Susumu Tamai, M.D., Ph.D.
Director
Nara Microsurgery · Hand Surgery Institute, West Nara Central Hospital
5-2-6 Hyakurakuen, Nara 631-0024, Japan
Professor Emeritus
Department of Orthopedic Surgery, Nara Medical University
840 Shijo-cho, Kashihara, Nara 634-8522, Japan

Masamichi Usui, M.D., Ph.D.
President
East Hokkaido Hospital
7-19 Wakatake-cho, Kushiro, Hokkaido 085-0036, Japan

Takae Yoshizu, M.D., Ph.D.
Chairman
Niigata Hand Surgery Foundation
1-18 Shinko-cho, Niigata 950-8556, Japan

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Foreword

This monumental text is without a doubt the most complete on this subject in the world today, prepared by an outstanding microsurgical researcher, clinician, and teacher, who has been active for the past 40 years since the very inception of microsurgery. There is certainly no one more qualified to present this material. The detailed history of microsurgery, with over 240 references, will be an invaluable source for researchers and clinical students, teachers, technicians, Ph.D.s, and M.D.s, both young and old.

There are almost 100 chapters in this book: 24 on experimental surgery, 10 on replantation, 32 on techniques of harvesting, 20 on clinical applications, and 6 chapters on pre- and post-operative management.

The section on experimental surgery is particularly timely with the expansion of microsurgical replantation and transplantation into the field of composite tissue allografts. The microsurgeon of today must be familiar with these immunological tests and immunosuppressants, as well as the various animal models for future research.

The section on clinical replantation is particularly thorough, covering replantation in detail, and techniques for harvesting composite tissues from all areas of the body. The contributions of Japanese microsurgeons are well represented, and almost every chapter contains a pearl of some sort. The chapter on lower leg and foot replants, often thought to produce an inferior result to a prosthesis, describes six patients, ages 16 to 74, all walking and working after replantation. The chapter on ear replants confirms that this is one of the most difficult of replants, but worth attempting, even if no vein is present.

The section on techniques for donor harvesting of several composite tissues is most informative, covering the well-described areas, as well as a series of new flaps about the hands and unique applications of venous flaps.

The 20 chapters on clinical applications provide the reader with a view of the sophistication of microsurgical replantation and transplantation that has occurred in Japan in the last 40 years. For example, the chapter on double fibular grafts for femoral reconstruction contains an example of multiple microvascular transplants performed simultaneously to solve a monumental reconstructive problem.

Dr. Tamai in his preface states that he hopes that this text will fulfill the needs of young microsurgical researchers and reconstructive surgeons as a historical reference and valuable source of specific information in the entire field of reconstructive microsurgical replantation and transplantation. He has achieved this goal.

Harry J. Buncke, M.D.
The Buncke Clinic, San Francisco, CA, USA
I am proud to introduce Dr. Tamai’s remarkable achievement: *Experimental and Clinical Reconstructive Microsurgery*. This book contains not only Dr. Tamai’s fascinating personal experiences but also scientific and experimental publications on microsurgery and its application to hand surgery and other medical specialties. The major accomplishments of the leading microsurgeons in Japan are also presented and, thanks to Dr. Tamai, are now readily available to the world.

The numerous, comprehensive chapters include experimental material, obstacles that had to be overcome, microscopes and the development of microsurgical instruments, the world’s first successful digit replantation, the history of microsurgery, and techniques of microsurgery. Clinical applications are described along with the prevention and correction of complications. Preoperative planning, postoperative care, avoiding complications, and ways of solving complications are covered.

*Experimental and Clinical Reconstructive Microsurgery* is a monumental publication, and, to the best of my knowledge, is the first gathering of a nation’s experience in microsurgery over a 40-year period. It serves as a stimulus for all surgeons and as a “must-obtain” publication for all microsurgeons, whether hand or reconstructive microsurgeons. My particular hope is that young surgeons, including plastic, orthopaedic, and even some interested general surgeons, will read this book and understand that in medicine nothing good is done alone and that teams of surgeons contribute to what is now truly the international field of hand and microsurgery.

Harold E. Kleinert, M.D.

