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EDITORIAL

INTEGRATING MULTIMEDIA TECHNOLOGY INTO MEDICAL PRACTICE

The Southern Orthopaedic Association (SOA) and the *Journal of the Southern Orthopaedic Association* have embarked on a project to build a comprehensive, online textbook that is both up-to-date and peer-reviewed—one that will provide detailed sources selected for quick reference by subspecialty area, regional (anatomic) site, pathologic entity, or diagnostic category. Comprehensive outlines, traditional text material, and references allow selection of those chapters most applicable to a specific clinical problem. Hyperlinks to techniques, pharmacologic information, technical material, and abstracted references in the online textbook provide the busy practitioner with a mechanism to efficiently access educational resources through one Internet resource—*Orthopaedic Care* (www.orthotextbook.net) (Fig 1).

Modern-Day Membership

As has been previously discussed in the *Journal* (eg, DeFiore, Summer 2000), many orthopaedic associations are reassessing their goals to remain competitive amid decreasing memberships in medical associations nationwide. Our publishing partner and affiliate, the Clinical Orthopaedic Society, was founded on the principle that

Orthopaedic Care:
Medical and Surgical Management
of Musculoskeletal Disorders
A Comprehensive, Peer-Reviewed, Internet Textbook

Welcome. The Southern Orthopaedic Association, the Clinical Orthopaedic Society, and the Journal of the Southern Orthopaedic Association are pleased to provide for your education and edification the first peer-reviewed Internet musculoskeletal textbook. This site is comprehensive; it covers all of orthopaedic surgery, plus relevant information from related specialties, such as neurology, oncology, pediatrics, and rheumatology.

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FIGURE 1. Home page for online textbook, *Orthopaedic Care*.

frequent exposure to and discussion of clinical challenges in a symposium format would lead to better practice of orthopaedic medicine; the Society continues to value that principle today. An online, peer-reviewed process allows SOA to accept this century-old vision as a model of learning in cyberspace that should be of service to its members and their patients.

New projects are a leading choice among associations for the realignment of their



FIGURE 2. Internal text references are hyperlinked to corresponding citations, abstracts, and annotations.

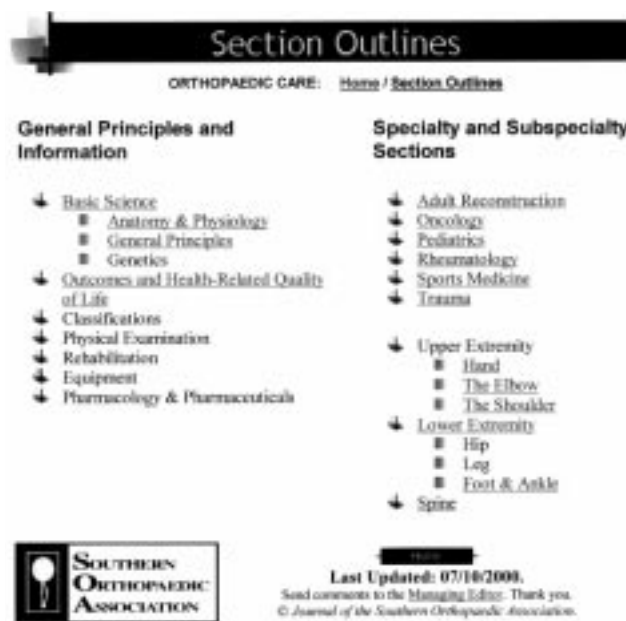


FIGURE 3. Sections of online textbook divided between "General Principles and Information" and "Specialty and Subspecialty Sections."

founding visions along the wishes of current memberships. This spirit has brought the *Journal* to offer *Orthopaedic Care* as a resource of clinical exchange and scholastic contribution, thus aligning itself with the founding visions of both the Southern Orthopaedic Association and the Clinical Orthopaedic Society. Through the power of digital technology and the experience of a highly respected review panel, the comprehensiveness of a traditional textbook coupled with the up-to-date, peer-reviewed validity of a professional journal is now available.

Joint Publication in This Issue

This issue includes a Special Article on compartment syndromes and an editorial preview of its online version in *Orthopaedic Care*. Joint publication of new works in both media offers the Southern Orthopaedic Association and its membership several benefits:

1. The peer-reviewed chapters of the online textbook may be associated with articles

listed by the National Library of Medicine in *Index Medicus*.

