

# HAIR TRANSPLANT 360

2



VOLUME 2  
2nd Edition

# HAIR TRANSPLANT 360

*for Assistants*

EMINA KARAMANOVSKI VANCE



JAYPEE

*The Health Sciences Publisher*

Philadelphia | New Delhi | London | Panama



## Jaypee Brothers Medical Publishers (P) Ltd

### Headquarters

Jaypee Brothers Medical Publishers (P) Ltd.  
4838/24, Ansari Road, Daryaganj  
New Delhi 110 002, India  
Phone: +91-11-43574357  
Fax: +91-11-43574314  
E-mail: [jaypee@jaypeebrothers.com](mailto:jaypee@jaypeebrothers.com)

### Overseas Offices

J.P. Medical Ltd.  
83, Victoria Street, London  
SW1H 0HW (UK)  
Phone: +44-20 3170 8910  
Fax: +44(0)20 3008 6180  
E-mail: [info@jpmedpub.com](mailto:info@jpmedpub.com)

Jaypee-Highlights Medical Publishers Inc.  
City of Knowledge, Bld. 237, Clayton  
Panama City, Panama  
Phone: +1 507-301-0496  
Fax: +1 507-301-0499  
E-mail: [cservice@jphmedical.com](mailto:cservice@jphmedical.com)

Jaypee Medical Inc.  
The Bourse  
111 South Independence Mall East  
Suite 835, Philadelphia, PA 19106, USA  
Phone: +1 267-519-9789  
E-mail: [jpmed.us@gmail.com](mailto:jpmed.us@gmail.com)

Jaypee Brothers Medical Publishers (P) Ltd.  
17/1-B, Babar Road, Block-B, Shaymali  
Mohammadpur, Dhaka-1207  
Bangladesh  
Mobile: +08801912003485  
E-mail: [jaypeedhaka@gmail.com](mailto:jaypeedhaka@gmail.com)

Jaypee Brothers Medical Publishers (P) Ltd.  
Bhotahity, Kathmandu, Nepal  
Phone: +977-9741283608  
E-mail: [kathmandu@jaypeebrothers.com](mailto:kathmandu@jaypeebrothers.com)

Website: [www.jaypeebrothers.com](http://www.jaypeebrothers.com)  
Website: [www.jaypeedigital.com](http://www.jaypeedigital.com)

© 2016, Jaypee Brothers Medical Publishers

The views and opinions expressed in this book are solely those of the original contributor(s)/author(s) and do not necessarily represent those of editor(s) of the book.

All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission in writing of the publishers.

All brand names and product names used in this book are trade names, service marks, trademarks or registered trademarks of their respective owners. The publisher is not associated with any product or vendor mentioned in this book.

Medical knowledge and practice change constantly. This book is designed to provide accurate, authoritative information about the subject matter in question. However, readers are advised to check the most current information available on procedures included and check information from the manufacturer of each product to be administered, to verify the recommended dose, formula, method and duration of administration, adverse effects and contraindications. It is the responsibility of the practitioner to take all appropriate safety precautions. Neither the publisher nor the author(s)/editor(s) assume any liability for any injury and/or damage to persons or property arising from or related to use of material in this book.

This book is sold on the understanding that the publisher is not engaged in providing professional medical services. If such advice or services are required, the services of a competent medical professional should be sought.

Every effort has been made where necessary to contact holders of copyright to obtain permission to reproduce copyright material. If any have been inadvertently overlooked, the publisher will be pleased to make the necessary arrangements at the first opportunity.

**Inquiries for bulk sales may be solicited at:** [jaypee@jaypeebrothers.com](mailto:jaypee@jaypeebrothers.com)

*Hair Transplant 360: for Assistants, Volume 2*

*Second Edition: 2016*

ISBN: 978-93-5250-037-6

*Printed at*





### **About the Cover**

The circular design on this cover is an *enso*, a Japanese word that means “circle” and carries the meaning of enlightenment, strength, elegance, and the universe. It has multiple, layered meanings. First, it is a symbol of the 360 concept in that this book and the entire series are meant to be very comprehensive in scope on the subject of hair restoration. Second, the circle signifies partnership that is needed to



complete any worthy task, like the teamwork of physician and assistant. Finally, the incomplete circle suggests that we all work on hair transplant or any subject about which we are passionate in an ever-improving journey, as mastery is an elusive and receding asymptote. Japanese Zen masters contend that the character of the artist is revealed through his interpretation of the *enso*, with artists who paint the *enso* on a daily basis as part of their spiritual journey.

