

Contents

I Introduction

| | | |
|-------|---|----|
| 1 | Surgical Anatomy | 3 |
| 1.1 | Structure of the Breast | 4 |
| 1.2 | Arterial Supply | 4 |
| 1.3 | Venous Supply | 7 |
| 1.4 | Lymph | 7 |
| 1.5 | Sensitivity | 7 |
| | Bibliography..... | 8 |
| 2 | General | 9 |
| 2.1 | Breast Footprint | 10 |
| 2.1.1 | Upper Breast Border..... | 10 |
| 2.1.2 | Inframammary Fold (IMF)..... | 10 |
| 2.1.3 | Medial Breast Border..... | 11 |
| 2.1.4 | Lateral Breast Border..... | 11 |
| 2.1.5 | Midline of the Breast..... | 11 |
| 2.2 | Breast Shape | 11 |
| 2.2.1 | Nipple Ptosis..... | 12 |
| 2.2.2 | Ptosis of the Gland..... | 12 |
| 2.2.3 | Ptosis of Gland and Nipple..... | 12 |
| 2.2.4 | Pseudoptosis..... | 12 |
| 2.3 | Breast Size and Symmetry | 12 |
| 2.4 | Dimensions and Planning | 12 |
| 2.5 | Markings | 13 |
| 2.6 | Incisions and Drains | 13 |
| 2.6.1 | Classic Incisions..... | 13 |
| 2.6.2 | BCT, Oncoplastic Surgery, and Mastectomy..... | 14 |
| 2.6.3 | Axilla..... | 14 |
| 2.6.4 | Drains..... | 14 |
| 2.7 | Positioning on the Operating Table | 14 |
| 2.8 | Suturing Techniques | 15 |
| 2.9 | Photographs | 15 |

II Breast Cancer

| | | |
|-------|--|----|
| 3 | General | 19 |
| 3.1 | Breast Center | 20 |
| 3.2 | Breast Cancer | 20 |
| 3.3 | Timeline | 21 |
| 3.3.1 | Operation..... | 21 |
| 3.3.2 | Chemotherapy and Anti-hormonal Therapy..... | 21 |
| 3.3.3 | Irradiation..... | 21 |
| 3.4 | Family History and Genetic Testing | 21 |
| 3.4.1 | Intensified Screening..... | 21 |
| 3.4.2 | Risk-Reducing Mastectomy..... | 22 |
| | Bibliography..... | 22 |
| 4 | Tumor Removal and Breast-Conserving Therapy (BCT) | 23 |
| 4.1 | Diagnostics | 24 |
| 4.2 | Indications | 24 |

