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## FOREWORD

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Sir Harold Gillies, the father of plastic surgery, often lamented that “tissue transfer is a constant battle between blood supply and beauty” when, with artistic flair, he repaired the horrific defects of those poor unfortunates who were mutilated during the two Great Wars. This dilemma was because Gillies designed his skin flaps on a trial-and-error basis without knowledge of the underlying blood supply of the region, assigning rigid length-to-breadth ratios to his flap procedures.

The pioneering work of Ian McGregor and Ian Jackson answered his plea. They focused our attention on skin flaps supplied by named axial vessels that perforated the outer layer of the deep fascia and coursed parallel to the skin for long distances. This culminated in their publication of a description of the “groin flap” for local or pedicled transfer. After initial failed attempts by Buncke and Antia in 1971, we successfully transplanted this flap in one stage in 1973 using microsurgery and coined the phrase “the free flap” for the procedure.

This microsurgical technique demanded a reappraisal of the basic vascular and neurovascular anatomy of the body for future transplants. Consequently, this led to the design of various free flaps based on either *direct* cutaneous perforators that passed from their source arteries and veins between the deep structures to pierce the outer layer of the deep fascia as *fasciocutaneous* flaps, or *indirect* cutaneous perforators that were derived from vessels supplying the deep structures, usually as *musculocutaneous* flaps.

These musculocutaneous free flaps were bulky because of the obligatory muscle and often imposed a greater morbidity on the donor site when compared with their fasciocutaneous counterparts. This problem stimulated Bob Allen and Phillip Blondeel to dissect these indirect musculocutaneous perforators, tracing them to their underlying source vessels to provide a sleeker flap and at the same time to preserve muscle function. They first targeted the perforators of the deep inferior epigastric artery. As other musculocutaneous flaps were reexamined, the concept of “perforator flaps” evolved and was expanded to include the direct fasciocutaneous vessels.

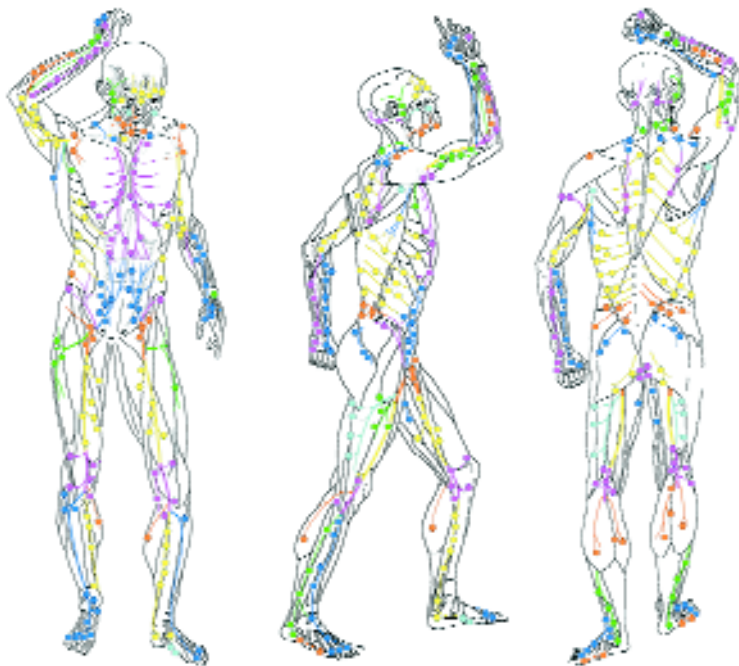
The editors of these two volumes of text have made a valuable contribution to reconstructive surgery. Not only have they combined their own particular clinical and research expertise as leaders in the field, but they have captured an “arm full of bullfrogs” of flamboyant contributors, all skilled in the art of free tissue transfer.

With any multiauthored book it is difficult to avoid overlap and to provide continuity and a logical sequence to the text. The editors have achieved this by coauthor-

ing 27 of the 64 chapters, standardizing the illustrations, and introducing each region with superb cadaver studies of the cutaneous perforators and underlying source vessels. Steven Morris, who I am proud to say spent 2 years with me in the 1990s examining with Mark Gianoutsos the neurovascular territories of the skin and muscles, has reexamined our angiosome territories of the cutaneous perforators with his team in Halifax. He has confirmed our results and gone a step farther in several regions, subdividing some perforator territories. Phillip Blondeel and Peter Neligan have combined their pioneering technical skills, their tips and pitfalls, and Geoff Hallock has not only simplified terminology with a clear analytical mind, but has also compiled an exhaustive list of references in the Appendix on perforator flaps that are state of the art today.

Although designed specifically for microsurgeons performing free tissue transfers, *Perforator Flaps: Anatomy, Technique, & Clinical Applications* provides valuable anatomic data for any reconstructive surgeon who breaches the vascular network of the skin with an incision or who designs a flap in the area for local repair.

It is noteworthy that some of the contributors believe that “big is beautiful” as they trace the cutaneous perforators to their sizeable source vessels for transplantation, whereas others exhibit their microsurgical skills using “supermicrosurgery” to reconnect tiny cutaneous perforators. It will be interesting to see which techniques will survive and which will be relegated to the bookshelves. Having been involved for more than 30 years with free tissue transfers, I have come to the conclusion that for the average surgeon, long pedicles with large vessels have the highest success rate. This is why the radial forearm skin flap is so popular in Western countries, whereas in Taiwan, for example, where the forearm is always exposed because of the hot climate, lateral thigh flaps based on the large descending branch of the later femoral circumflex vessels are favored because the donor site is more easily concealed.



Sites of an average of 374 dominant cutaneous perforators of 0.5 mm or greater as they emerge from the outer layer of the deep fascia, colored to match their source vessels. The majority of perforators are musculocutaneous on the torso, piercing the muscles near their fixed attachments, whereas they are most often fasciocutaneous in the limbs, piercing the deep fascia between muscles, tendons, or bone (compare Fig. 2-6).

The abbreviated nomenclature for these perforator flaps may pose a problem for the future. When John Palmer and I published our angiosome concept, we identified an average of 374 direct or indirect cutaneous perforators of greater than 0.5 mm diameter, as shown in the figure on the facing page. Even though most were represented bilaterally, there are still at least 187 possible perforators to which an individual abbreviation may be attributed. It will be interesting to see which of these will remain in common use.

In the preface of this book, the authors describe how they intend it to be used in clinical practice. The clinical problem is presented to the reader, and then the clinical application chapter is consulted for various options. The reader can learn how to perform the flap in the relevant sections in Part II.

The DVD that accompanies the book shows the harvesting of the most popular flaps. This is a nice addition and might be very valuable for the surgeon attempting a flap for the first time. The clinical case reports and photographs are impressive and tie in well with the text.

I believe these volumes will become an important reference that no doubt will be revised from time to time as new techniques evolve. It has been a monumental task done in a time of flux. Above all, the editors have made us focus on the most important factor that determines flap survival: the anatomy of the blood supply of the transplant. Both they and all of their invited contributors to the various chapters are to be congratulated on their achievement.

**G. Ian Taylor**