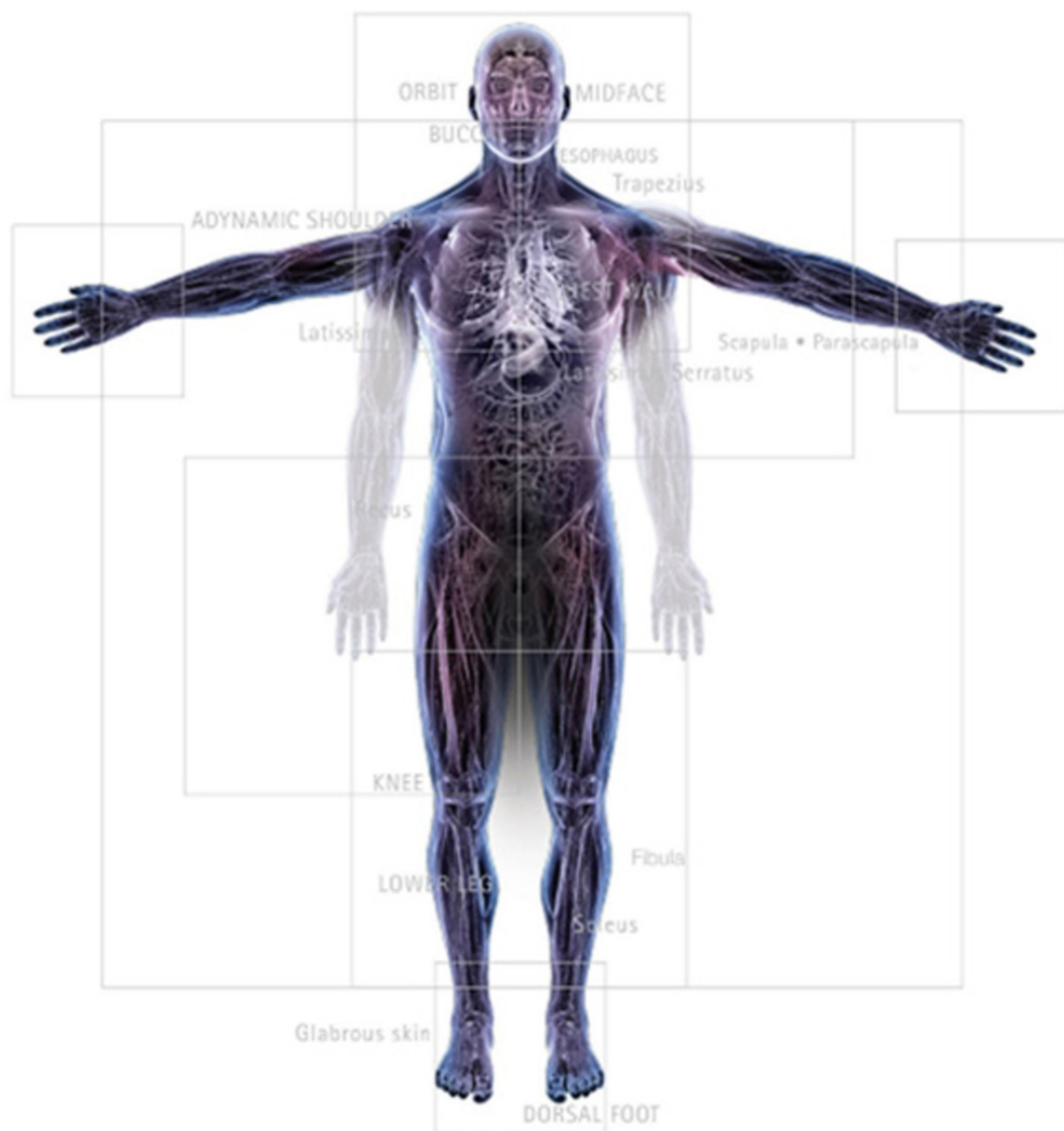


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FU-CHAN WEI SAMIR MARDINI

FLAPS AND RECONSTRUCTIVE SURGERY



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FLAPS AND RECONSTRUCTIVE SURGERY

2nd Edition

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2nd Edition

FLAPS AND RECONSTRUCTIVE SURGERY

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Contents

Video Table of Contents, ix
List of Chapter Contributors, xv
List of Expert Commentary Contributors, xxiv
Video Contributor List, xxx
Preface, xxxix
Dedication, xli
Acknowledgments, xlii

PART 1 PRINCIPLES

- 1** Problem Analysis in Reconstructive Surgery: Reconstructive Ladders, Elevators, and Surgical Judgment, 1
Nicholas B. Vedder
Expert Commentary William Lineaweaver
-  **2** Classification of Flaps, e1
Geoffrey G. Hallock, Reza Ahmadzadeh, Steven F. Morris
Expert Commentary Michel Saint-Cyr
- 3** Considerations in Flap Selection, 6
Geoffrey G. Hallock
Expert Commentary Milomir Ninković
-  **4** Emerging Technology in Reconstructive Surgery, e11
Matthew M. Hanasono
Expert Commentary Uros Ahean
- 5** Prefabrication and Prelamination, 16
Indranil Sinha, Lifei Guo, Julian J. Pribaz
-  **6** Tissue Engineering, e25
Jan Jeroen Vranckx, Margot Den Hondt
Expert Commentary James Chang
- 7** Percutaneous Aponeurotomy and Lipofilling (PALF): A Regenerative Alternative to the Flap, 28
Roger Karl Khouri Jr, Roger K. Khouri
Expert Commentary Peter Rubin
- 8** Lymphedema: Microsurgical Reconstruction, 40
Joseph H. Dayan, Jaume Masia Ayala, Isao Koshima
Expert Commentaries David W. Chang; Ming-Huei Cheng

- 9** Robotic Applications in Plastic and Reconstructive Surgery, e36

Jesse Selber
Expert Commentary Philippe Liverneux




PART 2 CLINICAL ANATOMY AND RECIPIENT VESSEL ANATOMY, SELECTION, AND EXPOSURE

- 10** Clinical Anatomy of the Head and Neck, and Recipient Vessel Selection, 61
Peter C. Neligan, Basel Sharaf
- 11** Clinical Anatomy and Recipient Vessel Selection in the Chest, Abdomen, Groin, and Back, 75
Joshua Fosnot, Joseph M. Serletti
- 12** Clinical Anatomy and Recipient Vessel Selection in the Upper Extremity, 89
Karim Bakri
- 13** Clinical Anatomy and Recipient Vessel Selection and Exposure in the Lower Extremity, 115
Christopher J. Pannucci, T. Shane Johnson, L. Scott Levin

PART 3 RECONSTRUCTION


- 14** Head and Neck Reconstruction, 138
Michael Sosin, Mark Fisher, Eduardo D. Rodriguez
Expert Commentary Paul N. Manson; Richard E. Hayden
- 15** Facial Reanimation: Evolution and Refinements, 162
Julia K. Terzis, Dimitrios Karypidis
- 16** Breast Reconstruction, 183
Maurice Y. Nahabedian
Expert Commentaries David W. Chang; Venkat V. Ramakrishnan

- 17** Chest and Back Reconstruction, 203
Amanda K. Silva, David H. Song
Expert Commentary Lawrence J. Gottlieb
- 18** Abdominal Wall Reconstruction, 218
Donald P. Baumann, Charles E. Butler
Expert Commentary Jan Jeroen Vranckx
-  **19** Pelvic and Urogenital Reconstruction, e43
Jens U. Berli, Richard J. Redett III
Expert Commentary Christopher J. Salgado
- 20** Upper Extremity Reconstruction, 227
Michael W. Neumeister
Expert Commentary Francisco Del Piñal
- 21** Adult Brachial Plexus Injury (A-BPI) Reconstruction, 242
David Chwei-Chin Chuang
Expert Commentary Wieslawa De Pawlikowski
- 22** Lower Extremity Reconstruction, 255
Frank Fang, Chih-Hung Lin
Expert Commentary Lawrence Colen
- 23** Functional Muscle Transfers for Various Purposes, 275
Milomir Ninković, P. Niclas Broer, S. Voigt, Marina Ninković
Expert Commentary Milan Stevanovic and Frances Sharpe

SECTION A MICROSURGERY TECHNIQUES, 295

- 24** Nerves, 295
Kazuteru Doi, Alison Snyder-Warwick
Expert Commentaries Ivica Ducic;
Huan Wang and Robert J. Spinner
- 25** Vessels, 310
S. Raja Sabapathy
Expert Commentary Joon Pio (JP) Hong

SECTION B FLAP HANDLING AND TECHNICAL TIPS, e62

-  **26** Thinning and Tailoring, e62
Naohiro Kimura
Expert Commentary Hung-Chi Chen
- 27** Avoiding Complications, 323
Jeremy L. Wilson, Andrew N. Morrirt, Kenneth L. Fan,
Karen Kim Evans, Wayne A. Morrison
Expert Commentary Edward J. Caterson,
Stephanie A. Caterson, and Julian J. Pribaz
- 28** Flap Re-exploration and Salvage, 333
Jonathan Bank, Lawrence J. Gottlieb
Expert Commentary Roman Skoracki


SECTION C PRE AND POSTOPERATIVE MANAGEMENT, 348

- 29** Postoperative Care, 348
Jonathan Rimler, Audrey Nguyen, Gregory R.D. Evans
Expert Commentary Lucie Lessard


- 30** Reconstructive Options Following Flap Failure, 357
Michael J. Miller, Rajiv Chandawarkar
Expert Commentary Stefan O.P. Hofer

PART 4 CONVENTIONAL WORKHORSE FLAPS



SECTION A LOCAL AND FREE FLAPS IN THE HEAD AND NECK, 367

- 31** Local Flaps in the Head and Neck: Forehead, FAMM, Submental, Nasolabial and Cervicofacial Flaps, 367
Robert L. Walton, Thomas Willson, Elliot Hirsch
- 32** Temporoparietal Fascia Flap, e72 
Steven L. Moran, Eric Santamaria
Expert Commentary Zung-Chung Chen