| | | |
|-------|--|----|
| 4.3 | Operative Removal According to Palpation Findings | 24 |
| 4.4 | Operative Removal After Wire Marking and Specimen Radiography | 24 |
| 4.5 | Histopathological Examination and Margins | 26 |
| 4.6 | Informed Consent | 26 |
| 4.7 | Operation | 26 |
| 4.7.1 | Preoperative Markings and Incisions..... | 26 |
| 4.7.2 | Positioning on the Operating Table..... | 27 |
| 4.7.3 | Tumor Removal..... | 27 |
| 4.7.4 | Post-resection..... | 27 |
| 4.7.5 | Aftercare | 27 |
| 4.7.6 | Complications..... | 27 |
| 5 | Oncoplastic Surgery | 29 |
| 5.1 | Indications for Oncoplastic Techniques | 30 |
| 5.2 | Resection | 30 |
| 5.3 | Incisions and Local Tissue Transposition | 30 |
| 5.3.1 | Local Tissue Transposition in Ptotic or Large Breasts | 32 |
| 5.4 | Local Pedicled and Microsurgical Distant Flaps | 35 |
| | Bibliography..... | 38 |
| 6 | Sentinel Lymph Node and Axillary Lymphadenectomy | 39 |
| 6.1 | Anatomy | 40 |
| 6.2 | Indications | 40 |
| 6.3 | Technique of Sentinel Marking and Removal | 40 |
| 6.4 | Informed Consent | 41 |
| 6.5 | Operation | 41 |
| 6.5.1 | Preoperative Markings | 41 |
| 6.5.2 | Positioning on the Operating Table..... | 41 |
| 6.5.3 | Sentinel Operation..... | 41 |
| 6.5.4 | Axillary Lymphadenectomy | 42 |
| 6.5.5 | Isolated Metastases | 42 |
| 6.5.6 | Aftercare | 42 |
| 6.5.7 | Complications..... | 42 |
| 6.5.8 | Re-Sentinel Removal..... | 43 |
| | Bibliography..... | 43 |
| 7 | Mastectomy | 45 |
| 7.1 | Indication | 46 |
| 7.2 | Informed Consent | 46 |
| 7.3 | General Information on Mastectomy Surgery | 47 |
| 7.3.1 | Preoperative Markings | 47 |
| 7.3.2 | Positioning on the Operating Table..... | 47 |
| 7.3.3 | Operation..... | 47 |
| 7.3.4 | Aftercare | 48 |
| 7.3.5 | Complications..... | 48 |
| 7.4 | Skin-Sparing Mastectomy, SSM | 48 |
| 7.5 | Nipple-Sparing and Risk-Reducing Mastectomy | 49 |
| 7.6 | Mastectomy and Autoderm | 50 |
| 7.7 | Complete Mastectomy Without Immediate reconstruction | 54 |
| | Bibliography..... | 54 |
| 8 | Reconstruction with Foreign Material | 55 |
| 8.1 | Expander Reconstruction | 56 |
| 8.1.1 | Indication | 56 |
| 8.1.2 | Contraindication..... | 56 |

| | | |
|--------|--|-----|
| 8.1.3 | Expander | 56 |
| 8.1.4 | Positioning..... | 57 |
| 8.1.5 | Expansion and Duration | 57 |
| 8.1.6 | Informed Consent | 57 |
| 8.1.7 | Preoperative Markings | 57 |
| 8.1.8 | Surgical Technique..... | 58 |
| 8.1.9 | Aftercare | 58 |
| 8.1.10 | Complications..... | 59 |
| 8.2 | Implant Reconstruction | 59 |
| 8.2.1 | Indication | 59 |
| 8.2.2 | Contraindication..... | 59 |
| 8.2.3 | Implants..... | 59 |
| 8.2.4 | Location | 60 |
| 8.2.5 | Informed Consent | 60 |
| 8.2.6 | Preoperative Markings | 60 |
| 8.2.7 | Surgical Technique..... | 60 |
| 8.2.8 | Aftercare | 65 |
| 8.2.9 | Complications..... | 66 |
| | Bibliography..... | 73 |
| 9 | Acellular Dermal Matrices (ADM) and Meshes..... | 75 |
| 9.1 | Which Matrix?..... | 76 |
| 9.2 | Operation | 76 |
| 9.3 | Complications..... | 76 |
| 9.4 | Special Features..... | 78 |
| 10 | Reconstruction with Autologous Tissue: Free Flaps | 79 |
| 10.1 | Timing | 80 |
| 10.2 | Perioperative Features | 81 |
| 10.2.1 | Medical History and Coagulation..... | 81 |
| 10.2.2 | Intraoperative Management..... | 81 |
| 10.2.3 | Flaps | 81 |
| 10.2.4 | Blood Pressure, Blood Flow | 82 |
| 10.3 | Anastomoses | 82 |
| 10.3.1 | Pedicle | 82 |
| 10.3.2 | Venous Anastomoses..... | 83 |
| 10.3.3 | Arterial Anastomosis..... | 83 |
| 10.4 | Postoperative Management | 84 |
| 10.5 | Vascular Complications and Management | 84 |
| 10.6 | Aesthetic Limitations and Irradiation | 86 |
| | Bibliography..... | 88 |
| 11 | Preparation of the Recipient Vessels | 89 |
| 11.1 | Internal Mammary Artery (IMA) | 90 |
| 11.2 | Internal Mammary Artery Perforators (IMAPs) | 93 |
| 11.3 | Subscapular Vascular Tree | 95 |
| 11.4 | Other Recipient Vessels | 96 |
| | Bibliography..... | 96 |
| 12 | Free Flaps | 97 |
| 12.1 | DIEP, ms-TRAM, and SIEA Flaps | 99 |
| 12.1.1 | Indication | 99 |
| 12.1.2 | Contraindication..... | 100 |
| 12.1.3 | Characteristics | 100 |
| 12.1.4 | Informed Consent..... | 101 |