2. When viewed online, references in the articles may be accessed by hyperlinks to their abstracts and, where available, to author annotations and/or full-text references (Fig 2).
3. The unlimited space of the online format allows for increased clinical material and exposure as envisioned by the Clinical Orthopaedic Society, whose purpose may now be accomplished when traditional clinical symposia are out of session.
4. The flexibility of hypertext encourages interdisciplinary contributions and perspectives on specific topics, resulting in an exemplary "forum for the exchange of original, practical, medical and surgical information," set forth as the founding vision of the Southern Orthopaedic Association ("About the SOA," located at the Southern Medical Association Web site, at www.sma.org/affiliate/about_soa.htm).

TABLE 1. Section Outline for Pediatric Orthopaedics—An Excerpt

| | |
|---|---|
| > | Growth and development of the musculoskeletal system |
| ♦ | Genetics |
| ♦ | Embryology |
| ♦ | Growth and maturation |
| * | Joints |
| * | Muscles |
| * | Skeleton |
| > | General pediatric orthopedic examination |
| ♦ | Newborn |
| ♦ | Toddler |
| ♦ | Child |
| ♦ | Adolescent |
| > | Neuromuscular disorders |
| ♦ | Physical assessment of neuromuscular development |
| ♦ | Normal gait and motion analysis |
| ♦ | Cerebral palsy |
| ♦ | Spinal dysraphism |
| * | Myelodysplasia |
| * | Tethered cord |
| * | Diastematomyelia |
| ♦ | Arthrogyposis |
| ♦ | Myopathies and neuropathies |
| * | Diagnostic studies |
| * | Muscular dystrophy |
| * | Spinal muscular atrophy |
| * | Freidreich ataxia |
| * | Hereditary motor sensory neuropathies |
| * | Poliomyelitis |
| * | Guillian-Barre syndrome |
| * | Other neuromuscular disorders |
| > | Genetic, endocrine, and metabolic disorders of the musculoskeletal system |
| ♦ | Evaluation of generalized musculoskeletal disorders |
| ♦ | Genetic aspects of musculoskeletal disorders |
| ♦ | Skeletal dysplasias |
| ♦ | Metabolic and endocrine disorders |
| ♦ | Syndromes with musculoskeletal manifestations |
| ♦ | Localized musculoskeletal disorders |

Outline is continued online at www.orthotextbook.net.
 Key: > Subsection; ♦ Overview Chapter; * Specific Chapter

Scope and Structure

The operating principle of the online textbook is that a comprehensive resource in orthopaedics must provide access to a wide variety of relevant information, clearly organized into divisions (Fig 3), sections (Table 1), and chapters (Table 2). The precise structure allows the user to navigate from the outline to all resources within and between chapters. For example, one may either use the chapter's abridged outline to preview chapter contents and hyperlink to texts of particular interest (Table 3), or bypass traditional text discussion to gain substantive new knowledge directly from the chapter's detailed outline (Table 4). Users may hyperlink from references

TABLE 2. Standard Chapter Outline

| | |
|-------|---|
| I. | Introduction |
| II. | Historical Perspective |
| III. | Anatomic and Physiologic Considerations |
| IV. | Natural History |
| V. | Diagnosis and Recognition |
| VI. | Treatment |
| VII. | Summary |
| VIII. | Equipment and Instrumentation |
| IX. | Pharmacology |
| X. | References |
| XI. | Patient Summary |

aligned with their relevant outline entries to corresponding abstracts and selected author annotations. To complete the online learning experience, the outline provides immediate access to texts, figures, tables, technical information, and specific clinical/surgical techniques. (For a live demonstration of the chapter outline, go to www.orthotextbook.net.)

Several features in *Orthopaedic Care* are unique to its flexible medium. Clinical coverage is realized through step-by-step treatment techniques (Table 5) accompanied by indications and contraindications for their use; high-quality illustrations and descriptive figures (Fig 4); use of pharmacologic agents in the treatment of the illness; diagnostic tools and procedures, especially as they relate to differential diagnosis and longitudinal tracking of individual cases; and much more clinical information.