SECTION B LOCAL AND FREE FLAPS IN THE CHEST, 387

- 33** Supraclavicular Artery Flap, 387
Michael R. Zenn
Expert Commentary Michael W. Chu and Ernest S. Chiu
- 34** Pectoralis Major Flap, 396
William Ignace Wei, Chan Yu Wai
Expert Commentary Hung-Chi Chen
- 35** Deltpectoral Flap and Internal Mammary Artery Perforator Flap, e87 
J.R. Castro, Charles E. Stewart IV, Mark L. Urken
Expert Commentary Eric M. Genden

SECTION C LOCAL AND FREE FLAPS IN THE ABDOMEN, e98

- 36** Omentum, Superior Epigastric, and External/Internal Oblique Flaps, e98 
Marina Barandun, Anne O'Neill, Stefan O.P. Hofer
Expert Commentary Bien-Keem Tan
- 37** Rectus Abdominis Flap, 416
Marcus Castro Ferreira, Luis Henrique Ishida,
Lincoln Saito Millan
Expert Commentary Brian T. Carlsen
- 38** Jejunum Flap, e112 
Hung-Chi Chen, Stefano Spanio di Spilimbergo,
Karen Kim Evans, Samir Mardini
Expert Commentaries John J. Coleman III;
Michael J.A. Klebuc

SECTION D LOCAL AND FREE FLAPS IN THE BACK, e134

- 39** Trapezius Flap, e134 
Franz Haas, Andreas Weiglein, Neal D. Futran
Expert Commentary Bassem T. Elhassan

40 Scapular and Parascapular Flaps, 432

Claudio Angrigiani, Matthew M. Hanasono
Expert Commentary Geoffrey G. Hallock

41 Latissimus Dorsi Flap, 446

Günter Germann, Matthias Reichenberger
Expert Commentary Theodore A. Kung and Paul S. Cederna

SECTION E LOCAL AND FREE FLAPS IN THE PELVIS, GROIN, AND BUTTOCK, 464**42 Iliac Flap, 464**

James S. Brown
Expert Commentary Roberto Puxeddu

43 Groin Flap and Superficial Circumflex Iliac Artery Perforator Flap, 478

Isao Koshima, Kensuke Tashiro, Samir Mardini,
Fu-Chan Wei
Expert Commentary Joon Pio (JP) Hong

44 Gluteus Flap, e157

Moustapha Hamdi

SECTION F LOCAL AND FREE FLAPS IN THE UPPER EXTREMITY, 491**45 Pedicled Flaps of the Hand, 491**

James P. Higgins, Ryan D. Katz
Expert Commentary Don Lalonde

46 Lateral Arm Flap, 511

Milomir Ninković, Ulf Dornseifer
Expert Commentary Yu-Te Lin and Chih-Hung Lin

47 Radial Forearm Flap, 525

Amir H. Taghinia, Joseph Upton
Expert Commentary Hani Sbitany

SECTION G LOCAL AND FREE FLAPS IN THE LOWER EXTREMITY, 540**48 Local Flaps in the Foot, 540**

Kevin D. Han, Karen Kim Evans, Christopher E. Attinger
Expert Commentary Randy Sherman

49 Gracilis Flap, 559

Ronald M. Zuker, Robert D. Bains
Expert Commentary Yuan-Kun Tu

50 Gastrocnemius Flap, 570

Alain-Charles Masquelet, Paolo Sassu, Marco Innocenti
Expert Commentary Geoffrey G. Hallock

51 Soleus Flap, 581

Jacques Baudet, Philippe Pelissier, Vincent Casoli,
Philippe Caix, Félix J. Fariás, Wiesława De Pawlikowski
Expert Commentary Randy Sherman and
Michael J. A. Klebuc

52 Fibula Flap, 596

Christopher J. Salgado, Harvey Chim, Steven L. Moran,
Fu-Chan Wei, Samir Mardini
Expert Commentary Marco Innocenti

53 Glabrous Skin Flaps, e176

Gregory M. Buncke, Rudolf F. Buntic
Expert Commentary Mohammad M. Al-Qattan

54 Toe Flaps and Toe Transplantation, 613

Chih-Hung Lin, Paolo Sassu
Expert Commentaries David T.W. Chiu and
Wenhai Sun; Fu-Chan Wei

55 Medial Femoral Condyle and Descending Genicular Artery Perforator Flaps, 636

Matthew Houdek, Heinz Bürger, Steven L. Moran
Expert Commentary Tarek Abdalla El-Gammal

PART 5 PERFORATOR-BASED WORKHORSE FLAPS**56 Perforator Flaps in the Lateral Thoracic Region, 648**

Jeong-Tae Kim
Expert Commentary Stephanie A. Caterson and
Edward J. Caterson

57 Deep and Superficial Inferior Epigastric Artery Perforator Flaps, 668

Alain R. Gagnon, Phillip N. Blondeel
Expert Commentary Aldona J. Spiegel and
Robert J. Allen Sr

58 Superior and Inferior Gluteal Artery Perforator Flaps, 687

Robert J. Allen Sr, Joshua L. Levine,
Katherine A. Impastato
Expert Commentary Moustapha Hamdi

59 Anterolateral and Anteromedial Thigh Flaps, 700

Samir Mardini, Harvey Chim, Fu-Chan Wei
Expert Commentary Peirong Yu

60 Tensor Fascia Lata Flap, e190

Ömer Özkan, O. Koray Coşkunfırat,
Özlenen Özkan
Expert Commentary Bishara Atiyeh
and Fadel M. Chahine

61 Posterior Tibial Artery Perforator Flap, 717

Niri S. Niranjani
Expert Commentary Alexandru V. Georgescu

62 Free-style Flaps, 729

Fu-Chan Wei, Seng-Feng Jeng, Samir Mardini
Expert Commentary Michel Saint-Cyr

PART 6 RECONSTRUCTIVE TRANSPLANT SURGERY**63 Starting a Reconstructive Transplantation Program, e204**

Laurant Lantieri, Hatem Amer
Expert Commentary Palmina Petruzzo

64 Face Transplantation, 739

Joseph A. Ricci, Bohdan Pomahac
Expert Commentary Samir Mardini and
Hatem Amer

65 Hand and Upper Extremity
Transplantation, 754

Jaimie T. Shores, Gerald Brandacher, W.P. Andrew Lee
Expert Commentary L. Scott Levin

66 Laryngeal, Abdominal Wall, and Uterus
Transplantation, 770

Ömer Özkan, Özlenen Özkan
Expert Commentary David W. Mathes

67 Immunology and Research in Reconstructive
Transplantation, e210

Maria Z. Siemionow, Bahar Bassiri Gharb,
Antonio Rampazzo
Expert Commentary Yur-Ren Kuo

68 Peripheral Nerve Allograft Transplantation, 779

Amy M. Moore, James T.W. Saunders,
Susan E. Mackinnon
Expert Commentary Yur-Ren Kuo

Index, 799



Video Table of Contents

- 3.1** Scalp Split Thickness Skin Graft
Geoffrey G. Hallock
- 7.1** Lipografter / Jackhammer Grafting
Roger Karl Khouri Jr and Roger K. Khouri
- 7.2** Fat Grafting for Breast Reconstruction
Michel Saint-Cyr
- 8.1** LV Bypass Preoperative Planning in Lower
Extremity Lymphedema
Michel Saint-Cyr
- 8.2** Lymphovenous Bypass
Edward I-Fei Chang
- 8.3** Vascularized Groin Lymph Node
Transfer for Upper Extremity
Lymphedema
Jaume Masia Ayala, Gemma Pons
- 8.4** Superficial Circumflex Iliac Artery Perforator
Flap (SCIP Flap) for Lymph Node Transfer in
Lymphedema Treatment
Jaume Masia Ayala
- 8.5** Axillary Lymph Node Transfer for Lower
Extremity Lymphedema
Joseph H. Dayan
- 9.1** Trans Oral Robotic Surgery
Jesse Selber
- 9.2** External View of Robotic LD
Jesse Selber
- 9.3** Robotic Harvest of Rectus Abdominis
Jesse Selber
- 9.4** Robotic Harvest of Latissimus Dorsi
Jesse Selber
- 9.5** Robotic Microvascular Anastomosis
Jesse Selber
- 9.6** Robotic Lymphaticovenous Bypass
Jesse Selber
- 10.01** Exposure of Superficial Temporal Vessels
Basel Sharaf
- 10.02** Exposure of the Facial Vessels
Basel Sharaf
- 10.03** Exposure of the Transverse Cervical Vessels
Basel Sharaf
- 10.04** Facial Nerve Anatomy
Michael J.A. Klebuc
- 10.05** Facial Nerve Anatomy, Clinical Case
Samir Mardini
- 10.06** Facial Nerve Anatomy and Stimulation
Samir Mardini
- 10.07** Facial Reanimation: Masseteric nerve to
Facial Nerve Transfer, Cross Facial
Nerve Grafting
Shai Rozen
- 10.08** Facial Reanimation: Preoperative Facial
Markings, Preparation of Face on Recipient
Side, Harvest of Partial Gracilis Functional
Muscle Flap, Masseter Nerve Dissection, and
Insetting of Gracilis to Paralyzed Side
Shai Rozen
- 11.01** Trunk Anatomy, Internal Mammary Artery
Exposure
Basel Sharaf
- 12.01** Exposure of the Brachial Artery in the Medial
Arm
Karim Bakri and Marissa Suchyta
- 12.02** Exposure of the Distal Brachial Artery and Its
Bifurcation in the Antecubital Fossa
Karim Bakri and Marissa Suchyta
- 12.03** Exposure of the Radial Artery in the Wrist
and Anatomic Snuffbox
Karim Bakri and Marissa Suchyta
- 12.04** Exposure of the Ulnar Artery at the Wrist and
Guyon's Canal
Karim Bakri and Marissa Suchyta
- 13.01** Groin and Lower Extremity Landmarks
Basel Sharaf
- 13.02** Exposure of Posterior Tibial Vessels
Basel Sharaf
- 13.03** Exposure of the Dorsalis Pedis and Tibialis
Anterior
Basel Sharaf

