

Contents

Part 1	Technique of Microvascular Surgery and Preliminary Experimental Studies	1
	I. Development of Microvascular Surgery	3
	II. Technical Equipment	4
	1. Operating Microscope	4
	2. Accessories and Documentation	7
	3. Operating Seats	9
	4. Instruments	9
	5. Suture Material	15
	III. Experimental Microvascular Surgery	16
	IV. Suture Technique in Microvascular Surgery	17
	1. Preliminary Remarks	17
	2. End-to-End Anastomosis	18
	3. End-to-Side Anastomosis	28
	V. Complications of Microvascular Suture	30
	1. Assessment of Microvascular Anastomosis	30
	2. Patency Test	30
	3. Microthrombectomies	30
	4. Micro-vein Grafts	30
	a) Indications for Micro-vein Grafts	33
	b) Donor Sites for Micro-vein Grafts	35
	c) Rules for Micro-vein Grafts	36
	VI. Micromorphological Evidence at the Site of Anastomosis in Small Vessels	40
	VII. Medical Prophylaxis and Treatment of Vessel Thrombosis and Spasm	47
	1. Local Measures	47
	2. Systemic Measures	47
	References	49
Part 2	Clinical Microvascular Surgery	53
A	A Replantation with Microvascular Anastomosis (micro-replantation)	55
	I. Definitions and Nomenclature	56

1. Replantation	56
2. Amputation	56
3. Total Amputation	56
4. Subtotal Amputation	56
5. Revascularisation	57
6. Replantation: Macro- and Micro-replantation	58
II. Classification of Amputations in the Hand	59
III. Indications for Replantation	59
IV. Guide-lines for the Primary Treatment of Amputation Injuries	62
V. Replantation Technique	63
1. Wound Debridement	64
2. Bone Shortening	64
3. Osteosynthesis	65
4. Suturing of the Flexor Tendon and Tendon Sheath	67
5. Arterial Anastomosis	67
6. Nerve Suturing	68
7. Management of the Extensor Tendon Apparatus	68
8. Vein Anastomosis	68
9. Skin Closure	68
10. Dressings	69
11. Medicinal Treatment	69
VI. Considerations of Differing Levels and Mechanisms of Amputation	70
1. Levels of Amputation in the Hand	70
2. Guillotine Amputations	75
3. Crushing Injuries	75
4. Severe Crushing and Combination Injuries with Damage to the Amputated Part	76
5. Avulsion Injuries	79
6. Degloving Injuries	79
VII. Primary Replacement of Destroyed Phalangeal Joints	85
VIII. Primary Finger Transplantation	88
IX. Post-operative Management	89
X. Physical Management	94
XI. Secondary Operations	95
XII. Results	97
XIII. Microreplantation of Other Parts of the Body – (e.g., toes, ears, scalping injuries, and penile amputations)	99
XIV. Replantation Service	104
 B Tissue Transplantation with Microvascular Anastomosis	105
I. Development of Tissue Transplantation Using Microvascular Anastomosis	105

II. Definitions and Nomenclature	106
III. Indications for Free Tissue Transplantation	106
IV. Preparations for Tissue Transplantation	107
V. Operating Technique	108
1. General Operative Plan	108
2. Medicinal Treatment	109
3. Post-operative Treatment and Supervision	110
4. Complications	110
VI. Free Flap Transplantation	116
1. Development	116
2. Advantages and Disadvantages of Free Flap Transplantation	116
3. Special Requirements for Free Flap Transplantation	117
4. Donor Sites	118
a) Groin Flaps (fat flap, iliac flaps)	118
b) Dorsalis Pedis Flaps (interdigital fold flap, toe pulp flap)	121
c) Delto-Pectoral Flap	123
d) Temporal Flaps	123
e) Axillary Flaps	123
f) Retro-Auricular Flaps	128
VII. Combined Skin and Muscle Flap Transplantation (musculo-cutaneous flaps)	129
VIII. Combined Skin Flap with Bone Transplantation (osteocutaneous flaps)	130
IX. Bone Transplantation	131
X. Muscle Transplantation	133
XI. Transplantation of the Omentum	134
XII. Toe Transplantation	134
References	143
Subject Index	147