Objective

In the Fall 1996 issue of the *Journal*, which was dedicated to the management of spine disorders and specific new technology, P. Merrill White, MD, highlighted a need to provide practitioners with clear indications for the use of various pharmacologic and technologic innovations. Dr. White called for practical perspective, seeing it as critically important to the skillful, not random, application of technological tools, instruments, and pharmaceuticals. Because this information is generally omitted by space-limited professional publications and com-

TABLE 3. Abridged Chapter Outline—Brief Contents of Natural History

| |
|--|
| Replantation of Digits and Hands |
| I. Introduction |
| II. Historical Perspective |
| III. Anatomic and Physiologic Considerations |
| IV. Natural History |
| A. Demographics |
| 1. Number of Occurrences |
| 2. Event/Time |
| B. Outcome of Revision vs. Replantation |
| 1. Digits (Non-thumb) |
| 2. Thumbs |
| 3. Multiple Digits |
| 4. Amputation Through Hand |
| C. Survival of Replantations |
| 1. Digits—80% to 90% |
| 2. Thumbs—80% to 90% |
| 3. Avulsion—50% to 60% |
| D. Indications for Replantation |
| 1. Thumb |
| 2. Multiple Digits |
| 3. Part of Child |
| 4. Isolated Digit Distal to Flexor Digitorum Superficialis |
| 5. Hand—All or Part |
| E. Relative Contraindication to Replantation |
| 1. Patient-oriented |
| 2. Function/Health-related Quality of Life |
| 3. Emotional/Social Factors |
| 4. Associated Injury or Disease(s) |
| F. Functional Expectations |
| 1. Range of Motion |
| 2. Sensibility |
| 3. Bone Growth in Children (Nunley 1987) |
| V. Diagnosis and Recognition |
| VI. Treatment |
| VII. Summary |
| VIII. Equipment and Instrumentation |
| IX. Pharmacology |
| X. References |
| XI. Patient Summary |

See Table 4 for full contents.

mercially oriented corporate literature, *Orthopaedic Care* offers peer-reviewed technical information and product evaluations as a continuing remedy to this problem.

The goal of the Southern Orthopaedic Association is to provide member benefits by serving the needs of the practicing orthopaedic surgeon—specialist and generalist alike. While the online textbook is not yet an interactive work, it is reactive to member needs. It greatly increases access to complete, authoritative information without regard to the space and time limitations of traditional text. Furthermore, it is envisioned that the associated technical information, annotated references, and medical techniques will provide a valuable

TABLE 4. Portion of Detailed Chapter Outline

| |
|--|
| Replantation of Digits and Hands |
| I. Introduction |
| II. Historical Perspective |
| III. Anatomic and Physiologic Considerations |
| IV. Natural History |
| A. Demographics |
| B. Outcome of Revision vs Replantation |
| 1. Digits (Non-thumb) |
| a. Require 1 cm proximal phalanx for grip |
| b. Replantation distal flexor digitorum |
| (1) Superficialis good PIP motion (~85°) |
| (2) Proximal poor PIP motion (~35°) (Urbaniak 1985) |
| c. Isolated digital replantations have poor function (Goldner 1987) |
| d. Ring avulsions depend on extent of damage and mechanism |
| (1) Classification of ring avulsion injuries |
| (a) Urbaniak JR 1981 |
| (i) Class I—circulation adequate |
| (ii) Class II—circulation inadequate (not amputated) |
| (iii) Class III—complete amputation usually at DIP |
| (b) Kay 1989 |
| (i) Class I—circulation adequate with or without skeletal injury |
| (ii) Class II—circulation inadequate; no skeletal injury |
| (iii) Class III—circulation inadequate; fracture or joint injury |
| (iv) Class IV—complete amputation |
| (2) Complete amputations are generally salvageable |
| (3) Survival rate is lower |
| (a) Function is related to degree of trauma |
| (b) Class IIA considered excellent candidate for salvage (Nissenbaum 1984) |
| 2. Thumbs |
| a. Thumb replantation vs revision (Goldner 1990) |
| b. Motion less critical thumb digits |
| 3. Multiple Digits |
| 4. Amputation Through Hand |
| a. Better than revision and prosthesis |
| b. "Poor" MP motion without intrinsic transfer secondary intrinsic muscle damage |
| C. Survival of Replantations |
| D. Indications for Replantation |
| E. Relative Contraindication to Replantation |
| F. Functional Expectations |
| V. Diagnosis and Recognition |
| VI. Treatment |
| VII. Summary |
| VIII. Equipment and Instrumentation |
| IX. Pharmacology |
| X. References |
| XI. Patient Education Summary |

Chapter outline showing full contents of Natural History. Full chapter contents available online at www.orthotextbook.net.

resource and act synergistically with the peer-reviewed textual content.