- 13.04** Dorsalis Pedis Exposure
Christopher J. Pannucci, T. Shane Johnson, and
L. Scott Levin
- 14.01** Ileocolon Flap for Reconstruction of the
Hypopharynx, Cervical Esophagus,
and Voice
Hung-Chi Chen and Samir Mardini
- 15.01** Babysitter Principle in Facial Reanimation
Julia K. Terzis
- 15.02** Techniques of Cross Facial Nerve Grafting
Julia K. Terzis
- 15.03** Gracilis Free Muscle Transfer for Facial
Reanimation
Julia K. Terzis
- 15.04** Pectoralis Minor Free Muscle Transfer for
Facial Reanimation
Julia K. Terzis
- 16.01** DIEP
Maurice Y. Nahabedian
- 16.02** Muscle Sparing Latissimus Dorsi
Michel Saint-Cyr
- 16.03** Breast Reconstruction with DIEP Flap Using 3
Dimensional Molding
Uros Ahcan
- 17.01** Chest Wall and Diaphragm Mesh
Reconstruction Moving With Respirations
Amanda K. Silva and David H. Song
- 17.02** Chest Wall Defect and Expanding Lung
Amanda K. Silva and David H. Song
- 17.03** Flap Inset
Amanda K. Silva and David H. Song
- 18.01** Component Separation
Samir Mardini
- 18.02** Pedicled Innervated Vastus Lateralis Muscle
for Abdominal Wall Reconstruction Case 1
Jan Jeroen Vranckx
- 18.03** Pedicled Innervated Vastus Lateralis Muscle
for Abdominal Wall Reconstruction Case 2
Jan Jeroen Vranckx
- 18.04** Pedicled Innervated Vastus Lateralis Muscle
for Abdominal Wall Reconstruction:
Dissection
Jan Jeroen Vranckx
- 19.01** Radial Forearm Free Flap Phalloplasty
Jessica Lynch, Jens U. Berli,
Richard J. Redett III
- 20.01** Great Toe Pulp Transfer to Reconstruct Non-
Painful Sensate Index Pulp Part 1
Fu-Chan Wei, Jay Hsin-Hung Chen,
Christopher G. Wallace
- 20.02** Great Toe Pulp Transfer to Reconstruct Non-
Painful Sensate Index Pulp Part 2
Fu-Chan Wei, Jay Hsin-Hung Chen,
Christopher G. Wallace
- 20.03** Second Toe Flap for Index Finger
Reconstruction
Fu-Chan Wei
- 21.01** Brachial Plexus Exploration and Exposure of
Transverse Cervical Artery
David Chwei-Chin Chuang
- 21.02** Adult Brachial Plexus Injury Clip 1
David Chwei-Chin Chuang
- 21.03** Adult Brachial Plexus Injury Clip 2
David Chwei-Chin Chuang
- 21.04** Shoulder Abduction Reconstruction By
Transfer of Latissimus, Teres Major, and
Clavicular Portion of Pectoralis Major
David Chwei-Chin Chuang
- 22.01** Reconstruction of Foot Dorsiflexion with Rectus
Femoris Functioning Muscle Transfer
David Chwei-Chin Chuang
- 22.02** Keystone Island Perforator Flaps for Thigh
Defects
Michel Saint-Cyr
- 22.03** Endoscopically-Assisted Medial Sural Artery
Perforator Flap Transfer for Foot
Reconstruction
Cheng-Hung Lin and Wyatt Ho
- 22.04** Pedicled Peroneal Artery Perforator Flap for
Reconstruction of a Soft Tissue Defect Over
the Tibia
Cheng-Hung Lin
- 22.05** Peroneal Artery Perforator Propeller Flap
Michel Saint-Cyr
- 22.06** Rectus Femoris Myocutaneous Flap
David Chwei-Chin Chuang
- 23.01** Peroneus Function After Reconstruction
Milomir Ninković
- 23.02** Facial Movement After Reconstruction
Milomir Ninković
- 24.01** Cross-Tongue Nerve Grafting for Lingual
Nerve Reconstruction
Federico Biglioli

- 25.01** Microvascular Anastomosis of an Artery and Vascular Coupling of a Vein
Robert J. Allen Sr
- 25.02** Microvascular Anastomosis of an Artery and Vein
Hung-Chi Chen
- 25.03** Airborne Suture Tying Technique
Hung-Chi Chen and Samir Mardini
- 31.01** Forehead Flap
Julian J. Pribaz
- 31.02** Facial Artery Myo Mucosal Flap
Julian J. Pribaz
- 31.03** Submental Flap
Julian J. Pribaz
- 32.01** Temporoparietal Fascia Flap for Auricular Reconstruction
Zung-Chung Chen
- 32.02** Scalp Fascia Flap (Temporoparietal Fascia Flap)
Geoffrey G. Hallock
- 32.03** Temporoparietal Fascia Flap
Julian J. Pribaz
- 32.04** Bilateral Pedicled Temporalis Muscle Flaps for Reconstruction of a Complete Maxillectomy Defect
Ernesto Padula, Stefano Spanio Di Spilimbergo, Roberto Squaquara, and Ugo Baciliero
- 33.01** Flaps
Michael R. Zenn
- 34.01** Pectoralis Major Flap
Geoffrey G. Hallock
- 34.02** Pectoralis Major Flap
Geoffrey L. Robb
- 35.01** Deltopectoral and Internal Mammary Artery Perforator Flaps
Geoffrey L. Robb
- 37.01** Rectus Abdominis Flap
Geoffrey G. Hallock
- 38.01** Jejunum Flap for Esophageal Reconstruction
Hung-Chi Chen
- 38.02** Jejunum Flap
Hung-Chi Chen
- 38.03** Supercharged Pedicled Jejunum Interposition for Esophageal Replacement
Shanda H. Blackmon
- 39.01** Contralateral Trapezius Transfer
Bassem T. Elhassan
- 40.01** Scapular and Parascapular Flaps
Geoffrey G. Hallock
- 41.01** Latissimus Dorsi Flap
Günter Germann
- 41.02** Latissimus Dorsi Muscle Flap
Geoffrey G. Hallock
- 41.03** Latissimus Dorsi Flap
Yener Demirtas and Ömer Özkan
- 41.04** Preoperative Markings Extended Latissimus Dorsi
Michel Saint-Cyr
- 41.05** Latissimus Dorsi Flap for Breast Reconstruction
Michel Saint-Cyr
- 41.06** Composite Osteomuscular Flap of Latissimus Dorsi and Rib
Alexandru V. Georgescu
- 42.01** Iliac Flap
Chih-Hung Lin
- 43.01** Groin Flap
Chih-Hung Lin
- 43.02** SCIP
Joon Pio (JP) Hong and Hyun-suk Suh
- 43.03** Groin Flap With Iliac Bone Harvest Based on the Superficial Circumflex Iliac Artery
Chung-Chen Hsu
- 45.01** First Dorsal Metacarpal Artery Flap
Steven L. Moran
- 45.02** Posterior Interosseous Flap
Hung-Chi Chen
- 46.01** Extended Lateral Arm Flap
Milomir Ninković
- 46.02** Lateral Arm Flap for Reconstruction of a Webspace Defect After Contracture Release
Fu-Chan Wei
- 47.01** Reverse Radial Forearm Flap
Joseph Upton and Amir H. Taghinia
- 47.02** Radial Forearm Flap
Geoffrey G. Hallock
- 47.03** The Suprafascial Harvest of the Radial Forearm Flap
Fu-Chan Wei, Jason Su Shiu-an-tzuen, Wyatt Ho, and Nidal Farhan Al Deek

- 47.04** Radial Forearm Flap, Suprafascial Dissection
Fu-Chan Wei
- 47.05** Radial Forearm Flap, Suprafascial
Fu-Chan Wei
- 47.06** Radial Forearm Flap for Buccal Defect Reconstruction
Fu-Chan Wei
- 47.07** Radial Forearm Flap for Reconstruction of an Upper Lip Defect
Fu-Chan Wei
- 47.08** Radial Forearm Fascia Flap Reverse Pedicled
Nicholas B. Vedder
- 47.09** Radial Forearm Flap Dissection and Management of the Donor Site with a Full Thickness Skin
Fu-Chan Wei
- 48.01** Distal Sural Flap
Geoffrey G. Hallock
- 49.01** Segmental Gracilis Muscle Transfer for Smile in a Case of Möbius Syndrome
Ronald M. Zuker, Gregory H. Borschel, Karen W.Y. Wong, Alison Snyder-Warwick, and Andrew Yee
- 49.02** Gracilis Flap
Geoffrey G. Hallock
- 49.03** Facial Reanimation (Second Stage) Reconstruction with a Gracilis Functioning Muscle Transfer
David Chwei-Chin Chuang
- 49.04** Finger Flexion Reconstruction with Gracilis Functioning Muscle Transfer
David Chwei-Chin Chuang
- 49.05** Gracilis Myocutaneous Flap Harvested for Functional Muscle Transfer
David Chwei-Chin Chuang
- 49.06** Endoscopic Harvest of the Gracilis Muscle
Chih-Hung Lin
- 49.07** Preoperative Markings for Transverse Upper Gracilis Myocutaneous Flap for Bilateral Breast Reconstruction
Michel Saint-Cyr
- 49.08** Flap Harvest of Transverse Upper Gracilis Myocutaneous Flap for Breast Reconstruction
Michel Saint-Cyr
- 49.09** Vertical Design Upper Gracilis Flap for Breast Reconstruction
Michel Saint-Cyr
- 49.10** Stage 1 – Cross-Facial Nerve Grafting for Smile
Ronald M. Zuker, Gregory H. Borschel, Karen W.Y. Wong, Alison Snyder-Warwick, and Andrew Yee
- 49.11** Double innervated gracilis free-flap transfer for smiling reanimation
Federico Biglioli
- 49.12** Diagonal Upper Gracilis Flap
Joseph H. Dayan
- 50.01** Medial Gastrocnemius Flap
Geoffrey G. Hallock
- 50.02** Lateral Gastrocnemius Flap
Geoffrey G. Hallock
- 50.03** Medial Sural Artery Perforator Flap
Seng-Feng Jeng
- 50.04** Medial Sural Artery Perforator Flap and Lateral Gastrocnemius Flap
Geoffrey G. Hallock
- 50.05** Medial Sural Artery Perforator Flap
Geoffrey G. Hallock
- 51.01** The Soleus Muscle Flap
Geoffrey G. Hallock
- 51.02** Hemi-Soleus Distally Based for Lower Extremity Defect
Nidal Farhan Al Deek and Chung-Chen Hsu
- 52.01** Fibula Osteoseptocutaneous Flap
Fu-Chan Wei and Nidal Farhan Al Deek
- 52.02** Free Fibula Osteocutaneous Flap Harvest
Edward I-Fei Chang
- 52.03** Harvest of the Fibula Osteoseptocutaneous Flap Via Anterior Approach
Fu-Chan Wei
- 52.04** Fibula Osteoseptocutaneous Flap with Primary Osteointegrated Implants for Mandible Reconstruction
Fu-Chan Wei
- 52.05** Fibula Flap for Obliteration and Osseous Reconstruction of a Persistent Frontal Basilar Fracture Infection Associated with Nasofrontal Outflow Tract Obstruction
Eduardo D. Rodriguez
- 52.06** Reconstruction of the Mandible with the Preformed Matrixmandible and Fibula OSC Flap
Nidal Farhan Al Deek, Duretti Fufa, and Fu-Chan Wei