| | |
|---|------------|
| 12.1.5 Planning and Preoperative Markings..... | 102 |
| 12.1.6 Surgical Technique..... | 106 |
| 12.1.7 Monitoring..... | 114 |
| 12.1.8 Aftercare | 114 |
| 12.1.9 Complications..... | 115 |
| 12.1.10 Corrective and Complementary Interventions | 116 |
| 12.1.11 Pregnancy | 116 |
| 12.1.12 Results After Different Flap Surgeries | 116 |
| 12.2 Inner Thigh Flap..... | 132 |
| 12.2.1 Indication | 132 |
| 12.2.2 Contraindications..... | 132 |
| 12.2.3 Characteristics | 132 |
| 12.2.4 Informed Consent | 133 |
| 12.2.5 Planning and Preoperative Markings..... | 133 |
| 12.2.6 Surgical Technique for the Classic Transverse Skin Island | 134 |
| 12.2.7 Monitoring..... | 139 |
| 12.2.8 Aftercare | 139 |
| 12.2.9 Corrective and Complementary Interventions | 140 |
| 12.2.10 Results After Inner Thigh Flap Surgery | 140 |
| 12.3 Fasciocutaneous Infragluteal Flap Reconstruction (FCI) | 147 |
| 12.3.1 Indication | 147 |
| 12.3.2 Contraindications..... | 147 |
| 12.3.3 Characteristics | 148 |
| 12.3.4 Informed Consent..... | 148 |
| 12.3.5 Planning and Preoperative Markings..... | 148 |
| 12.3.6 Surgical Technique..... | 148 |
| 12.3.7 Monitoring..... | 150 |
| 12.3.8 Aftercare | 150 |
| 12.3.9 Corrective and Complementary Interventions | 150 |
| 12.3.10 Results After Fasciocutaneous Infragluteal Flap Surgery | 151 |
| 12.4 Lymph Node Transplantation..... | 153 |
| 12.4.1 Therapy of Lymphedema | 153 |
| 12.4.2 Breast Reconstruction and Lymph Node Transplantation in One Flap Reconstruction | 153 |
| 12.5 Special Indications..... | 155 |
| 12.5.1 Bilateral Interventions | 155 |
| 12.5.2 Extended Defect Coverage and Palliative Interventions | 155 |
| 12.5.3 Results According to Special Indications..... | 156 |
| Bibliography..... | 161 |
| 13 Reconstruction with Autologous Tissue: Pedicled Flaps | 163 |
| 13.1 Latissimus Dorsi Muscle Flap | 164 |
| 13.1.1 Indication | 164 |
| 13.1.2 Contraindications..... | 164 |
| 13.1.3 Characteristics | 164 |
| 13.1.4 Informed Consent | 165 |
| 13.1.5 Planning and Preoperative Markings..... | 165 |
| 13.1.6 Surgical Technique..... | 166 |
| 13.1.7 Monitoring..... | 169 |
| 13.1.8 Aftercare | 169 |
| 13.1.9 Corrective and Complementary Interventions | 169 |
| 13.1.10 Results After Latissimus Dorsi Muscle Flap Surgery | 169 |
| 13.2 Pedicled Transverse and Vertical Rectus Abdominis Muscle Flap (TRAM/VRAM Flap) | 174 |
| 13.2.1 Indication | 174 |
| 13.2.2 Contraindication..... | 175 |
| 13.2.3 Characteristics | 175 |

