Distribution of the studied cases according to method of trauma	28
V.	Distribution of the studied cases according to type of fracture	28
VI.	Distribution of the studied cases according to Level of fracture	28
VII.	Distribution of the studied cases according to shape of fracture	29
VIII.	Distribution of the studied cases according to Associated injuries	29
IX.	Statistical analysis of the studied cases according to Time lapse before surgery	29
X.	TENS outcome score	37
XI.	Statistical analysis of the studied cases according to Time of clinical union	40
XII.	Statistical analysis of the studied cases according to Time of radiological union	41
XIII.	Distribution of the studied cases according to Limb length inequality	42
XIV.	Distribution of the studied cases according to Angulation	43
XV.	Relation between score and age	44
XVI.	Relation between score and sex	45
XVII.	Relation between score and side	46
XVIII.	Relation between score and time lapse before surgery (day)	47
XIX.	Relation between score and nail diameter (mm)	48
XX.	Relation between score and image time	49
XXI.	Relation between score and method of trauma	50
XXII.	Relation between score and type of fracture	51
XXIII.	Relation between score and level of fracture	52
XXIV.	Relation between score and shape of fracture	53
XXV.	Relation between score and associated injuries	54

LIST OF FIGURES

Figure		page
(1)	Anterior view of the tibia and fibula	3
(2)	Posterior view of the tibia and fibula	3
(3)	Stages in the ossification of the tibia	4
(4)	Muscles of the leg	6
(5)	Blood supply to the tibia	7
(6)	Nerve supply to the tibia	8
(7)	Fascial compartments of the leg	9
(8)	Direct bone healing	11
(9)	Contact healing: cutting cone	12
(10)	Secondary bone healing	13
(11)	OTA classification of tibia/fibula diaphyseal fractures	17
(12)	Unilateral external fixator	20
(13)	Titanium nails	21
(14)	Biomechanical principle of the titanium elastic nail	22
(15)	Flexible intramedullary nailing	23
(16)	Implants and instruments	32
(17)	Patient positioning	33
(18)	Prebending the nail	33
(19)	Entry hole and first nail	34
(20)	The first nail advanced distally	35
(21)	The second nail	35
(22)	Nail retrieval	37
(23)	Distribution of the studied patients group according to score	39
(24)	Statistical analysis of the studied cases according to Time of clinical union	40
(25)	Statistical analysis of the studied cases according to Time of radiological union	41
(26)	Distribution of the studied cases according to Limb length inequality	42
(27)	Distribution of the studied cases according to Angulation	43
(28)	Relation between score and age	44
(29)	Relation between score and sex	45
(30)	Relation between score and side	46

Figure		page
(31)	Relation between score and time lapse before surgery	47
(32)	Relation between score and nail diameter (mm)	48
(33)	Relation between score and image time	49
(34)	Relation between score and method of trauma	50
(35)	Relation between score and type of fracture	51
(36)	Relation between score and level of fracture	52
(37)	Relation between score and shape of fracture	53
(38)	Relation between score and associated injuries	54
(39)	Limb-length inequality	55
(40)	Patient (1)	57-58
(41)	Patient (2)	59-60
(42)	Patient (3)	61-62

LIST OF ABBREVIATION

- ESIN** : Elastic Stable Intramedullary Nailing
TENS : Titanium elastic nails