- 52.07** Proximal Fibula Flap with Growth Plate
Marco Innocenti
- 52.08** Proximal Fibula Epiphyseal Transplant
Marco Innocenti
- 54.01** Great Toe Transfer for Reconstruction of Metacarpal Hand: Planning and Recipient Site Preparation
Fu-Chan Wei, Hsin-Yu Sirena Chen, Ketan M. Patel, and Nidal Farhan Al Deek
- 54.02** Great Toe Transfer for Reconstruction of Metacarpal Hand: Great Toe Harvest
Fu-Chan Wei, Hsin-Yu Sirena Chen, Ketan M. Patel, and Nidal Farhan Al Deek
- 54.03** Great Toe Transfer for Reconstruction of Metacarpal Hand: Great Toe Inset
Fu-Chan Wei, Hsin-Yu Sirena Chen, Ketan M. Patel, and Nidal Farhan Al Deek
- 54.04** Trimmed Great Toe Flap
Fu-Chan Wei
- 54.05** Trimmed Great Toe Transfer
Fu-Chan Wei
- 54.06** Second Toe Flap
Hung-Chi Chen
- 54.07** Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Markings
Fu-Chan Wei and Wyatt Ho
- 54.08** Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Recipient Prep
Fu-Chan Wei, Wyatt Ho, and Jason Su Shiuan-tzuen
- 54.09** Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Flap Harvest
Fu-Chan Wei, Wyatt Ho, and Jason Su Shiuan-tzuen
- 54.10** Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Inset
Fu-Chan Wei, Wyatt Ho, and Jason Su Shiuan-tzuen
- 54.11** Second and Third Toe Flap for Metacarpal Hand Reconstruction
Fu-Chan Wei
- 54.12** Microsurgical Transplantation of the PIP Joint of the Second Toe: Recipient Site Preparation
Yu-Te Lin, Chung-Chen Hsu, Cheng-Hung Lin, and Nidal Farhan Al Deek
- 54.13** Microsurgical Transplantation of the PIP Joint of the Second Toe: Flap Harvest
Yu-Te Lin, Chung-Chen Hsu, Cheng-Hung Lin, and Nidal Farhan Al Deek
- 54.14** Microsurgical Transplantation of the PIP Joint of the Second Toe: Flap Inset
Yu-Te Lin, Chung-Chen Hsu, Cheng-Hung Lin, and Nidal Farhan Al Deek
- 55.01** Medial Femoral Condyle Flap Based on Descending Geniculate Vessel
Steven L. Moran
- 55.02** Medial Femoral Condyle Flap
Steven L. Moran
- 56.01** Perforator Flaps in the Lateral Thoracic Area: Latissimus Dorsi Perforator Flap, Thoracodorsal Perforator Flap, and Lateral Thoracic Perforator Flap
Jeong-Tae Kim
- 57.01** Preoperative Deep Inferior Epigastric Perforator (DIEP) Marking in a High BMI Patient
Michel Saint-Cyr
- 57.02** Deep Inferior Epigastric Perforator Flap Harvest and Dissection Summary
Michel Saint-Cyr
- 57.03** Deep Inferior Epigastric Artery Perforator (DIEP) Flap for Breast Reconstruction
Ming-Huei Cheng
- 57.04** Deep Inferior Epigastric Artery Perforator Flap
Ming-Huei Cheng
- 57.05** DIEP Free Flap Harvest
Edward I-Fei Chang
- 57.06** Superficial Inferior Epigastric Artery (SIEA) Flap for Breast Reconstruction
Aldona J. Spiegel
- 58.01** Inferior Gluteal Artery Perforator (IGAP) Flap for Breast Reconstruction
Robert J. Allen Sr and Julie V. Vasile
- 59.01** Anterolateral Thigh Flap
Geoffrey G. Hallock
- 59.02** Anteriolateral Thigh Flap
Chih-Hung Lin
- 59.03** Suprafascial Harvest of the Anterolateral Thigh Flap
Fu-Chan Wei, Dennis Yeh, Thomas Constantinescu, and Nidal Farhan Al Deek

- 59.04** Anterolateral Thigh Perforator Flap, Dissection
Fu-Chan Wei
- 59.05** Vastus Lateralis Myocutaneous Flap
Chih-Hung Lin
- 59.06** Chimeric Anterolateral Thigh Perforator Skin Flap and Vastus Lateralis Muscle Flap for Reconstruction of a Defect in the Maxilla
Chung-Kan Tsao
- 59.07** Anterolateral Thigh Flap for Wound Coverage and Flow Through Reconstruction of the Radial Artery
Ye-Tin Lin
- 59.08** Free Vastus Lateralis Muscle Flap
Michel Saint-Cyr
- 59.09** Different Designs of the Anterolateral Thigh Flap
Fu-Chan Wei and Nidal Farhan Al Deek
- 59.10** Pedicled ALT Flap for Groin
Michel Saint-Cyr
- 59.11** Pedicled Anterolateral Thigh Myocutaneous Flap (Vastus Lateralis Myocutaneous Flap) for Reconstruction of a Medial Thigh Defect
Chung-Ho Feng
- 59.12** Reconstruction of Hemiglossectomy Defect with the ALT Flap
Fu-Chan Wei, Jay Hsin-Hung Chen, and Christopher G. Wallace
- 59.13** Anterolateral Thigh Perforator Flap for Reconstruction of a Palate Defect
Fu-Chan Wei
- 59.14** Anterolateral Thigh Perforator Flap for Hypopharyngeal and Cervical Esophagus Reconstruction
Fu-Chan Wei
- 59.15** Reverse Pedicled Anterolateral Thigh Perforator Flap With Venous Supercharge for Reconstruction of a Popliteal Defect
Chung-Ho Feng
- 59.16** Maxillary Reconstruction with the Anterolateral Thigh Free Flap
Matthew M. Hanasono
- 60.01** Tensor Fascia Lata Flap
Chih-Hung Lin
- 61.01** Posterior Tibial Artery Perforator Propeller Flap
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- 62.01** Intraoperative PAP Flap Markings and Flap Harvest
Michel Saint-Cyr
- 62.02** Profunda Artery Perforator (PAP) Flap for Head and Neck Reconstruction
Jerry Chih-Wei Wu
- 62.03** Pedicled Superficial Femoral Artery Perforator Flap
Michel Saint-Cyr
- 62.04** Superficial Femoral Artery Perforator Flap for Knee Coverage
Michel Saint-Cyr
- 62.05** Proximal Free-style Superficial Femoral Artery Perforator Flap for Medial Thigh Defect
Michel Saint-Cyr
- 63.01** Face Transplantation: Donor Restoration
Gillian F. Duncan and Michaela Calhoun
- 64.01** Facial Transplant
Joseph A. Ricci and Bohdan Pomahac
- 64.02** Face Transplant Postoperative Result
Edward J. Caterson, Julian J. Pribaz, and Bodan Pomahac
- 64.03** Face Transplant Postoperative Result: Showing Spontaneous Emotion
Edward J. Caterson, Julian J. Pribaz, and Bodan Pomahac
- 64.04** Face Transplant: Recipient Preparation
Samir Mardini, Marissa Suchyta, Uldis Bite
- 64.05** Face Transplant: Lower Face Donor Procurement
Samir Mardini, Marissa Suchyta, Karim Bakri
- 64.06** Face Transplant: Recipient Reconstruction
Samir Mardini, Marissa Suchyta, and Elizabeth A. Bradley
- 66.01** Uterus Transplantation: Surgical Technique
Ömer Özkan and Özlenen Özkan
- 68.01** Jumping the Nerve Gap
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47.03 The Suprafascial Harvest of the Radial Forearm Flap
51.02 Hemi-Soleus Distally Based for Lower Extremity Defect
52.01 Fibula Osteoseptocutaneous Flap
52.06 Reconstruction of the Mandible With the Preformed Matrixmandible and Fibula OSC Flap
54.01 Great Toe Transfer for Reconstruction of Metacarpal Hand Part 1
54.02 Great Toe Transfer for Reconstruction of Metacarpal Hand Part 2
54.03 Great Toe Transfer for Reconstruction of Metacarpal Hand Part 3
54.12 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 1
54.13 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 2
54.14 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 3
59.03 Suprafascial Harvest of the Anterolateral Thigh Flap
59.09 Different Designs of the Anterolateral Thigh Flap

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12.02 Exposure of the Distal Brachial Artery and Its Bifurcation in the Antecubital Fossa
12.03 Exposure of the Radial Artery in the Wrist and Anatomic Snuffbox
12.04 Exposure of the Ulnar Artery at the Wrist and Guyon's Canal
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64.04 Face Transplant: Recipient Preparation

Shanda H. Blackmon MD, MPH, FACS

Associate Professor of Surgery
Division of Thoracic Surgery
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38.03 Supercharged Pedicled Jejunum Interposition for Esophageal Replacement

Gregory H. Borschel MD

Associate Professor
University of Toronto and The Hospital for Sick Children
Division of Plastic Surgery
Toronto, Canada