Start by doing what's necessary; then do what's possible; and suddenly you are doing the impossible.

**Francis of Assisi**





## *Dedication*

To Sam Lam, whose vision, passion, and determination has forever changed the teaching landscape of hair restoration. Thank you for being a source of inspiration to me and many others. You continually push the boundaries and always manage to make every step of the way fun. It is a true privilege to work with you and to know you.



# Foreword

When I first entered the field of hair restoration in Louisville, Kentucky, in 1976, the field was still in its infancy. The first academic meeting had been held in Hot Springs, Arkansas, only 2 years earlier, directed by Dr Bluford Stough. Round grafts, mostly 3.5–4.5 mm in diameter, were still the order of the day, not much different from Dr Orentreich's technique published in 1959. My background as a Registered Nurse (RN) primarily interested in surgery, fit well with this new opportunity.



For several years, I worked in hair restoration before spending 14 years as the surgical assistant to Dr Gerald Verdi in Louisville, Kentucky, Dr Verdi was a masterful plastic surgeon, voted a Top Doctor for his specialties in the greater Louisville area during my time with him. In 1994, my husband and I went to San Antonio, Texas, to visit a doctor who had a new technique that was creating a lot of interest in the field. The doctor was Dr Bobby Limmer and the technique was microscopically dissected follicular unit transplantation. This new technique was a significant advance over previous techniques but required a larger team with greater skills than previous techniques. At that time, I re-entered the field of hair restoration and never looked back.

Since that time numerous developments have occurred in hair restoration, the most significant of which is follicular unit extraction. This reintroduced round grafts to the field with one big difference—this time the round grafts contained only a single follicular unit. Now we had 2 primary techniques instead of one. With these new techniques and scientific developments have come the increased need for knowledge and instruction.

To help train surgical assistants, a vibrant assistants program sprung up via the leadership of the International Society of Hair Restoration Surgery (ISHRS). Starting with Cheryl Pomerantz the efforts and contributions of this group led to the assistants becoming an integral part of the surgical team. A significant barrier to new doctors entering the field was the ability to put together a team of skilled surgical assistants.

Around this period, I had the pleasure of witnessing the development of two very enthusiastic and talented individuals—Drs Sam Lam and Emina Karamanovski Vance. I have attended 2 Cadaver Workshops in St Louis, Missouri, which they organized in addition to working with Emina in several assistant workshops at the annual meetings of the ISHRS. Her enthusiasm and attention to detail are outstanding. Perhaps the greatest contribution of Emina (along with Dr Lam) is her work in publishing textbooks for assistants. What this book brings to our field is invaluable because it is the only textbook geared toward surgical assistants. I recommend this new book as a must read for any assistants interested in reaching their potential as well as to any physicians entering the field of hair restoration.

**MaryAnn Parsley RN**

Parsley/Waldman Hair Center Louisville, Kentucky, USA

Surgical Assistant's Chair of the Annual ISHRS Meeting 2006 in San Diego, California, USA

Distinguished Assistant Award 2005 in Sydney, Australia



# Introduction

## Volume 2 (2nd Edition)

The publisher's request to write a new edition for Volumes 1 and 2 of this book series, as the inventory of the first edition was nearly depleted for these two volumes, came as an answer to my silent questions. For a while, I had been looking at the first edition of this book, reflecting how much I have learned since its publication and wondering how to relate that knowledge to my readers. In the short span of time since the first publication, I taught various courses, encountered many students, learned new techniques, and realized that there was much more to graft preparation and placement than had been described in the first edition or in any other publication for that matter.

I started the project with the idea of elaborating on the existing chapters but quickly realized that the book called for more information and more chapters. Although there are new things added to the practice of hair restoration, such as new storage solutions and different bioenhancement methodologies (such as HypoThermosol, platelet-rich plasma, or liposomal ATP), they are not as significant for the surgical assistants as they are for physicians. As follows, the major focus in this edition has been given to the details of the two most important skills for assisting in hair-restoration surgery. Although these skills were addressed in the first edition, this time I examined every aspect of graft preparation and placement, analyzed every detail, and documented important subtleties. The material included in this book evaluates the instruments and equipment used for graft preparation, examines technique and strategies, and stresses the factors that can affect graft survival as well as promote graft preservation. This edition also covers new skills like graft extraction, as the follicular unit extraction (FUE) technique has been gaining popularity in the last several years. Furthermore, the book describes proper graft-handling and graft-placing techniques and principles that are vital for achieving good results. The sections on challenges and solutions, critical thinking, and how to identify and learn from one's mistakes in both graft preparation and placement have been expanded and the section on assistant training updated with new inanimate models. Finally, the book is filled with pearls of wisdom that can help the new or seasoned assistant based on my accumulated 23 years of experience in this industry.