Kleinert, Kutz and Associates Hand Care Center, PLLC

Louisville, KY, USA
Almost a century has passed since Alexis Carrel reported the three-stay suture technique of vascular anastomosis, performed by hand, in the early 1900s, and it has been more than 40 years since the first description of the microvascular anastomosis conducted under a microscope by Julius Jacobson in 1960. In the early 1960s, I was doing experimental studies of canine limb replantation in the postgraduate program in the Department of Orthopedic Surgery, Nara Medical University, under the guidance of the late Professor Yutaka Onji. Shigeo Komatsu and I were the first in Japan to start microvascular surgery, in 1964. In July 1965, we succeeded in replanting a completely amputated thumb, which was the world's first successful digit replantation. Thereafter, microvascular surgery rapidly progressed throughout Japan, among hand, orthopedic, and plastic surgeons. In the first 20 years of the development of microsurgery, more than 150 surgeons, from both Japan and overseas, came to our orthopedic laboratory at Nara Medical University to learn microsurgical techniques. In 1972, the International Society of Reconstructive Microsurgery was established. My colleagues and I organized the first Congress of the Japanese Society of Reconstructive Microsurgery in 1974 in the city of Kashihara, in Nara Prefecture.

Since celebrating my retirement in April 2000 from Nara Medical University, where I spent almost 40 years doing research and clinical practice in the field of hand and microsurgery, I have planned a monograph on microsurgery in English. Over the past several decades, there have been many monographs on microsurgery published in the world, but most of them were primarily for the application of microsurgical techniques in clinical reconstructive surgery. I have believed for a long time that such a monograph should include not only the essential laboratory techniques or microsurgical methodology for laboratory research but also the fundamental techniques of harvesting several composite tissues and their grafting techniques. Because microsurgery includes many kinds of clinical disciplines, it is impossible for a single author to produce a monograph covering all aspects in this field. Therefore, I asked my colleagues and some invited guests to contribute chapters on specialized fields for this multi-authored book. It has taken almost 3 years to receive their manuscripts and to edit them carefully. Drs. Masamichi Usui in Sapporo and Takae Yoshizu in Niigata were nominated to the Editorial Board to assist me.

I hope this monograph will fulfill the needs of young microsurgical researchers and reconstructive microsurgeons and that they will find it an essential textbook of microsurgery, not only in Japan but also throughout Asia, Europe, and the United States.

Susumu Tamai, M.D., Ph.D.
December 2002
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List of Contributors

AKAHANE, MANABU
Department of Orthopedic Surgery, Nara Medical University, 840 Shijo-cho, Kashihara, Nara 634-8522, Japan

AKASAKA, YOSHIHISA
Senpo Tokyo Takanawa Hospital, 3-10-11 Takanawa, Minato-ku, Tokyo 108-8606, Japan

ARAI, KOICHI
Department of Orthopaedic Surgery, Daido Central Hospital, 127 Daido, Naha, Okinawa 902-0066, Japan

ARASHIRO, KEN
Division of Plastic and Reconstructive Surgery, Okinawa Chubu Hospital, 281 Miyazato, Gushikawa, Okinawa 904-2293, Japan

BEPPU, MOROE
Department of Orthopedic Surgery, St. Marianna University School of Medicine, 2-16-1 Sugao, Miyamae-ku, Kawasaki 216-0015, Japan

FUJIMAKI, ARIHISA
Orthopaedic Clinic, Tokyo Hospital of Ishikawajima-Harima Heavy Industries Co., Ltd., 2-15-17 Tsukuda, Chuo-ku, Tokyo 104-0051, Japan

FUJISAWA, KOHZO
Suzuka Kaisei General Hospital, 112-1 Koh, Suzuka, Mie 513-0836, Japan

FUKUI, AKIHIRO
Department of Orthopaedics, Nara Prefectural Mimuro Hospital, 1-14-16 Mimuro, Sango-cho, Ikoma-gun, Nara 636-0802, Japan

FURUKAWA, HIROSHI
Department of Plastic and Reconstructive Surgery, Hokkaido University School of Medicine, North 14 West 5, Kita-ku, Sapporo 060-8638, Japan