49.01 Segmental Gracilis Muscle Transfer for Smile in a Case of Möbius Syndrome
49.10 Stage 1 – Cross-Facial Nerve Grafting for Smile

Elizabeth A. Bradley MD

Associate Professor of Ophthalmology
Department of Ophthalmology
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Rochester, MN, USA

64.06 Face Transplant: Recipient Reconstruction

Michaela Calhoun MS, CCA

Director of Anaplastology
Prosthetics at Graphica Medica, LLC
Bloomington, MN, USA

63.01 Face Transplantation: Donor Restoration

Edward J. Catterson MD, PhD

Instructor in Surgery
Plastic and Reconstructive Surgery
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Harvard Medical School
Boston, MA, USA

64.02 Face Transplant Postoperative Result

64.03 Face Transplant Postoperative Result: Showing Spontaneous Emotion

Edward I-Fei Chang MD, FACS

Assistant Professor
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The University of Texas MD Anderson Cancer Center
Houston, TX, USA

8.2 Lymphovenous Bypass

52.02 Free Fibula Osteocutaneous Flap Harvest

57.05 DIEP Free Flap Harvest

Zung-Chung Chen MD

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Chang Gung Memorial Hospital
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Taiyuan, Taiwan

32.01 Temporoparietal Fascia Flap for Auricular Reconstruction

Hung-Chi Chen MD, PhD, FACS

Director, International Medicine
Professor, Department of Plastic Surgery
China Medical University
Taichung, Taiwan

14.01 Ileocolon Flap for Reconstruction of the Hypopharynx, Cervical Esophagus, and Voice

25.02 Microvascular Anastomosis of an Artery and Vein

25.03 Airborne Suture Tying Technique

38.01 Jejunum Flap for Esophageal Reconstruction

38.02 Jejunum Flap

45.02 Posterior Interosseous Flap

54.06 Second Toe Flap

Jay Hsin-Hung Chen MD

Attending staff
Department of Plastic and Reconstructive Surgery
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Keelung, Taiwan;
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Chang Gung University
Taoyuan, Taiwan

20.01 Great Toe Pulp Transfer to Reconstruct Non-Painful Sensate Index Pulp Part 1

20.02 Great Toe Pulp Transfer to Reconstruct Non-Painful Sensate Index Pulp Part 2

59.12 Reconstruction of Hemiglossectomy Defect with the ALT Flap

Hsin-Yu Sirena Chen MD

Division of Craniofacial Surgery
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Taoyuan, Taiwan

54.01 Great Toe Transfer for Reconstruction of Metacarpal Hand Part 1

54.02 Great Toe Transfer for Reconstruction of Metacarpal Hand Part 2

54.03 Great Toe Transfer for Reconstruction of Metacarpal Hand Part 3

Ming-Huei Cheng MD, MBA, FACS

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Chief, Center for Tissue Engineering;
Chairman, International Medical Center;
Superintendent, Chang Gung Memorial Hospital
College of Medicine, Chang Gung University
Taoyuan, Taiwan

57.03 Deep Inferior Epigastric Artery Perforator (DIEP) Flap for Breast Reconstruction

57.04 Deep Inferior Epigastric Artery Perforator Flap

David Chwei-Chin Chuang MD

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Department of Plastic Surgery
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Taipei, Taiwan

21.01 Brachial Plexus Exploration and Exposure of Transverse Cervical Artery

21.02 Adult Brachial Plexus Injury Clip 1

21.03 Adult Brachial Plexus Injury Clip 2

21.04 Shoulder Abduction Reconstruction By Transfer of Latissimus, Teres Major, and Clavicular Portion of Pectoralis Major

22.01 Reconstruction of Foot Dorsiflexion with Rectus Femoris Functioning Muscle Transfer

22.06 Rectus Femoris Myocutaneous Flap

49.03 Facial Reanimation (Second Stage) Reconstruction with a Gracilis Functioning Muscle Transfer

49.04 Finger Flexion Reconstruction With Gracilis Functioning Muscle Transfer

49.05 Gracilis Myocutaneous Flap Harvested for Functional Muscle Transfer

Thomas Constantinescu MD, CM, FRCSC

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 Department of Plastic Surgery
 Chang Gung Memorial Hospital
 Chang Gung University
 Taipei, Taiwan

59.03 Suprafascial Harvest of the Anterolateral Thigh Flap

Joseph H. Dayan MD

Co-Director Lymphatic Surgery Program
 Memorial Sloan Kettering Cancer Center
 Division of Plastic Surgery
 New York, NY USA

8.5 Axillary Lymph Node Transfer for Lower Extremity Lymphedema

49.12 Diagonal Upper Gracilis Flap

Yener Demirtas MD

Associate Professor in Plastic Surgery
 Director of Lymphest Clinic for Plastic Surgery
 Istanbul, Turkey

41.03 Latissimus Dorsi Flap

Stefano Spanio di Spilimbergo MD

Maxillofacial Surgery
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 Vicenza, Italy

32.04 Bilateral Pedicled Temporalis Muscle Flaps for Reconstruction of a Complete Maxillectomy Defect

Gillian F. Duncan MS, CMI, CCA

Clinical Anaplastologist
 Prosthetics at Graphica Medica
 Rochester, MN, USA

63.01 Face Transplantation: Donor Restoration

Bassem T. Elhassan MD

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 Mayo Clinic College of Medicine
 Department of Orthopedic Surgery
 Mayo Clinic
 Rochester, MN, USA

39.01 Contralateral Trapezius Transfer

Chung-Ho Feng MD

Director
 Vendome Aesthetic Medical Center
 Taipei, Taiwan

59.11 Pedicled Anterolateral Thigh Myocutaneous Flap (Vastus Lateralis Myocutaneous Flap) for Reconstruction of a Medial Thigh Defect

59.15 Reverse Pedicled Anterolateral Thigh Perforator Flap With Venous Supercharge for Reconstruction of a Popliteal Defect

Duretti Fufa MD

Assistant Professor of Orthopaedic Surgery
 Weill Cornell Medical College
 Assistant Attending Orthopaedic Surgeon
 Hospital for Special Surgery
 New York, NY, USA

52.06 Reconstruction of the Mandible With the Preformed Matrixmandible and Fibula OSC Flap

Alexandru V. Georgescu MD, PhD

Professor of Plastic Surgery and Reconstructive Microsurgery
 University of Medicine Iuliu Hatieganu;
 Chairman, Clinic of Plastic Surgery and Reconstructive Microsurgery
 Clinical Hospital of Rehabilitation
 Cluj Napoca, Romania

41.06 Composite Osteomuscular Flap of Latissimus Dorsi and Rib

Günter Germann MD, PhD

Professor of Plastic Surgery
 ETHIANUM Clinic for Plastic, Reconstructive and Aesthetic Surgery at Heidelberg University
 Heidelberg, Germany

41.01 Latissimus Dorsi Flap

Geoffrey G. Hallock MD

Consultant
 Plastic Surgery
 Sacred Heart Hospital,
 Allentown, PA, USA

3.1 Scalp Split Thickness Skin Graft

32.02 Scalp Fascia Flap (Temperoparietal Fascia Flap)

34.01 Pectoralis Major Flap

37.01 Rectus Abdominis Flap

40.01 Scapular and Parascapular Flaps

41.02 Latissimus Dorsi Muscle Flap

47.02 Radial Forearm Flap

48.01 Distal Sural Flap

49.02 Gracilis Flap

50.01 Medial Gastrocnemius Flap

50.02 Lateral Gastrocnemius Flap

50.04 Medial Sural Artery Perforator Flap and Lateral Gastrocnemius Flap

50.05 Medial Sural Artery Perforator Flap

51.01 The Soleus Muscle Flap

59.01 Anterolateral Thigh Flap

Matthew M. Hanasono MD

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 Houston, TX USA

59.16 Maxillary Reconstruction with the Anterolateral Thigh Free Flap

Wyatt Ho MD

Private Practice Plastic Surgeon
 Saint Francis Hospital
 Tulsa, OK, USA

22.03 Endoscopically-Assisted Medial Sural Artery Perforator Flap Transfer for Foot Reconstruction

47.03 The Suprafascial Harvest of the Radial Forearm Flap

54.07 Bilateral Second Toe Transfer for Reconstruction of

Distal Fingertip Amputations: Markings

54.08 Bilateral Second Toe Transfer for Reconstruction of

Distal Fingertip Amputations: Recipient Prep

54.09 Bilateral Second Toe Transfer for Reconstruction of

Distal Fingertip Amputations: Flap Harvest

54.10 Bilateral Second Toe Transfer for Reconstruction of

Distal Fingertip Amputations: Inset

Joon Pio (JP) Hong MD, PhD

Professor and Chairman
Department of Plastic Surgery
Asian Medical Center
University of Ulsan
School of Medicine
Seoul, Korea
43.02 SCIP

Chung-Chen Hsu MD

Division of Trauma Plastic Surgery
Department of Plastic and Reconstructive Surgery
Chang Gung Memorial Hospital
Linkou, Taiwan
43.03 Groin Flap With Iliac Bone Harvest Based on the Superficial Circumflex Iliac Artery
51.02 Hemi-Soleus Distally Based for Lower Extremity Defect
54.12 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 1
54.13 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 2
54.14 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 3

Marco Innocenti MD

Professor of Plastic Surgery
University of Florence,
Director Plastic & Reconstructive
Microsurgery Department
Careggi University Hospital,
Florence, Italy
52.07 Proximal Fibula Flap with Growth Plate
52.08 Proximal Fibula Epiphyseal Transplant

Seng-Feng Jeng MD FACS

Professor of Surgery
Plastic Surgery
E-Da hospital
Kaohsiung, Taiwan
50.03 Medial Sural Artery Perforator Flap

T. Shane Johnson MD

Associate Professor of Surgery, Orthopaedics and
Rehabilitation
Program Director, Division of Plastic Surgery
Penn State Hershey Medical Center and School of
Medicine
Hershey, PA, USA
13.04 Dorsalis Pedis Exposure

Roger K. Khouri MD, FACS

Volunteer Professor
Herbert Wertheim College of Medicine
University Park, FL, USA;
Medical Director
Miami Breast Center & Miami Hand Center
Miami, FL, USA
7.1 Lipograft / Jackhammer Grafting

