SURGERY OF REPAIR AS APPLIED TO HAND INJURIES

В

B. K. RANK, C.M.G.

M.S.(Melbourne), F.R.C.S.(England), F.R.A.C.S.

Honorary Plastic Surgeon, Royal Melbourne Hospital; Visiting Plastic Surgeon, Repatriation Commission, Victoria; Consulting Plastic Surgeon, Ministry of Health in Tasmania

AND

A. R. WAKEFIELD

M.S.(Melbourne), F.R.C.S.(England), F.R.A.C.S.

Plastic Surgeon, Royal Children's Hospital, Melbourne; Honorary Assistant Plastic Surgeon, Royal Melbourne Hospital; Visiting Plastic Surgeon, Repatriation Commission, Victoria

FOREWORD BY

SIR GORDON GORDON-TAYLOR

K.B.E., C.B., LL.D., Se.D., F.R.C.S., F.R.C.S.(Ed.), F.R.A.C.S., F.A.C.S., F.R.C.S.(Canada)

SECOND EDITION



E. & S. LIVINGSTONE LTD. EDINBURGH AND LONDON

CONTENTS

PART ONE

GENERAL

Chapter	THE SOCIAL SIGNIFICANCE OF HAND INJURIES .	3-11					
	Incidence of hand injuries and how they occur 3. Economic considerations of band injuries 6. Personal and individual aspects of hand injury 10. Medical responsibility concerning hand injuries 11.						
Chapter	II SURGICAL ANATOMY OF THE HAND	12-35					
	Posture of the hand 13. Hand types and normal variations 14. The skin 15. The nails 16. The subcutaneous tissue 17. The fascia 17. The blood-vessels 17. The nerves 18. The tendons 25. The joints 34.						
Chapter	III ORGANISATION IN RELATION TO HAND INJURIES	36-42					
	General considerations of organisation 36. First-aid instructions 38. Casualty reception and management 39. Operating theatre arrangements 40.						
Снартев	IV THE EXAMINATION AND APPRAISAL OF A RECENTLY INJURED HAND	43-52					
The nature and circumstances of the injury 43. The viewpoint of the patient 4 The clinical examination of the injured hand 44: General factors and limitions 44; Tests of tendon function 46—the studied posture of hand and fing 46, the tendon tension in the fingers 46, tests of tendon continuity by moveme 47; Tests of nerve function 49—tests of motor function—ulnar nerve median nerve 49; Tests for sensory function 50; Tests for bony injury 50; T general examination of the patient 50; Some common mistakes 50. T consultation 51.							
	PART TWO						
	PRIMARY TREATMENT						
Introdu	ECTION TO PART TWO	54					
Снартев	V GENERAL CONSIDERATIONS OF PRIMARY TREAT-						
	MENT FOR OPEN HAND INJURIES	55-79					
	Anæsthesia 55: General anæsthesia 56; Sodium thiopentone 56; Hypotensive techniques 56; Regional anæsthesia 56; Pre-operative medication 56; Complications 57; Local anæsthesia 57; Anæsthetic recovery 58. Cleansing 60. Final assessment of damage 60: Is there any skin loss? 61. What structures are exposed? 61; Will the skin survive? 61; What structures are damaged? 61. Choice of procedure 62: Indications for wound closure 62; Indications for repair of deep structures 63; The "tidy" hand injury 63. The use of a tourniquet 66: Indications 66; Technique of application 66. Hæmostasis 67. Primary dressings at operation 68. Immobilisation 70. Antibiotics and antisera 71. After-treatment of primary repair procedures 73. Transition from immobilisation to active function 74. Artefact lesions and "functional" disorders 76. Short muscle contracture 79.						

CONTENTS

CHARLES WE METHODS OF WOUND CLOSUDE AS ADDITED	PAGES						
CHAPTER VI METHODS OF WOUND CLOSURE AS APPLIED TO THE HAND	80-96						
Suturing of wounds without appreciable skin loss 81. Primary skin grafting for skin loss 84: Local flaps for wounds with minor skin loss 84—the rotation principle 86, the advancement principle 86, combinations of the rotation and advancement principles 86, the principle of the "Z" plastic 90. Grafting of wounds with major skin loss 91—free skin grafts 92, attached flaps 93; Closure of traumatic amputations 94.							
CHAPTER VII TIDY HAND WOUNDS AND THEIR COMMON SUB-TYPES	97-121						
The simple uncomplicated skin cut 97. Slicing injuries with soft tissue loss 97. Guilfotine amputations 102. Incised wounds involving severed tendons and/or nerves 105: On the palmar surface of the hand 107—in the fingers 107, in the palm 110, at the wrist 111: On the dorsum of the hand and fingers 112—distal to the metacarpo-phalangeal joint 113, at the proximal interphalangeal joint 113, at the distal interphalangeal joint 115, over the metacarpo-phalangeal joint or knuckle 117, on the dorsum of the hand and wrist 117. Some aspects of technique in nerve and tendon repair 117. The after-treatment of repaired tendons and nerves 119.							
CHAPTER VIII UNTIDY WOUNDS AND THEIR COMMON SUB-	122-142						
TYPES. The crushed or pulped finger tip 122. Mangled fingers 124: Decisions related to viability and extent of damage 124; Conservation or amputation 124; Control of open fractures 125: Repair and closure 125. Deep wounds of the palmar region 130. Flap avulsions and degloving injuries 130: The viability of avulsed flaps 130; The question of amputation 131; Methods of skin replacement 132. Compression injuries of the hand 133: The jammed finger 136. High-explosive injuries 136. Gunshot wounds of the hand 136. Some less common injuries 140; Electric wringer injuries 140; Roller press injuries 141; Grease-gun injuries 141.	122-142						
PART THREE							
INTERMEDIATE TREATMENT							
INTRODUCTION TO PART THREE	144						
CHAPTER IX UNHEALED WOUNDS OF THE HAND Recent unclosed wounds 145. Massive tissue necrosis 146. Exposure necrosis 147. Granulating wounds 148. Septic complications 150.	145-151						
CHAPTER X RE-ESTABLISHMENT OF JOINT MOBILITY	152-157						
Splints for finger joints stiff in flexion 154. Splints for finger joints stiff in extension 154. Surgical correction of posture deformities 155: Capsulotomy 155.							
PART FOUR							
SECONDARY TREATMENT OF HAND INJURIES							
Introduction to Part Four	160						
CHAPTER XI GENERAL CONSIDERATIONS OF SECONDARY TREATMENT	161-163						
Review of the recently healed hand 161: The physical state of the hand 161; The efficiency of the hand 161; Trial of function 161. Records and reports 162.							