The introduction to the first edition that follows this current introduction is still entirely valid and relevant since the goals and intent have remained the same. Only the vision has been updated and the content significantly expanded. For that reason, I have asked that the publisher retain it for the readership. The book has 8 chapters, 25 videos, and hundreds of full-color, full-sized photographs. This book represents a labor of love and dedication to excellence, a value that Dr Lam and I share and uphold.

**Emina Karamanovski Vance MD**  
Dallas, Texas, USA



# Introduction

## Volume 2 (1st Edition)

The practice of hair restoration is a combined effort between a physician and a team of surgical assistants. Unlike other cosmetic enterprises that are principally dependent on the physician for success, hair transplantation requires a sophisticated, well-trained, and dedicated team of surgical assistants and ancillary staff. Taking into account that assistants perform a significant part of the surgery, the result of hair transplantation highly depends on the assistant's skillfulness in graft preparation and placement as well as their education about and commitment to quality hair restoration.

Most practices face a challenge of training surgical assistants because the current assistant training is hindered by the limitations of live donor tissue, i.e., its availability and narrow margin of error. In addition, when starting a practice, a surgeon may face the untenable situation where he/she would like to undertake a hair transplant on a prospective patient so that the staff can begin to develop their skills but at the same time does not want to subject a patient to the outcomes of a bad transplant from an inexperienced team.

Until now, all available surgical textbooks explain in detail the surgeon's task and give only an overview of the assistant's task leaving surgeons ill equipped to train their staff or perform quality control. This book is a comprehensive guide dedicated to both surgical assistants and physicians; it can serve as a self-study for the novice as well as a reference book for experienced surgical assistants. Considering that the topics shared in this book cover the intricacies of the surgical assistant role, it is also intended for physicians so they can train their staff and supervise their team. In addition, this book will outline the requirements for staff hiring; provide general knowledge on hair biology, hair loss and hair restoration; will address how to develop the technical skills necessary for assisting in hair transplantation, and finally present a unique "without-a-live-patient" training that can accelerate a trainee's learning curve and thereby decrease a trainee's nervousness and improve his or her proficiency. In addition, it will provide in-depth information on quality standards and guidelines for quality control as well as address patient care and assistant teamwork.

Besides having technical skills required from both the surgeon and surgical assistants, a successful practice demands an excellent assistant-patient relationship. Since it takes six to twelve months for transplanted hair to grow and the patient to see the results of surgery, establishing good rapport with every patient is essential. From the person answering the phone to the person assisting in surgery, all should be amiable, knowledgeable in the basics of hair restoration, and understanding of a patient's concerns such as knowing how to calm a patient who is experiencing postoperative thinning. Because hair transplantation is an elective treatment, every person considering hair restoration is equally customer and patient and should be treated accordingly. With the development of the internet, patients are researching for the best results and are willing to travel a long distance to receive a quality procedure and obtain the desired look. Considering the profound contribution of the assistant in the quality of the final result, this book was conceived as the first thorough training manual for the surgical assistant in hair restoration. After discussing with my co-author, Dr Lam, we agreed on giving a more colloquial tone to Volume 2 as opposed to the more scientific voice of Volume 1 of this book. We wanted to impart valuable knowledge without overwhelming the reader with intimidating medical terminology. My hope is that readers will find it easy to read, its information of great value, and that this book will serve as a model and inspiration for a new era in quality standards for assisting in the field of hair restoration.

**Emina Karamanovski Vance MD**  
Dallas, Texas, USA





# Acknowledgments

This book is based on over twenty-three years of experience assisting in hair restoration. As a physician with a foreign license who could not practice medicine, I started assisting in hair restoration as a temporary solution to my predicament. Ironically, my seeming indisposition led me to discover my passion and a unique position of being able to relate equally to assistants and physicians. Along the way I met some amazing people, worked with numerous assistants and physicians, and had the privilege to learn from two remarkable teachers, Dr Vance Elliott and Dr Samuel Lam. I would like to thank my teachers for their unique contributions in improving my knowledge and sharpening my critical-thinking skills. Above all, I want to thank them for believing in me and supporting me so that I could become the best me possible. Many years ago I had a dream of creating some type of educational platform for assisting in hair restoration. I owe a debt of gratitude to Dr Samuel Lam for his extraordinary vision and leadership that made my dream come true.