Roger Karl Khouri Jr BS

Medical Student
University of Michigan Medical School
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Research Assistant
Miami Breast Center & Miami Hand Center
Miami, FL, USA
7.1 Lipograft / Jackhammer Grafting

Jeong-Tae Kim PhD

Hanyang University Medical Center
Seongdong-gu
Seoul, Korea
56.01 Perforator Flaps in the Lateral Thoracic Area: Latissimus Dorsi Perforator Flap, Thoracodorsal Perforator Flap, and Lateral Thoracic Perforator Flap

Michael J.A. Klebuc MD

Associate Clinical Professor of Plastic and
Reconstructive Surgery
Weill Cornell Medical College
Director, Center for Facial Paralysis Surgery
and Functional Restoration
Methodist Hospital
Houston, Texas
10.04 Facial Nerve Anatomy

L. Scott Levin MD, FACS

Paul B. Magnuson Professor of Bone and Joint Surgery
Orthopaedic Surgery
Chairman, Department of Orthopaedic Surgery
Professor of Orthopaedic Surgery
Professor of Surgery, Division of Plastic Surgery
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Philadelphia, PA, USA
13.04 Dorsalis Pedis Exposure

Cheng-Hung Lin MD

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Chang Gung Memorial Hospital
Kuei-Shan, Taiwan
22.03 Endoscopically-Assisted Medial Sural Artery Perforator Flap Transfer for Foot Reconstruction
22.04 Pedicled Peroneal Artery Perforator Flap for Reconstruction of a Soft Tissue Defect Over the Tibia
54.12 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 1
54.13 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 2
54.14 Microsurgical Transplantation of the PIP Joint of the Second Toe Part 3

Chih-Hung Lin MD

Chairman of Plastic and Reconstructive Surgery
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Linkou, Taiwan
42.01 Iliac Flap
43.01 Groin Flap
49.06 Endoscopic Harvest of the Gracilis Muscle
59.02 Anteriolateral Thigh Flap
59.05 Vastus Lateralis Myocutaneous Flap
60.01 Tensor Fascia Lata Flap

Yu-Te Lin MD, MS

Associate Professor of Plastic Surgery
 College of Medicine, Chang Gung University;
 Consultant, Division of Trauma Plastic Surgery
 Department of Plastic and Reconstructive Surgery
 Chang Gung Memorial Hospital
 Linkou, Taiwan

- 54.12 *Microsurgical Transplantation of the PIP Joint of the Second Toe Part 1*
- 54.13 *Microsurgical Transplantation of the PIP Joint of the Second Toe Part 2*
- 54.14 *Microsurgical Transplantation of the PIP Joint of the Second Toe Part 3*
- 59.07 *Anterolateral Thigh Flap for Wound Coverage and Flow Through Reconstruction of the Radial Artery*

Jessica Lynch MB, BCh, BAO

Plastic Surgery Intern
 Department of Plastic and Reconstructive Surgery
 Beaumont Hospital
 Dublin, Ireland

- 19.01 *Radial Forearm Free Flap Phalloplasty*

Susan E. Mackinnon MD

Plastic and Reconstructive Surgery
 Washington University
 St. Louis, MO, USA

- 68.01 *Jumping the Nerve Gap*

Samir Mardini

Professor of Surgery
 Mayo Clinic College of Medicine
 Program Director, Plastic Surgery
 Surgical Director
 Essam and Dalal Obaid Center for Reconstructive Transplant Surgery
 Mayo Clinic
 Rochester, MN, USA

- 10.05 *Facial Nerve Anatomy, clinical case.*
- 10.06 *Facial Nerve Anatomy and Stimulation*
- 14.01 *Ileocolon Flap for Reconstruction of the Hypopharynx, Cervical Esophagus and Voice*
- 18.01 *Component Separation*
- 25.03 *Airborne Suture Tying Technique*
- 64.04 *Face Transplant: Recipient Preparation*
- 64.05 *Face Transplant: Lower Face Donor Procurement*
- 64.06 *Face Transplant: Recipient Reconstruction*

Jaume Masia Ayala MD, PhD

Professor of Plastic Surgery
 Chief, Plastic Surgery Department
 Director, European School of Reconstructive Microsurgery
 Barcelona, Spain

- 8.3 *Vascularized Groin Lymph Node Transfer for Upper Extremity Lymphedema*
- 8.4 *Superficial Circumflex Iliac Artery Perforator Flap (SCIP Flap) for Lymph-Node Transfer in Lymphedema Treatment*

Steven L. Moran MD

Professor and Chair of Plastic Surgery, Professor of Orthopedic Surgery
 Mayo Clinic
 Rochester, MN, USA

- 45.01 *First Dorsal Metacarpal Artery Flap*
- 55.01 *Medial Femoral Condyle Flap Based on Descending Geniculate Vessel*
- 55.02 *Medial Femoral Condyle Flap*

Maurice Y. Nahabedian MD

Professor
 Department of Plastic Surgery
 Georgetown University
 Washington, DC, USA

- 16.01 *DIEP*

Milomir Ninković MD, PhD

Professor of Plastic Surgery
 Chairman, Department of Plastic, Reconstructive, Hand and Burn Surgery
 Academic Hospital Munich Bogenhausen,
 Technical University
 Munich, Germany

- 23.01 *Peroneus Function After Reconstruction*
- 23.02 *Facial Movement After Reconstruction*
- 46.01 *Extended Lateral Arm Flap*

Ömer Özkan MD

Professor of Plastic and Reconstructive Surgery
 Department of Plastic and Reconstructive Surgery
 Akdeniz University Hospital
 Antalya, Turkey

- 41.03 *Latissimus Dorsi Flap*
- 66.01 *Uterus Transplantation: Surgical Technique*

Özlenen Özkan, MD

Associate Professor
 Akdeniz University Hospital
 Head of Plastic and Reconstructive Surgery Department
 Antalya, Turkey

- 66.01 *Uterus Transplantation: Surgical Technique*

Ernesto Padula MD

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 Vicenza, Italy

- 32.04 *Bilateral Pedicled Temporalis Muscle Flaps for Reconstruction of a Complete Maxillectomy Defect*

Christopher J. Pannucci MD, MS

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- 13.04 *Dorsalis Pedis Exposure*

Ketan M. Patel MD

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 Keck Medical Center of USC
 University of Southern California
 Los Angeles, CA, USA

- 54.01 *Great Toe Transfer for Reconstruction of Metacarpal Hand Part 1*
- 54.02 *Great Toe Transfer for Reconstruction of Metacarpal Hand Part 2*
- 54.03 *Great Toe Transfer for Reconstruction of Metacarpal Hand Part 3*

Bohdan Pomahac MD

Director, Plastic Surgery Transplantation
 Medical Director, BWH Burn Center
 Associate Professor
 Harvard Medical School
 Boston, Massachusetts

- 64.01 *Facial Transplant*
- 64.02 *Face Transplant Postoperative Result*
- 64.03 *Face Transplant Postoperative Result: Showing Spontaneous Emotion*

Gemma Pons MD, PhD

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 Hospital de la Santa Creu i Sant Pau
 Universitat Autònoma de Barcelona
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- 8.3 *Vascularized Groin Lymph Node Transfer for Upper Extremity Lymphedema*

Julian J. Pribaz MD

Professor, Division of Plastic Surgery
 Brigham and Women's Hospital
 Harvard Medical School
 Boston, MA, USA

- 31.01 *Forehead Flap*
- 31.02 *Facial Artery Myo Mucosal Flap*
- 31.03 *Submental Flap*
- 32.03 *Temporoparietal Fascia Flap*
- 64.02 *Face Transplant Postoperative Result*
- 64.03 *Face Transplant Postoperative Result: Showing Spontaneous Emotion*

Richard J. Redett III MD

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 Johns Hopkins University School of Medicine
 Baltimore, MD, USA

- 19.01 *Radial Forearm Free Flap Phalloplasty*

Joseph A. Ricci MD

Plastic Surgery Resident
 Harvard Medical School
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 Boston, MA, USA

- 64.01 *Facial Transplant*

Geoffrey L. Robb MD, FACS

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 Department of Plastic Surgery
 The University of Texas MD Anderson Cancer Center
 Houston, TX, USA

- 34.02 *Pectoralis Major Flap*
- 35.01 *Delto Pectoral and Internal Mammary Artery Perforator Flaps*

Eduardo D. Rodriguez MD, DDS

Helen L. Kimmel Professor of Reconstructive Plastic Surgery
 Chair, Hansjörg Wyss Department of Plastic Surgery
 NYU School of Medicine
 NYU Langone Medical Center
 New York, NY, USA

- 52.05 *Fibula Flap for Obliteration and Osseous Reconstruction of a Persistent Frontal Basilar Fracture Infection Associated with Nasofrontal Outflow Tract Obstruction*

Shai Rozen MD, FACS

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 Director of Microsurgery
 Director of the Facial Palsy Program
 Department of Plastic Surgery
 UT Southwestern Medical Center
 Dallas, TX, USA

- 10.07 *Facial Reanimation: Masseteric Nerve to Facial Nerve Transfer, Cross Facial Nerve Grafting*
- 10.08 *Facial Reanimation: Preoperative Facial Markings, Preparation of Face on Recipient Side, Harvest of Partial Gracilis Functional Muscle Flap, Masseter Nerve Dissection, and Insetting of Gracilis to Paralyzed Side*

Michel Saint-Cyr MD, FRSC(C)

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 Director, Division of Plastic Surgery
 Baylor Scott and White
 Temple, TX, USA

