

شبكة المعلومات الجامعية







شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار في درجة حرارة من ١٥-٥٠ مئوية ورطوبة نسبية من ٢٠-٠٠% To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%



بعض الوثائـــق الإصليــة تالفــة



بالرسالة صفحات لم ترد بالإصل



بسم الله الوحمن الوحيم

INTRAMEDULLARY FIXATION OF PEDIATRIC FOREARM DIAPHYSEAL FRACTURES

Essay Submitted For Partial Fulfillment Of M.Sc Degree in Orthopaedic Surgery

BY

EHAB ABOU ELKASSIM ABD ELMAKSOUD

M.B.B.Ch.,

Under Supervision Of

Prof.Dr. ELSAYED MOHAMED WAHB Professor of Orthopaedic Surgery Ain Shams University

Dr. TAREK MOHAMED SAMY
Assistant Professor of Orthopaedic Surgery
Ain Shams University

Dr. ABDELFATTAH MOHAMED FATHY SAOUD Lecturer of Orthopaedic Surgery Ain Shams University

> Faculty of Medicine Ain Shams University 2002

राहे इंडिंग

वेश प्रताप्तर

्यो**ः**

WEST, ...

ei:E

可是好

RATE OF THE SECOND

. P

Acknowledgment

I would like to express my profound gratitude to Prof. Dr. ELSAYED MOHAMED WAHB (Professor of Orthopaedic Surgery, Ain Shams University) for his generous help, support and guidance throughout this work.

Special thanks to Dr. TAREK MOHAMED SAMY (Assistant Professor of Orthopaedic Surgery, Ain Shams University) for his meticulous and careful help in reviewing this work.

I am most grateful to Dr. ABDELFATTAH MOHAMED FATHY SAOUD (Lecturer of Orthopaedic Surgery, Ain Shams University) who worked so hard with me to bring this work to its present shape.

I would like to thank all members of Orthopaedic Department, Ain Shams University for their help and support.

• . , . • · ,

Contents

i		
No.	Chapter	Page
1	Introduction	1
2	Anatomy & Growth of forearm bones	3
3	Classifications of Pediatric forearm diaphyseal fractures	42
4	Management of complete forearm diaphyseal fractures	54
5	Intramedullary Fixation of pediatric forearm diaphyseal fractures	78
6	Summary	125
7	References	131
8	Arabic Summary	

List of Figures

Figure No.	Page	Content
F.(1)	4	(A) Ossification centers of the radius and ulna, (B) Age of appearance of secondary ossification centers, (C) Age of physeal closure. 8, 29
F.(2)	6	The rotation of the radius on the ulna has a mechanical axis (axis of rotation) from the center of the radial head to the ulnar styloid (AC), The long axis of the radius in supination (AB), in pronation (AB). 8
F.(3)	7	Bones of the Forearm. 1
F.(4)	10	The technique of fracture reduction in children by opening of the periosteal hinge. 8
F.(5)	12	Superficial muscles of the forearm, Anterior view. 1
F.(6)	13	Deep muscles of the forearm, Anterior view. 1
F.(7)	14	Bony attachment of forearm muscles, Anterior view. 1
F.(8)	16	Superficial muscles of the forearm, Posterior view.
F.(9)	17	Deep muscles of the forearm, Posterior view. 1
F.(10)	18	Bony attachment of forearm muscles, Posterior view. 1
F.(11a)	20	Main deforming muscular forces of the forearm. 24
F.(11b)	21	Fracture of the upper shaft of the radius between the insertion of the supinator and pronator teres. 24
F.(11c)	22	Fracture of the middle shaft of the radius between the insertions of the pronator teres and the pronator quadratus. 24
F.(11d)	23	Fracture of the distal radius. 24
F.(12)	27	Surface anatomy of the main arteries and nerves in the forearm. 1

Figure No.	Page	Content
F.(13)	27	Superficial branch of Radial nerve. 24
F.(14)	27	Superficial (Dorsal) branch of Ulnar nerve. 24
F.(15)	33	The annular and the quadrate ligaments. ²
F.(16)	35	The triangular fibrocartilage complex. 8,1
F.(17)	. 37	The Interosseous Membrane. 1
F.(18)	39	The appearance of forearm bones in supination (A) & in pronation (B). 8
F.(19)	46	Bado's classification of Monteggia fracture dislocation. 24
F.(20)	48	A.O classification of diaphyseal forearm fractures (Types). 14
F.(21)	53	A.O classification of diaphyseal forearm fractures (Groups & Subgroups). 14
F.(22)	57	Bayonet apposition. 24
F.(23a)	60	Normal X-ray forearm, A.P view. 24
F.(23b)	60	Normal X-ray forearm, Lateral view. 24
F.(24)	61	The tuberosity view. 8
F.(25)	63	Cross sectional incongruence. 24
F.(26)	64	Estimation of the degree of angulation. 8
F.(27)	67	Ideal cast shape. ⁸

Figure No.	Page	Content	
F.(28)	67	The technique of fracture reduction in children by opening of the periosteal hinge. 8	
F.(29)	69	The technique of three-point fixation. 8	
F.(30)	69	Molding technique. 8	
F.(31)	70	While the cast hardens, it is pressed together by both hands to form an oval. 24	
F.(32)	72	Application of traction-counter traction using finger-taps. 24	
F.(33)	90	Diagrammatic explanation of reduction of displaced fracture by a mini-incision with the help of a thick K-wire under fluoroscopic control. 23	
F.(34)	92	Entrance of the radial pin. 24	
F.(35)	92	The entrance hole is drilled craniad under direct vision through the exposed distal radial metaphysic. ²⁴	
F.(36)	93	(A) The first bend is a 15-30° at its terminal end of 5-10mm long, followed by a gradual curve about 1 to 1.5 cm proximal (B) The second bend is a 15-30° at its midportion in the same plane as the previous bend. 35	
F.(37)	95	A Kirschner wire is inserted through the drill hole into the metaphysis. The long curve (large arrow) of the distal pin facilitates passing it up the intramedullary canal. The 30° terminal bend (small arrow) is used to facilitate reduction. 24	
F.(38)	96	- (Left) the distal 30° angulation is used to facilitate entering the proximal fragment (Right) once the proximal fragment is entered, the nail can be twisted or turned so that the correct alignment is achieved. The nail is then passed up the proximal fragment. ²⁴	
F.(39)	97	Intramedullary pinning of both bones of the forearm. 8	
F.(40)	100	Intrameduliary fixation. The ulna is approached through the olecranon. 24	
F.(41a)	101	Location of the skin incision for insertion of the nail in the distal ulna. 24	

Figure No.	Page	Content
F.(41b)	101	The entrance hole is drilled craniad under direct vision through the exposed distal ulnar metaphysis. 24
F.(42)	102	In the same manner, the nail is passed proximally up the ulnar shaft to cross the fracture site into the olecranon. 24
F.(43)	105	Nail ends are transcutaneous. 27
F.(44a)	106	Nail ends are subcutaneous. 27
F.(44b)	107	Nail ends are subcutaneous. 27
F.(45)	124	Elastic Titanium Nails in the forearm bones. 33