HARA, TETSUYA
Tokyo Metropolitan Rehabilitation Hospital, 2-14-1 Tsutsumidori, Sumida-ku, Tokyo 131-0034, Japan

HIRASE, YUICHI
Saitama Hand Surgery Institute, Saitama Seikeikai Hospital, 1721 Ishibashi, Higashi-matsuyama, Saitama 355-0072, Japan
HIRATA, HITOSHI
Department of Orthopaedic Surgery, School of Medicine, Mie University, 2-174 Edobashi, Tsu 514-8507 Japan

HORIUCHI, KATSUHIRO
Nakatani Dental Clinic, 4-11-3 Nohara-nishi, Gojo, Nara 637-0036, Japan

IKETANI, MASAYUKI
Iketani Orthopedic Clinic, 1233-21 Gomigaya, Tsurugashima, Saitama 350-2202, Japan

INADA, YUI
Department of Emergency and Critical Care Medicine, Department of Orthopedic Surgery, Nara Medical University, 840 Shijo-cho, Kashihara, Nara 634-8522, Japan

INAGAWA, KIICHI
Department of Plastic and Reconstructive Surgery, Graduate School of Medicine and Dentistry, Okayama University, 2-5-1 Shikata, Okayama 700-8558, Japan

INOUE, SADAHIRO
Inoue Orthopaedic Clinic, 37-7 Eto, Ishie, Aomori 038-0003, Japan

ISHIDA, KUNIHIRO
Division of Plastic and Reconstructive Surgery, Okinawa Chubu Hospital, 281 Miyazato, Gushikawa, Okinawa 904-2293, Japan

ISHII, SEICHI
Department of Orthopedic Surgery, Sapporo Medical University, South 1, West 16, Chuo-ku, Sapporo 060-8543, Japan

ISOGAI, NORITAKA
Department of Plastic Surgery, Kinki University School of Medicine, 377-2 Onohigashi, Osaka-sayama, Osaka 589-8511, Japan

ITOH, KAZUO
Department of Radiology, JR Sapporo Hospital, North 3, East 1, Chuo-ku, Sapporo 060-0033, Japan

IWASAKI, NORIMASA
Department of Orthopaedic Surgery, Hokkaido University School of Medicine, North 15, West 7, Kita-ku, Sapporo 060-8638, Japan

KAMIISHI, HIROSHI
Department of Plastic Surgery, Kinki University School of Medicine, 377-2 Onohigashi, Osaka-sayama, Osaka 589-8511, Japan

KANAYA, FUMINORI
Department of Orthopedic Surgery, School of Medicine, University of the Ryukyus, 207 Uehara, Nishihara, Okinawa 903-0215, Japan

KAWANISHI, KOICHI
Department of Orthopaedic Surgery, Takita Hospital, 2-13 Jhonan-cho, Yamatokoriyama, Nara 639-1016, Japan
Kawate, Kenji
Department of Orthopedic Surgery, Nara Medical University, 840 Shijo-cho,
Kashihara, Nara 634-8522, Japan

Kino, Yoshitake
Department of Orthopaedic Surgery, Nagoya Ekisaikai Hospital, 4-66 Shonen-cho,
Nakagawa-ku, Nagoya 454-0854, Japan

Kohno, Takeshi
Kohno Clinic, 1272-6 Kankakuji, Takatori, Takaichi-gun, Nara 635-0154, Japan

Konoh, Kikuo
Department of Orthopaedic Surgery, Nakatsugawa Municipal General Hospital,
1522-1 Komaba, Nakatsugawa, Gifu 508-8502, Japan

Koshima, Isao
Department of Plastic and Reconstructive Surgery, Graduate School of Medicine
and Dentistry, Okayama University, 2-5-1 Shikata, Okayama 700-8558, Japan

Kugai, Atsuo
Department of Orthopaedic Surgery, Osaka-Saiseikai Tondabayashi Hospital,
1-3-36 Koyodai, Tondabayashi, Osaka 584-0082, Japan

Maki, Yutaka
Niigata Hand Surgery Foundation, 1-18 Shinko-cho, Niigata 950-8556, Japan