- 7.2 *Fat Grafting for Breast Reconstruction*
- 8.1 *LV Bypass Preoperative Planning in Lower Extremity Lymphedema*
- 16.02 *Muscle Sparing Latissimus Dorsi*
- 22.02 *Keystone Island Perforator Flaps for Thigh Defects*
- 22.05 *Peroneal Artery Perforator Propeller Flap*
- 41.04 *Preoperative Markings Extended Latissimus Dorsi*
- 41.05 *Latissimus Dorsi Flap for Breast Reconstruction*
- 49.07 *Preoperative Markings for Transverse Upper Gracilis Myocutaneous Flap for Bilateral Breast Reconstruction*
- 49.08 *Flap Harvest of Transverse Upper Gracilis Myocutaneous Flap for Breast Reconstruction*
- 49.09 *Vertical Design Upper Gracilis Flap for Breast Reconstruction*
- 57.01 *Preoperative Deep Inferior Epigastric Perforator (DIEP) Marking in a High BMI Patient*
- 57.02 *Deep Inferior Epigastric Perforator Flap Harvest and Dissection Summary*
- 59.08 *Free Vastus Lateralis Muscle Flap*
- 59.10 *Pedicled ALT Flap for Groin*
- 61.01 *Posterior Tibial Artery Perforator Propeller Flap*
- 62.01 *Intraoperative PAP Flap Markings and Flap Harvest*
- 62.03 *Pedicled Superficial Femoral Artery Perforator Flap*
- 62.04 *Superficial Femoral Artery Perforator Flap for Knee Coverage*
- 62.05 *Proximal Free-style Superficial Femoral Artery Perforator Flap for Medial Thigh Defect*

Jesse Selber MD, MPH, FACS

Associate Professor, Director of Clinical Research
Department of Plastic Surgery
The University of Texas MD Anderson Cancer Center
Houston, TX, USA

- 9.1 *Trans Oral Robotic Surgery*
- 9.2 *External View of Robotic LD*
- 9.3 *Robotic Harvest of Rectus Abdominis*
- 9.4 *Robotic Harvest of Latissimus Dorsi*
- 9.5 *Robotic Microvascular Anastomosis*
- 9.6 *Robotic Lymphaticovenous Bypass*

Basel Sharaf MD, DDS, FACS, FRCDC

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Mayo Clinic College of Medicine
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Rochester, MN, USA

- 10.01 *Exposure of Superficial Temporal Vessels*
- 10.02 *Exposure of the Facial Vessels*
- 10.03 *Exposure of the Transverse Cervical Vessels*
- 11.01 *Trunk Anatomy, Internal Mammary Artery Exposure*
- 13.01 *Groin and Lower Extremity Landmarks*
- 13.02 *Exposure of Posterior Tibial Vessels*
- 13.03 *Exposure of the Dorsalis Pedis and Tibialis Anterior*

Amanda K. Silva MD

The University of Chicago Medicine & Biological Sciences
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- 17.01 *Chest Wall and Diaphragm Mesh Reconstruction Moving With Respirations*
- 17.02 *Chest Wall Defect and Expanding Lung*
- 17.03 *Flap Inset*

Alison Snyder-Warwick MD

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Washington University School of Medicine
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- 49.01 *Segmental Gracilis Muscle Transfer for Smile in a Case of Möbius Syndrome*
- 49.10 *Stage 1 – Cross-Facial Nerve Grafting for Smile*

David H. Song MD, MBA, FACS

Cynthia Chow Professor of Surgery
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Vice-Chair, Department of Surgery
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- 17.01 *Chest Wall and Diaphragm Mesh Reconstruction Moving With Respirations*
- 17.02 *Chest Wall Defect and Expanding Lung*
- 17.03 *Flap Inset*

Aldona J. Spiegel, MD

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- 57.06 *Superficial Inferior Epigastric Artery (SIEA) Flap for Breast Reconstruction*

Roberto Squaquara MD

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- 32.04 *Bilateral Pedicled Temporalis Muscle Flaps for Reconstruction of a Complete Maxillectomy Defect*

Jason Su Shiuan-tzuen

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Gueishan Township, Taiwan

- 47.03 *The Suprafascial Harvest of the Radial Forearm Flap*
- 54.08 *Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Recipient Prep*
- 54.09 *Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Flap Harvest*
- 54.10 *Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Inset*

Marissa Suchyta BS

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- 12.01 *Exposure of the Brachial Artery in the Medial Arm*
- 12.02 *Exposure of the Distal Brachial Artery and Its Bifurcation in the Antecubital Fossa*
- 12.03 *Exposure of the Radial Artery in the Wrist and Anatomic Snuffbox*
- 12.04 *Exposure of the Ulnar Artery at the Wrist and Guyon's Canal*
- 64.04 *Face Transplant: Recipient Preparation*
- 64.05 *Face Transplant: Lower Face Donor Procurement*
- 64.06 *Face Transplant: Recipient Reconstruction*

Hyun-Suk Suh MD, PhD

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- 43.02 *SCIP*

Amir H. Taghinia MD, MPH

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- 47.01 *Reverse Radial Forearm Flap*

Julia K. Terzis MD, PhD, FACS, FRCS(C)

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New York University Medical Center
Medical Director, International Institute of Reconstructive
Microsurgery
New York, NY

- 15.01 *Babysitter Principle in Facial Reanimation*
- 15.02 *Techniques of Cross Facial Nerve Grafting*
- 15.03 *Gracilis Free Muscle Transfer for Facial Reanimation*
- 15.04 *Pectoralis Minor Free Muscle Transfer for Facial Reanimation*

Chung-Kan Tsao MD

Assistant Professor in Plastic Surgery
 Chief of Division of Plastic Reconstructive Microsurgery
 Department of Plastic Surgery
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59.06 *Chimeric Anterolateral Thigh Perforator Skin Flap and Vastus Lateralis Muscle Flap for Reconstruction of a Defect in the Maxilla.*

Joseph Upton MD

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 Shriners' Hospital for Children
 Beth Israel-Deaconess Medical Center
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47.01 *Reverse Radial Forearm Flap*

Julie V. Vasile MD, FACS

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 New York Eye and Ear Infirmary of Mt. Sinai
 New York, NY, USA

58.01 *Inferior Gluteal Artery Perforator (IGAP) Flap for Breast Reconstruction*

Nicholas B. Vedder MD

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 Chief Plastic Surgery
 Vice Chair, Department of Surgery
 University of Washington
 Seattle, Washington

47.08 *Radial Forearm Fascia Flap Reverse Pedicled*

Jan Jeroen Vranckx MD, PhD

Professor & Chief
 Dept. Plastic & Reconstructive Surgery
 Leuven University Hospitals
 Leuven, Belgium

18.02 *Pedicled Innervated Vastus Lateralis Muscle for Abdominal Wall Reconstruction Case 1*

18.03 *Pedicled Innervated Vastus Lateralis Muscle for Abdominal Wall Reconstruction Case 2*

18.04 *Pedicled Innervated Vastus Lateralis Muscle for Abdominal Wall Reconstruction: Dissection*

Christopher G. Wallace MD, MS, FRCS(Plast)

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 Department of Plastic Surgery,
 Royal Devon and Exeter NHS Foundation Trust
 Exeter, UK

20.01 *Great Toe Pulp Transfer to Reconstruct Non-Painful Sensate Index Pulp Part 1*

20.02 *Great Toe Pulp Transfer to Reconstruct Non-Painful Sensate Index Pulp Part 2*

59.12 *Reconstruction of Hemiglossectomy Defect with the ALT Flap*

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Distinguished Chair and Professor
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 Chang Gung University, Medical College
 Taipei, Taiwan

20.01 *Great Toe Pulp Transfer to Reconstruct Non-Painful Sensate Index Pulp Part 1*

20.02 *Great Toe Pulp Transfer to Reconstruct Non-Painful Sensate Index Pulp Part 2*

20.03 *Second Toe Flap for Index Finger Reconstruction*

46.02 *Lateral Arm Flap for Reconstruction of a Webspace Defect After Contracture Release*

47.03 *The Suprafascial Harvest of the Radial Forearm Flap*

47.04 *Radial Forearm Flap, Suprafascial Dissection*

47.05 *Radial Forearm Flap, Suprafascial*

47.06 *Radial Forearm Flap for Buccal Defect Reconstruction*

47.07 *Radial Forearm Flap for Reconstruction of an Upper Lip Defect*

47.09 *Radial Forearm Flap Dissection and Management of the Donor Site with a Full Thickness Skin*

52.01 *Fibula Osteoseptocutaneous Flap*

52.03 *Harvest of the Fibula Osteoseptocutaneous Flap Via Anterior Approach*

52.04 *Fibula Osteoseptocutaneous Flap with Primary Osteointegrated Implants for Mandible Reconstruction*

52.06 *Reconstruction of the Mandible With the Preformed Matrixmandible and Fibula OSC Flap*

54.01 *Great Toe Transfer for Reconstruction of Metacarpal Hand Part 1*

54.02 *Great Toe Transfer for Reconstruction of Metacarpal Hand Part 2*

54.03 *Great Toe Transfer for Reconstruction of Metacarpal Hand Part 3*

54.04 *Trimmed Great Toe Flap*

54.05 *Trimmed Great Toe Transfer*

54.07 *Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Markings*

54.08 *Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Recipient Prep*

54.09 *Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Flap Harvest*

54.10 *Bilateral Second Toe Transfer for Reconstruction of Distal Fingertip Amputations: Inset*

54.11 *Second and Third Toe Flap for Metacarpal Hand Reconstruction*

59.03 *Suprafascial Harvest of the Anterolateral Thigh Flap*

59.04 *Anterolateral Thigh Perforator Flap, Dissection*

59.09 *Different Designs of the Anterolateral Thigh Flap*

59.12 *Reconstruction of Hemiglossectomy Defect with the ALT Flap*

59.13 *Anterolateral Thigh Perforator Flap for Reconstruction of a Palate Defect*

59.14 *Anterolateral Thigh Perforator Flap for Hypopharyngeal and Cervical Esophagus Reconstruction*

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49.01 Segmental Gracilis Muscle Transfer for Smile in a Case of Möbius Syndrome
49.10 Stage 1 – Cross-Facial Nerve Grafting for Smile

Jerry Chih-Wei Wu MD

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62.02 Profunda Artery Perforator (PAP) Flap for Head and Neck Reconstruction

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St. Louis, MO, USA
49.01 Segmental Gracilis Muscle Transfer for Smile in a Case of Möbius Syndrome
49.10 Stage 1 – Cross-Facial Nerve Grafting for Smile
68.01 Jumping the Nerve Gap

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59.03 Suprafascial Harvest of the Anterolateral Thigh Flap

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33.01 Flaps

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49.10 Stage 1 – Cross-Facial Nerve Grafting for Smile

Preface

Remarkable advances in research, technology, and clinical experience in medicine over the past few decades have resulted in a strong surge of development in reconstructive surgery. Each field of medicine brings about a unique perspective on a disease and its treatment. The patients are the direct beneficiaries of these advances and we, as surgeons, are rewarded with the gift of knowing that we have given hope and provided new opportunities for those who have been disfigured or rendered dysfunctional. The change to the patients' lives and the reward we derive from providing them with a chance to become "normal" again are equally gratifying. The field of surgery is truly rewarding; we are often able to eradicate a disease, improve a condition, rewire a circuit, or recreate form and function. We truly believe that no specialty in medicine is as rewarding as reconstructive surgery, where conditions that were impossible to correct only a few decades ago are now treated with sophisticated and technically advanced procedures on a routine basis.