I would like to thank Tina Lardner for her generous support and invaluable contribution to this book. Tina's input and her gift of several clinical photographs made this work richer to you, the readers. Tina's dedication to and passion for hair restoration are exemplary and inspiring. I would also like to thank MaryAnn Parsley RN, who helped me relate better the history of hair restoration and, more importantly, tell the story of the evolution of surgical assisting. MaryAnn is one of the pioneers who helped shape the field of hair restoration with her invaluable contribution as surgical assistant. This book would not have been as inclusive without their contributions.

I would like to thank the group of amazing women who make our workplace a second home and our practice successful. Our team includes front desk personnel, surgical assistants, medical assistants, nursing, and janitorial department. My husband refers to our group of women as "my village" and that makes me smile. Ladies, thank you for being dedicated to excellence in patient care and to each other's wellbeing. Without you my life would not have been as rich and successful.

I would also like to thank Mr Jitendar P Vij (Group Chairman), Mr Ankit Vij (Group President), Ms Chetna Malhotra Vohra (Associate Director), Ms Angima Shree (Development Editor), and the production team of Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, India.



Last but not least, I would like to thank all my students for making me a better person and a better teacher. Assisting in hair restoration allowed me to be part of an amazing process of transformation: for my patients, for my team members, and for myself.

**Emina Karamanovski Vance MD**



# Contents

|   |           |
|---|-----------|
| <b>SECTION I: CORE 360</b>                            | <b>1</b>  |
| <b>1. Basic Hair Knowledge</b>                        | <b>5</b>  |
| About Hair Growth                                     | 5         |
| Hair in General                                       | 5         |
| Hair Anatomy  | 5         |
| Hair Growth Cycles                                    | 7         |
| About Hair Loss                                       | 8         |
| Male-Pattern Baldness                                 | 9         |
| Female-Pattern Baldness                               | 13        |
| Other Types of Alopecia                               | 16        |
| About Hair Restoration                                | 18        |
| Nonsurgical Options                                   | 24        |
| Medical Treatment                                     | 24        |
| Low-Level Laser Therapy (LLLT)                        | 28        |
| Platelet-Rich Plasma                                  | 29        |
| Camouflaging Products and Treatments                  | 30        |
| <b>2. Surgery Overview</b>                            | <b>35</b> |
| Terminology   | 35        |
| Size of the Surgical-Assistant Team                   | 35        |
| Surgical Flow   | 36        |
| Surgical Timing                                       | 38        |
| Other Things to Know                                  | 40        |
| Medication Used                                       | 40        |
| Emergency Situations                                  | 41        |
| Clean Procedure                                       | 43        |
| Do's and Don'ts                                       | 44        |
| <b>3. Assistant's Duties</b>                          | <b>47</b> |
| An Overview   | 47        |
| Surgical Set-up                                       | 48        |
| Assisting the Physician                               | 57        |
| Graft Preparation and Placement                       | 60        |
| Postsurgery Cleaning (Disinfection and Sterilization) | 60        |
| Charting (Documentation)                              | 63        |
| Patient Follow-up                                     | 64        |
| Other Duties  | 66        |
| Suppliers   | 67        |

|   |            |
|---|------------|
| <b>4. Graft Preparation</b>  | <b>69</b>  |
| Magnification and Lighting .....  | 69         |
| Ergonomics .....  | 72         |
| Graft Survival .....  | 74         |
| Graft Preservation.....   | 76         |
| Harvesting Techniques.....  | 79         |
| Strip Harvesting (FU-Strip).....  | 79         |
| Follicular Unit Extraction (FUE) .....  | 80         |
| Donor-Tissue Evaluation.....  | 81         |
| Slivering .....   | 82         |
| Technique.....  | 82         |
| Slivering Strategy.....   | 89         |
| Instruments .....   | 89         |
| Graft Dissection .....  | 90         |
| Technique.....  | 90         |
| Dissecting Strategy .....   | 95         |
| Instruments .....   | 97         |
| Graft Yield Feedback .....  | 99         |
| Graft Extraction.....   | 102        |
| Technique.....  | 102        |
| Graft Sorting and Trimming.....   | 105        |
| Extracting Strategy.....  | 106        |
| Instruments .....   | 106        |
| Graft Yield Feedback .....  | 108        |
| Challenges and Solutions .....  | 108        |
| Quality Control .....   | 112        |
| <b>5. Graft Placement</b>  | <b>123</b> |
| Magnification and Lighting .....  | 123        |
| Recipient Area .....  | 124        |
| Hair Direction and Angle .....  | 124        |
| Recipient Sites .....   | 128        |
| Graft Handling and Survival.....  | 130        |
| Placing Technique.....  | 134        |
| Cleaning.....   | 134        |
| Loading Grafts .....  | 134        |
| Choosing the Forceps.....   | 136        |
| Testing the Angle.....  | 138        |
| Graft Grasping and Hair Curl Orientation.....   | 139        |
| Graft Insertion .....   | 139        |
| Dabbing.....  | 141        |
| Other Things to Know .....  | 143        |