Masuda, Kazuyuki
Asahikawa Kosei Hospital, 24-111-3 Ichijo, Asahikawa, Hokkaido 070-0831,
Japan

Matsuda, Masao
Division of Surgery, Chukyo Hospital, 1-1-10 Sanjo, Minami-ku, Nagoya 457-8510,
Japan

Minakawa, Hidehiko
Department of Plastic and Reconstructive Surgery, Sapporo National General
Hospital, 4-2 Kikusui, Shiroishi-ku, Sapporo 003-0804, Japan

Minami, Akio
Department of Orthopaedic Surgery, Hokkaido University School of Medicine,
North 15, West 7, Kita-ku, Sapporo 060-8638, Japan

Mizumoto, Shigeru
Mizumoto Orthopedic Surgery Clinic, 2-313-1 Gojo, Gojo, Nara 637-0042, Japan

Moriguchi, Takahiko
Department of Plastic and Reconstructive Surgery, Graduate School of Medicine
and Dentistry, Okayama University, 2-5-1 Shikata, Okayama 700-8558, Japan
XX  List of Contributors

MURAMATSU, IKUO
National Hakodate Hospital, 18-16 Kawaharacho, Hakodate, Hokkaido 041-8512, Japan

NAITO, TAKAFUMI
Ohasa Clinic, 2-17 Ohasa-Nakamachi, Ebetsu, Hokkaido 060-0854, Japan

NAKAGAWA, YOJI
Division of Orthopaedic Surgery, National Insurance Medical Center of Nara, 404-1 Miyako, Tawaramoto-cho, Shiki-gun, Nara 639-0302, Japan

NAKASHIMA, HIDECHIKA
Orthopaedic Surgery Unit, Kumamoto Kinoh Hospital, 6-8-1 Yamamuro, Kumamoto 860-8518, Japan

NAKASHIMA, SHUNSKE
Department of Orthopaedic Surgery, Mutsu General Hospital, 1-2-5 Ogawa-cho, Mutsu, Aomori 035-0071, Japan

NISHI, GENZABURO
Department of Orthopaedic Surgery, Aichi-ken Koseiren Kainan Hospital, Yatomi-cho, Ama-gun, Aichi 498-8502, Japan

NISHIKAWA, SHINJI
Hirosaki University School of Medicine, 5 Zaifu-cho, Hirosaki, Aomori 036-8562, Japan

NOHIRA, KUNIHIKO
Soshundo Plastic Surgery, South 1 West 4, Chuo-ku, Sapporo 060-0061, Japan

OHGUSHI, HAJIME
Tissue Engineering Research Center (TERC), National Institute of Advanced Industrial Science and Technology (AIST), 3-11-46 Nakouji, Amagasaki, Hyogo 661-0974, Japan

OHTSUKA, HISASHI
Surgical Division (Plastic and Reconstructive Surgery Section), Ehime University Hospital, Shitsukawa, Shigenobu-cho, Onsen-gun, Ehime 791-0295, Japan

OKUMURA, MOTOAKI
Orthopedic Clinic, Todaiji Seishien, Handicapped Children’s Hospital, 406-1 Zoshi-cho, Nara 630-8211, Japan

OMOKAWA, SHOHEI
Department of Orthopedics, Ishinkai-Yao General Hospital, 1-41 Numa, Yao, Osaka 581-0036, Japan

ONO, HIROSHI
Division of Orthopaedic Surgery, National Insurance Medical Center of Nara, 404-1 Miyako, Tawaramoto-cho, Shiki-gun, Nara 639-0302, Japan
SAGAWA, KIMITAKA
Department of Transfusion Medicine, Kurume University School of Medicine,
67 Asahi-machi, Kurume, Fukuoka 830-0011, Japan

SAKADA, TAKENORI
School of Health and Social Services, Saitama Prefectural University, 820 San-
nomiya, Koshigaya, Saitama 343-8540, Japan

SAKAMURA, RITSUO
Department of Functional Neuroscience, Division of Plastic and Reconstructive
Surgery, Niigata University Graduate School of Medical and Dental Sciences,
1-757 Asahimachi-dori, Niigata 951-8520, Japan