| | | |
|-----------|--|------------|
| 13.2.4 | Informed Consent..... | 175 |
| 13.2.5 | Planning and Preoperative Markings..... | 176 |
| 13.2.6 | Surgical Technique..... | 176 |
| 13.2.7 | Monitoring..... | 179 |
| 13.2.8 | Posttreatment and Corrective and Complementary Interventions..... | 179 |
| | Bibliography..... | 179 |
| 14 | Secondary Reconstruction for Partial Defects | 181 |
| 14.1 | Do Nothing | 182 |
| 14.2 | Mastopexy and Reduction Contralateral or Bilateral..... | 182 |
| 14.3 | Volume Through Lipofilling, Scar Correction..... | 182 |
| 14.4 | Implants for Partial Reconstruction | 182 |
| 14.5 | Local Flap for Partial Reconstruction..... | 182 |
| 14.5.1 | Latissimus Dorsi Muscle Flap | 182 |
| 14.5.2 | Parascapular Flap | 182 |
| 14.5.3 | Intercostal Perforator and Thoracoepigastric Flap Reconstruction | 183 |
| 14.6 | Microsurgical Flaps for Partial Reconstruction | 183 |
| 14.7 | Complete Reconstruction..... | 184 |
| | Bibliography..... | 184 |
| 15 | Reconstruction by Lipofilling..... | 185 |
| 15.1 | Indications | 186 |
| 15.2 | Safety..... | 186 |
| 15.3 | Contraindications..... | 186 |
| 15.4 | Take or Healing and Frequency of Interventions | 186 |
| 15.5 | Physiology | 187 |
| 15.6 | Informed Consent | 187 |
| 15.7 | Technique..... | 187 |
| 15.7.1 | Tumescent Solution | 187 |
| 15.7.2 | Aspiration and Preparation..... | 188 |
| 15.7.3 | Filling and Grafting | 188 |
| 15.8 | Follow-Up Treatment | 189 |
| 15.9 | Complications..... | 189 |
| 15.10 | Results After Lipofilling..... | 189 |
| | Bibliography..... | 192 |
| 16 | Reconstruction of the Nipple-Areola Complex (NAC)..... | 195 |
| 16.1 | Position | 196 |
| 16.2 | Nipple Reconstruction..... | 197 |
| 16.2.1 | Pigmentation | 197 |
| 16.2.2 | Nipple Sharing..... | 197 |
| 16.2.3 | Nipple Reconstruction by Local Flaps | 197 |
| 16.3 | Areola | 199 |
| 16.3.1 | Pigmentation | 199 |
| 16.3.2 | Skin Grafting | 199 |
| 16.4 | Combinations of Nipple and Areola Reconstructions | 199 |
| | Bibliography..... | 200 |

III Aesthetic Surgery

| | | |
|-----------|---|------------|
| 17 | Breast Reduction and Mastopexy | 203 |
| 17.1 | Pedicles and Incisions..... | 204 |
| 17.1.1 | Which Incision for Which Patient?..... | 204 |
| 17.1.2 | Which Pedicle for Which Patient?..... | 205 |