Members of the Southern Orthopaedic Association and its affiliates are encouraged to contribute directly to the broadening of orthopaedic educational multimedia

Table 5. Step-by-Step Treatment Techniques—An Excerpt

Technique: Replantation of Thumbs and Digits

- I. Preparation
 - A. Begin dissection of amputated part independent of patient's arrival in operating room.
 - B. Prep part by scrubbing skin with appropriate solution
 1. Avoid alcohol on open wound
 2. Scrub brush may be used at sink on intact skin, followed by solution
 - C. Tourniquet
- II. Debridement
 - A. Any contaminated muscle or tissue
- III. Incision/Dissection
 - A. Explore ulnar and radial neurovascular bundles through midlateral incision
 1. Incise Cleland's ligament, exposing nerve and artery
 2. Tag nerves and arteries with 8-0
 3. Suture flexor and extensor mechanism
 4. Dissect and mobilize dorsal veins and tag with 8-0 suture
- IV. Skeletal Stabilization
 - A. Use:
 1. Crossed pins
 2. Pin and interosseus wire
 3. Plate and screws
 - B. Debride bone
 1. Use small oscillating saw or rongeur to smooth edges.
 - C. Shorten as determined by skin coverage, nerve approximation, and tendon length.
 - D. Secure or place fixation in distal part.
 1. Fix plate either on palmar or dorsal surface
 2. Place longitudinal or crossed pin
 - E. Debride proximal wound
 - F. Expose structures for repair through midlateral incision, which may be extended with palmar or dorsal longitudinal incisions.
 - G. Stabilize skeleton
 1. Check alignment and rotation
 2. Ensure adequate bone-to-bone contact, if possible
 3. Place interosseus wire, insert screw in plate, advance pins into proximal skeleton, fusion, arthroplasty.
 4. After fixation, flex MP joint and PIP joint to check rotational alignment
- V. Arterial Vascular Repair
- VI. Neurorrhaphy
- VII. Venous Vascular Repair
- VIII. Skin Closure
- IX. Post-operative Care

Complete technique available at www.orthotextbook.net.

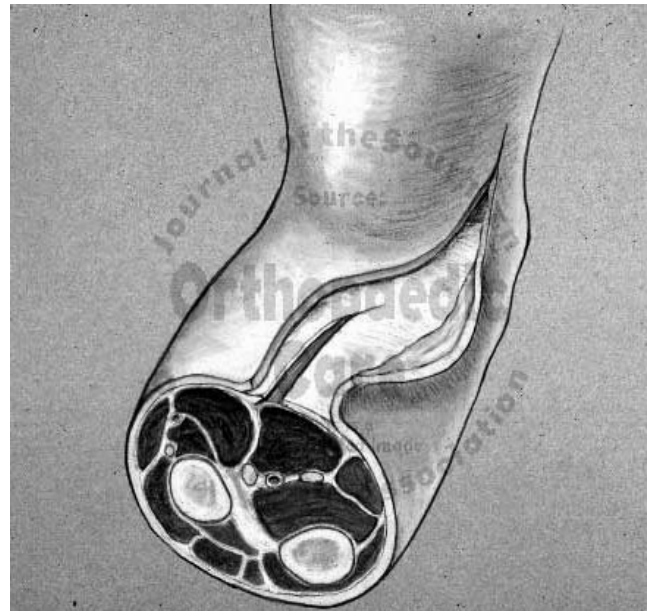


FIGURE 4. Numerous high-quality images and illustrations (each protected by watermark) accompany chapter outlines and texts.

and resources through collective support of both the online textbook and the *Journal of the Southern Orthopaedic Association*.

Thank you for making the growing, innovative resource of *Orthopaedic Care* a reality through your continuing manuscript contributions and your Association membership. Our success will serve our ultimate goal of providing complete, skilled care of orthopaedic patients.

Sandra Haas Binford, MAEd, Managing Editor, *Orthopaedic Care*

L. Andrew Koman, MD, Editor in Chief, *Orthopaedic Care*, and Editor, *Journal of the Southern Orthopaedic Association*

See related articles beginning on pages 230 and 233.