SEMPUKU, TAKEO
Department of Orthopaedic Surgery, Saiseikai Chuwa Hospital, 323 Abe, Sakurai,
Nara 633-0054, Japan

SHIBATA, MINORU
Department of Functional Neuroscience, Division of Plastic and Reconstructive
Surgery, Niigata University Graduate School of Medical and Dental Sciences,
1-757 Asahimachi-dori, Niigata 951-8520, Japan

SHINTOMI, YOSHIHISA
Soshundo Plastic Surgery, South 1 West 4, Chuo-ku, Sapporo 060-0061, Japan

SUGIHARA, TSUNEKI
Department of Plastic and Reconstructive Surgery, Hokkaido University, North
14 West 5, Kita-ku, Sapporo 060-8638, Japan

SUZUKI, KIYOSHI
Kiyoshi Orthopaedic Clinic, 78 Hanadaniban-cho, Toyohashi, Aichi 441-8014, Japan

TAMAI, MAKOTO
Department of Orthopaedic Surgery, Kumamoto Orthopaedic Hospital, 1-15-7
Kohonji, Kumamoto 862-0976, Japan

TAMAII, SUSUMU
Nara Microsurgery · Hand Surgery Institute, West Nara Central Hospital, 5-2-6
Hyakurakuen, Nara 631-0024, Japan

TOH, SATOSHI
Department of Orthopaedic Surgery, Hirosaki University School of Medicine,
5 Zaifu-cho, Hirosaki, Aomori 036-8562, Japan

TOMITA, YOSHITSUGU
Department of Orthopaedic Surgery, Ohta General Hospital, 1-50 Nishin-cho,
Kawasaki-ku, Kawasaki 210-0024, Japan

TSUBO, KENJI
Department of Orthopaedic Surgery, Aomori City Hospital, 1-14-20 Katsuta-cho,
Aomori, 030-0821, Japan
XXII List of Contributors

TSUCHIDA, YOSHIHIKO
Department of Orthopedic Surgery, Sapporo Medical University, North 1 West 17, Chuo-ku, Sapporo 060-8556, Japan

USAMI, FUMIAKI
Usami Orthopedic Clinic, 3-11-10 Shimohoya, Nishi-Tokyo City, Tokyo 202-0004, Japan

USUI, MASAMICHI
East Hokkaido Hospital, 7-19 Wakatake-cho, Kushiro, Hokkaido 085-0036, Japan

YAJIMA, HIROSHI
Department of Orthopedic Surgery, Nara Medical University, 840 Shijo-cho, Kashihara, Nara 634-8522, Japan

YAMAMOTO, YUHEI
Department of Plastic and Reconstructive Surgery, Hokkaido University, North 14 West 5, Kita-ku, Sapporo 060-8638, Japan

YAMAOKA, NOBUYUKI
Department of Orthopedic Surgery, Nara Medical University, 840 Shijo-cho, Kashihara, Nara 634-0813, Japan

YANASE, YOSHIKI
Orthopedic Surgery, Kitano Hospital, Tazuke Kofukai Medical Research Institute, 2-4-20 Ohgimachi, Kita-ku, Osaka 530-8480, Japan

YASUMURA, MASAHIRO
Department of Orthopaedic Surgery, Ajigasawa Central Town Hospital, 110-1 Gamo, Maito-machi, Ajigasawa, Nishitsuguru-gun, Aomori 038-2761, Japan

YONEMITU, HIROYUKI
Orthopaedic Surgery Unit, Kumamoto Kinoh Hospital, 6-8-1 Yamamuro, Kumamoto 860-8518, Japan

YOSHIZU, TAKAE
Niigata Hand Surgery Foundation, 1-18 Shinko-cho, Niigata 950-8556, Japan
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E.2.1.6 Fig. 4

E.2.1.9 Fig. 3

E.2.1.8 Fig. 7a

E.2.1.9 Fig. 4

E.2.1.12 Fig. 1c
E.2.8 Fig. 3a, b, d, e

E.3.3 Fig. 3

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E.3.16 Fig. 2c, d

E.3.16 Fig. 3b, c

E.3.16 Fig. 4b, c