| | | |
|-------------|---|-----|
| 17.2 | Surgical Planning, Preoperative Markings, and Hazards..... | 207 |
| 17.2.1 | Planning the Operation with an Inverted T Incision and Determining the New Upper Edge of the NAC..... | 207 |
| 17.2.2 | Planning of the Operation with a Vertical Incision and Definition of the New Upper Edge of the NAC..... | 208 |
| 17.2.3 | Informed Consent..... | 208 |
| 17.3 | Operation..... | 209 |
| 17.3.1 | Positioning on the Operating Table, Special Measures | 209 |
| 17.3.2 | Superomedial/Central Pedicle and T Incision | 209 |
| 17.3.3 | Superomedial Pedicle, Inferior Flap According to Ribeiro and T Incision | 210 |
| 17.3.4 | Superomedial Pedicle and Vertical Incision..... | 210 |
| 17.3.5 | Aftercare | 211 |
| 17.4 | Complications..... | 211 |
| 17.5 | Special Cases..... | 212 |
| 17.6 | Results After Breast Reduction and Mastopexy | 212 |
| | Bibliography..... | 220 |
| 18 | Augmentation..... | 221 |
| 18.1 | Augmentation by Implants..... | 222 |
| 18.1.1 | Implants..... | 223 |
| 18.1.2 | Incisions and Implant Position | 225 |
| 18.1.3 | Surgical Planning, Preoperative Markings, and Hazards..... | 226 |
| 18.1.4 | Informed Consent..... | 228 |
| 18.1.5 | Operation..... | 229 |
| 18.1.6 | Aftercare | 230 |
| 18.1.7 | Complications..... | 232 |
| 18.1.8 | Special Cases..... | 240 |
| 18.1.9 | Secondary Procedures and Implant Changes..... | 242 |
| 18.2 | Augmentation with Autologous Fat..... | 243 |
| 18.2.1 | Which Patients Are Suitable? | 243 |
| 18.2.2 | Surgical Technique..... | 243 |
| 18.2.3 | Informed Consent..... | 243 |
| | Bibliography..... | 244 |
| 19 | Augmentation Mastopexy | 245 |
| 19.1 | Special Features of Implant and Mastopexy..... | 246 |
| 19.1.1 | Shape and Size | 246 |
| 19.1.2 | Location | 246 |
| 19.1.3 | Incisions and Pedicles of the Mastopexy..... | 247 |
| 19.2 | Operation..... | 247 |
| 19.2.1 | Operation Planning | 247 |
| 19.2.2 | Preoperative Markings | 248 |
| 19.2.3 | Informed Consent..... | 249 |
| 19.2.4 | Positioning on the Operating Table and Special Measures | 249 |
| 19.2.5 | Surgical Technique..... | 250 |
| 19.2.6 | Aftercare | 253 |
| 19.3 | Complications..... | 253 |
| 19.3.1 | Special Cases..... | 254 |
| 19.3.2 | Secondary Interventions and Implant Changes..... | 254 |
| 19.3.3 | Results After Augmentation Mastopexy..... | 255 |
| | Bibliography..... | 260 |

IV Malformation

| | | |
|--------|---|-----|
| 20 | Aplasia of the Breast | 263 |
| 20.1 | Therapy | 264 |
| 20.2 | Timing | 264 |
| 20.3 | Techniques | 264 |
| 20.3.1 | <i>Expander</i> | 264 |
| 20.3.2 | <i>Reconstruction</i> | 265 |
| 20.3.3 | <i>Lipofilling</i> | 265 |
| 20.3.4 | <i>NAC</i> | 265 |
| | Bibliography..... | 269 |
| 21 | Tuberous Breast | 271 |
| 21.1 | Symptoms of TB | 272 |
| 21.2 | Anatomy | 273 |
| 21.3 | Classifications | 273 |
| 21.4 | Objectives of the Correction | 273 |
| 21.5 | Timing of Correction, Expectation, and Number of Interventions | 273 |
| 21.6 | Operative Techniques | 273 |
| 21.6.1 | <i>Periareolar Approach, Gland Incision, and Implant Placement</i> | 274 |
| 21.6.2 | <i>Unfurling and Glandular Flaps</i> | 275 |
| 21.6.3 | <i>Expander</i> | 276 |
| 21.6.4 | <i>Mastopexy Figures</i> | 276 |
| 21.6.5 | <i>Lipofilling</i> | 276 |
| 21.6.6 | <i>Autologous Tissue</i> | 276 |
| 21.6.7 | <i>Timing</i> | 276 |
| 21.7 | Results for TB Interventions | 277 |
| | Bibliography..... | 282 |
| | Supplementary Information | |
| | Index | 285 |