	CONTENTS							
CHAPTER	XII SCAR DISABILITIES OF THE HAND	164-178						
	The indications for scar replacement 167. The time for scar replacement 167. The method of scar replacement 167: Replacement of uncomplicated scars 169—linear scars 169, area scars 169; Replacement of complicated scars 172—scar with tendon disability 172; Scar with tendon and bone disability 176; Scar with nerve disability 177.							
CHAPTER	XIII SECONDARY REPAIR OF DEEP STRUCTURES .	179-212						
	Flexor tendons 179; Early secondary repair 179—Injuries of the profundus tendon alone 180; Closed avulsion of the flexor profundus from its insertion 181; Delayed secondary repair 182; Complicated secondary repair 184; Failed tendon repair 184. Some special features of secondary management of tendon injury 186: Flexor tendon grafting 186—incisions and exposure of the operating field 186, radical resection of the flexor digital sheath 187, the choice of the graft 189, the importance of paratenon 189, the junctions of the graft 191, the tension of the graft 192, the post-operative management 194; The use of tendon substitutes 195; Tenodesis for terminal joint stability 195; Extensor tendons 197—the mallet-finger 197, the cut central slip of the extensor expansion 200, the severed extensor policis longus 201, the severed finger extensor on the hand 203, combined flexor and extensor injuries 203. Nerves 204: Irreparable nerve injuries and failed nerve repairs 206—median nerve only 206, ulnar nerve only 207, combined median and ulnar nerve lesions 209. Bones and joints 210: Correction of malunion 210; Correction of joint deformity 210; Restoration of bone loss 212.							
CHAPTER		213-220						
	Unhealed amputation stumps 213. Painful amputation stumps 214. Amputation stumps which interfere with hand function 215. Unsightly stumps 218. "Sites of election" 218. Technique of elective amputations 219.							
CHAPTER		221-235						
	Reconstruction of apposition digits 222. Pollicisation of a finger 231. Deepening interdigital clefts 231. Prosthesis 232.							
PART FIVE								
SPECIAL ASPECTS OF HAND INJURY								
CHAPTER	XVI THE BURNT HAND	239-260						
	Two main types of burnt hand 239: Exposure burns 239: Contact burns 240. Prognosis of a burnt hand 241. Diagnosis of the degree of the burn 241. Treatment of a burnt hand 242: First aid and casualty treatment 242: Primary treatment 242—Second-degree burns and burns of dubious depth 242—cleansing 243, dressing 243, immobilisation 243, elevation of the hand 244, chemotherapy 244: Third-degree burns 244: Electrical burns 245. Delayed treatment of burnt areas 247: Early after-care 247; Infected burns 249: Preparation for grafting 249: After-care of recently healed burns 249. Secondary reparative surgery of the burnt hand 250. The common burn scar disability 251.							

on the dorsum of the hand 251—scars which limit flexion of the metacarpo-phalangeal joint 251, scars which induce metacarpo-phalangeal joint deformity 252, hypertrophic dorsal scars 256; Correction of dorsal scars 256; Palmar scar contractures 257; Correction of palmar scars 258—localised scars on the fingers and webbing defects 260, deep scars involving tendon or nerve destruction 260; Fixed joint deformity 260; Nail deformities 260.

CONTENTS

CHAPTER	XVII	HAN	D IN	JUR	IES I	N CH	ILDI	REN				-	261-269
	Healing t differential Interferent Immobilist and remo Recovery	iting tis see with sation 2 wal of	sues 26 i juxta 266. T sutures	51. T -epiph Fechni 5 267.	he beha yseal g cal diff Interi	aviour o growth i ficulties	of graf 265. in rej	ted tiss Difficul pair 26	ue dur ties of 6. Ca	ing gro diagn tre of	owth 26 osis 26 dressin	3. 55. gs	
CHAPTER	XVIII	HAN	D PI	ROST	HESI	S						,	270-277
Cineplasty 270. Biceps cineplasty 273: Should a prosthesis be fitted at all ? 275: What type of prosthesis will best serve the particular case ? 275. Amputation in relation to hand prosthesis 276.								5 ; on					
INDEX													278-284