|   |     |
|---|-----|
| Final Check .....   | 145 |
| Placing Principles.....                                   | 146 |
| Placing Strategies.....                                   | 150 |
| Patient Positioning .....                                 | 157 |
| Ergonomics .....  | 158 |
| Challenges and Solutions .....                            | 160 |
| Popping .....   | 160 |
| Bleeding and Oozing.....                                  | 160 |
| Grafts Sinking In .....                                   | 161 |
| Sites Difficult to See.....                               | 163 |
| Long Hair .....   | 163 |
| Lax Tissue .....  | 164 |
| Scar Tissue .....   | 164 |
| Splayed Follicles or Different Length Hair Follicles..... | 164 |
| African Curly Hair.....                                   | 166 |
| Quality Control .....                                     | 167 |

**SECTION II: MORE 360 171**

|  |            |
|--|------------|
| <b>6. Patient Care</b>        | <b>175</b> |
| Before the Surgery.....  | 175        |
| In Preparation for Surgery.....  | 175        |
| Immediately Before Surgery .....   | 177        |
| At the End of Surgery .....  | 178        |
| Final Check, Cleaning, and Bandaging.....  | 178        |
| Postoperative Instructions .....   | 180        |
| Follow-up .....  | 183        |
| Immediate .....  | 183        |
| During the First Year .....  | 186        |
| Postoperative Shock Hair Loss.....   | 189        |
| Critical Thinking .....  | 190        |
| <b>7. Assistant Training</b>  | <b>197</b> |
| Overview.....  | 197        |
| Staff Selection.....   | 198        |
| Phase I Training.....  | 199        |
| Slivering and Dissection.....  | 199        |
| Graft Placement.....   | 202        |
| Graft Extraction in FUE .....  | 205        |
| Phase II Training.....   | 209        |
| Continuing Education.....  | 210        |
| Performance Progress and Evaluation .....  | 210        |
| Test Your Knowledge .....  | 212        |

|                                      |            |
|--------------------------------------|------------|
| <b>8. Other Things to Know</b> ..... | <b>213</b> |
| Standardized Photography .....       | 213        |
| Talking on the Phone .....           | 215        |
| Ergonomics and Stretching.....       | 215        |
| Teamwork.....                        | 220        |
| Dividing Tasks .....                 | 220        |
| Relationships .....                  | 221        |
| Attitude .....                       | 222        |
| Stress Management.....               | 223        |
| <i>Index</i> .....                   | 229        |

# Video Contents

## Chapter 2

1. Surgery Overview

## Chapter 3

2. First and Second Phase of Surgical Set-up
3. Prepping the Donor Area

## Chapter 4

4. Microscope Adjustments
5. Slivering
6. Graft Dissection
7. Splitting Follicular Units
8. Graft Extraction
9. Graft Extraction with Two Assistants using Two Techniques
10. What Not to do During Graft Preparation

## Chapter 5

11. Graft Placement
12. Graft Placement with Two Assistants
13. Graft Placement for FUE Grafts
14. Final Check
15. Placing Challenge: Popping
16. Placing Challenge: Bleeding
17. Placing Challenge: Grafts Sinking Below Scalp Surface
18. Placing Challenge: Long Hair

## Chapter 6

19. Patient Care: Cleaning Blood Clots
20. Patient Care: Suture Removal

## Chapter 7

21. Phase I Assistant Training: Slivering
22. Phase I Assistant Training: Dissection
23. Phase I Assistant Training: Placing
24. Phase I Assistant Training: Extraction
25. Test Your Knowledge