In order to truly appreciate the significance of this specialty, visualize the following scenarios and the vast number of possibilities that reconstructive surgery offers in dealing with these clinical challenges: a child with missing fingers trying to play with a toy; a young girl unable to symmetrically animate her face trying to explain to her classmates why she looks "funny" when she tries to smile; a teenage boy with an open wound on his leg who has been told that he may need to have his leg amputated; a middle-aged man with a defect in his esophagus being told that he will not be able to eat or drink from his mouth for the rest of his life; a 35-year-old woman trying to conceal a deformed chest after a mastectomy; the family of a 50-year-old man being told that their loved one who underwent a routine coronary bypass procedure may not leave the hospital because of a sternal wound infection that may take his life; and a 14-year-old girl with a brachial plexus injury being unable to reach her hand to her mouth. As a reconstructive surgeon, one may have been exposed to some or all of these situations and may also know that through our field we are capable of bringing hope in a bleak situation.

Reconstructive surgery spans all ages and all specialties. This is part of what makes this specialty unique, challenging, exciting, and unusually rewarding. Elegance and surgical skill are easily noticed and appreciated by our patients. It is difficult to be a reconstructive surgeon and not take special pride in every procedure performed and in positive outcomes seen. Likewise, every surgeon has experienced the consequences of a heroic effort that was unsuccessful. We are able to survive these experiences as surgeons because of our human nature of being able to forget, but, more importantly, for us to be able to forget, we need to know that we have learned as much as we can about a procedure before

performing it and have gathered as much information as possible and reviewed all the necessary material before embarking on a reconstructive effort. Every contributing author has detailed the anatomic basis for the way the described procedures are performed and made every effort to share as much detail of the technique, with colorful and detailed illustrations and pictures, and to provide as many tips as possible from the knowledge and wisdom they have gained during the course of their career. We have been fortunate to be able to bring together a phenomenal group of surgeons and scientists who have had a tremendous amount of experience with reconstructive surgery, and we have tried very hard to bring consistency and clarity to the presentation of this work.

This book is unique. It begins with a comprehensive section on principles of reconstruction which covers the types of reconstructive options that exist and how to choose which one is best for the patient, then discusses how to avoid complications in reconstructive surgery, how to deal with complications when they arise, and how to monitor the reconstructive patient. In this section, several new topics have been added including fat grafting, robotics, tissue engineering and lymphedema surgery. A special section is now dedicated to clinical anatomy of every part of the body along with detailed topics on recipient vessel selection and exposure with clear and detailed pictures and illustrations. An entire new section is dedicated to the topic of reconstruction, focusing on each area of the body and providing an algorithm for reconstruction using the flaps outlined later in the textbook. All of the topics on reconstruction are new, with leaders in the field detailing their thought process and techniques on how to deal with a defect and manage complications when they arise. Two sections of the book focus on all the important flaps that are needed to complete the reconstruction of a defect: workhorse non-perforator type flaps and workhorse perforator type flaps. Our intent while putting this book together was to provide a reference that would provide the reader with a comprehensive way of understanding the anatomy of the region where the flap is being harvested from, appreciating the anatomy of the flap itself, understanding the issues involved in reconstructing different parts of the body, appreciating and fully realizing the way to plan and execute flap harvest, tailoring a flap to fit the need of a defect, and reconstructing the defect in the way that yields the most functional and aesthetic result. In the final and totally new section, world leaders in the field of reconstructive transplantation discuss topics of how to start a reconstructive transplant program, the latest advances in research in the field of reconstructive transplantation along with techniques and outcomes of hand, face, uterus, nerve, and abdominal wall transplantation. This entire project is completed and detailed through clear and

thorough writing, beautiful and abundant illustrations and pictures, and a unique library of reconstructive surgical procedures.

We hope that this textbook and video collection will provide a core course for beginners and a reference for experienced surgeons who aim to restore aesthetically appealing form and function to their patients. Every chapter in this book has been written by world renowned surgeons who have had proven successes over the years and have generously given their time and effort to sharing their knowledge and experience with us. The reader will be exposed to the most cutting edge surgical procedures in the field. The curious surgeon who has the drive to find optimal surgical solutions to situations rendered as hopeless will benefit from the materials in this book.

With true appreciation for the contributions of our expert colleagues, and great gratitude to our families, teachers, students and colleagues, we sincerely hope that each reader from every specialty practicing reconstructive surgery will find this textbook to be useful in treating their patients and be an inspiration in providing a resource for them to continue to advance this specialty which is so intense and has a never-ending potential to help those in desperate need of care.

Fu-Chan Wei and Samir Mardini
2016

Dedication

To my wife Nancy, my son William, my daughter Shirley, my son-in-law Darren and my wonderful grandson Kyle whose support and love have made my journey possible.

Fu-Chan Wei MD

To my wife Rawan, and my children Celine and Tarek, your support and love fills my life with joy; to my mother who is so loving, to my father who is so wise and caring, to my teachers who have been so generous, and to my friends who make the journey of life so beautiful; for the love, support and guidance you have given me; from the bottom of my heart, I thank you.

Samir Mardini MD

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Every procedure demonstrated in the video library within this book required enormous effort on the part of the surgeon and team involved in executing the surgical procedure, taping it and narrating every procedure. We owe Mr. Hsu-Chun Chen so much for shooting many of the videos, Marissa Suchyta and Anita Mohan for editing many of the videos, Fiona Townsend for developing the videos, making them presentable and allowing us to be able to provide so many procedures in this second edition.

Anybody working on a project which requires teamwork, particularly a project as large as this, realizes very clearly that it is the collaborative effort of the team that makes such an endeavour possible. We are indebted to so many for their hard work and special talents in helping prepare and produce this work and for being there for us during our career and during the time this work was being produced.

Problem Analysis in Reconstructive Surgery: Reconstructive Ladders, Elevators, and Surgical Judgment

Nicholas B. Vedder

HISTORY OF RECONSTRUCTIVE SURGERY

As one of my professors, the late Bradford Cannon, noted, the field of plastic surgery, unlike most other surgical specialties, has no anatomic or functional area to which it can lay claim; the plastic surgeon practices methods and techniques applicable to all specialties and anatomic areas. Plastic surgery as a specialty was based on, and continues to be defined by, the process of developing creative solutions to the most difficult and challenging problems everywhere in the human body – literally from the head to the toe. As such, the plastic surgeon of today is, in fact, the last true “general surgeon.” Though plastic surgery is comprised of two distinct “spheres,” reconstructive surgery and aesthetic surgery, the two are closely intertwined and have great overlap. Many of the techniques employed in modern aesthetic surgery have their basis in reconstructive surgery. Similarly, reconstructive surgery focuses on restoring both function *and* form, such that many techniques used in aesthetic surgery are also employed in modern reconstructive surgery, such as flap contouring, fat grafting, etc.

Reconstructive surgery is the process of restoring the human body to “whole” following tumor extirpation, infection, trauma, or congenital or acquired deformity – restoring both form and function. Because the result of tumor, infection, trauma, or deformity has such a major effect on a patient’s life, health, and well-being, reconstructive surgery can have the powerful effect of truly rebuilding a patient’s life. The professional and personal gratification this brings to the reconstructive surgeon is profound.

Clearly, not all reconstructive surgery is performed by plastic surgeons. Indeed, orthopedic surgeons, otolaryngology/head and neck surgeons, oral surgeons, ophthalmologic surgeons, urologic surgeons, pediatric surgeons, gynecologic surgeons, and general surgeons perform a great deal of outstanding reconstructive surgery. But what they all have in common in performing reconstructive surgery is that all follow the same goals and principles of restoring both form and function.

The techniques employed in reconstructive surgery have come a long way from the days of Tagliacozzi, reconstructing noses with pedicled flaps from the arm, in the 1500s. Yet, only 50 years ago, those same techniques of random pedicled flaps still formed the basis of much of reconstructive surgery. In the 1930s, split skin grafts came into regular use, and in many ways defined the specialty of plastic surgery at its origin.¹ Over the past 50 years, there has been an explosion in the development of reconstructive techniques and approaches. In the 1960s, it was recognized that designing a flap based on an axial vessel could greatly increase the viable length of the flap to include the entire length of the axial vessel, plus a random component distal to it. This led to McGregor’s description of the forehead flap in 1963 and Bakamjian’s description of the deltopectoral flap in 1965.^{2,3} Then, the introduction of the two-headed operating microscope in 1960, and Buncke’s pioneering laboratory work in the early 1960s, including his rabbit ear replantation in 1964, opened the door to microvascular surgery.^{4,5} The first clinical application of the operating microscope was in replantation, with Konatsu and Tamai’s successful complete thumb replantation.⁶ The first microvascular composite tissue transplantation in a human was a second toe to thumb transfer, by Yang and Gu in 1966.⁷ In 1972 McLean and Buncke performed a free microvascular omental flap to cover a cranial defect, and the following year, both Daniel and Taylor performed the first free cutaneous flaps – free groin flaps, and thus the microsurgery revolution began.^{8,9}

THE RECONSTRUCTIVE LADDER

In the 1970s, Mathes and Nahai,¹⁰ as well as others, introduced the concept of muscle and myocutaneous flaps that had a tremendous influence on reconstructive choices throughout the body – head and neck, trunk, as well as upper and lower extremity. In their two seminal textbooks, first an atlas of muscle and myocutaneous flaps in 1979, then a text on clinical applications in 1982,¹¹ they defined