Transosseous Osteosynthesis Theoretical And Clinical Aspects Of The Regeneration And Growth Of Tissue


For the past 40 years, Ilizarov has been perfecting a system of orthopedics and traumatology based upon the tensioned-wire circular external skeletal fixator. He invented the apparatus in 1953 in a previously hidden corner of the Kurgan Scientific Research Institute of Experimental and Clinical Orthopedics and Traumatology. He first described the device in 1958 and the English-language version of the device's description was published in 1961 in the Journal of Bone and Joint Surgery.

The term “transosseous osteosynthesis” refers to a surgical technique developed in the 1950s by Dr. Alexander I. Ilizarov, a Russian orthopedic surgeon. This method involves the use of small, transfixion-type screws or wires that are inserted through bone to stabilize fractures or to lengthen bones. It has become a cornerstone of orthopedic surgery, particularly in the treatment of complex fractures and deformities.

Ilizarov's technique became widely known outside of the former Soviet Union due to the efforts of several prominent surgeons who adopted and further developed it. One of these surgeons was Dr. John M. Gardner, who introduced the technique to the United States in the early 1980s. Since then, it has been used to treat a wide range of orthopedic conditions, including bone tumors, bone non-unions, and limb length discrepancies.

One of the key features of the Ilizarov technique is the use of external fixation devices, which allow for precise bone alignment and protection during healing. These devices are adjustable, allowing for fine-tuning of the desired movement or stabilization. This flexibility makes the Ilizarov technique a versatile tool for the treatment of a variety of orthopedic problems.

The technique has been refined and expanded over the years to include newer applications, such as bone regeneration and the treatment of osteomyelitis. It has also been adapted for use in dental surgery, with successful outcomes in the treatment of dental implant failures and other dental-related problems.

The Ilizarov technique continues to evolve with advances in technology and surgical techniques. It remains a valuable tool in the armamentarium of orthopedic surgeons worldwide, offering a non-invasive and effective means of treating complex orthopedic conditions.
including tooth-borne, bone-borne, and hybrid fixation methods. Readers will learn how to minimize or avoid potential complications of osteodistraction by using proper preoperative planning and execution. It includes detailed discussions of mandibular lengthening and widening, maxillary orthopedic surgery, knee, and cranial distraction, and more. An extensive collection of case studies collected from world-renowned surgeons demonstrates the clinical application of the various techniques. Features an expert lead author, Dr. Mikhail Samchukov, who studied under Dr. Gavriel Ilizarov, the inventor of the distraction osteogenesis technique. Includes contributions from world renowned experts in the field such as Dr. Cesar Guerrero, Dr. Martin Chin and Dr. Suzanne Stucki-McCormick. Full color illustrations the use of intratraumatomobile devices includes over 70 cases which showcase successes achieved in patients around the world, and demonstrate the before and after of all techniques described. Covers a wide range of information about distraction osteogenesis, from its origins in Siberia, to the latest advancements. The book is divided into 12 sections, making it easier for readers to find key topics of interest. A welcome alternative to the short reviews or large tomes currently on the market. Modeled after Tintinalli's Emergency Medicine Study Guide, this title uses short, concise chapters on a given subject to provide comprehensive coverage of the full range of orthopaedic disorders. The book will appeal to students taking their licensing examinations as well as practitioners who require a review of a selected topic. The ilizarov device has revolutionized the treatment of non-healing fractures and the correction of deformities. This book supplies all the information required in order to use the ilizarov and other external fixation devices optimally, it will serve as an indispensable manual for both trainee and experienced orthopedic surgeons. Biomechanical principles, preoperative preparation, and the use of a system of coordinates to allow safer insertion of K-wires and half pins are thoroughly discussed. External fixation of a variety of fractures in different pathologic settings is then clearly explained in a series of detailed chapters with the aid of high-quality illustrations. Numerous case reports are included to illustrate the results of different treatment methods. In addition, postoperative management and treatment of complications are described. Since the first edition the text has been thoroughly updated, with inclusion of contributions from leading world experts. *Pathophysiology is a vast and rapidly changing subject in every Medical and Allied Health Professional student's programme. This book carefully selects and captures the key components in each of the subjects presented. Each chapter provides fundamental descriptions of diseases followed by current knowledge on the cellular and molecular mechanisms driving the disease processes. *Pathophysiology is an essential text aimed at advancing students' basic physiology knowledge and applying the clinical context. Undergraduates, postgraduates and practicing clinicians alike will find this book invaluable, particularly as it includes enhanced chapters on muscle, nerve and pathophysiological effects of movement, immobility and ageing. For students: "BOOK JACKET. This book contains videos embracing the spectrum of craniofacial surgery. Written by the world's foremost experts, Atlas of Operative Craniofacial Surgery with its accompanying videos is a unique resource that offers the reader a succinct yet comprehensive guide to performing craniofacial operations. In each chapter, renowned surgeons share their strategies for selecting patients, executing effective preoperative planning, comprehending detailed operative techniques, avoiding postoperative complications, diagnosing and much more. Key Features: *The full array of covered topics includes the cranial vault, reconstruction of the facial bones, orbital fracture repair, rhinoplasty, maxillary and mandibular operations, ear reconstruction, and cleft lip and palate repair. Over 1400 intraoperative photos and 300 drawings guide the reader through each operative procedure in a step-by-step fashion. Emphasis on how the procedures are performed, rather than on theory. Includes case studies that show the results of the discussed techniques Accompanied by 20 surgical technique videos Presented in cooperation with the American Society of Maxillofacial Surgeons (ASMS) and the American Society of Craniofacial Surgeons (ASCSF). This beautiful atlas is essential for all those involved with craniofacial surgery, including craniofacial surgeons, craniofacial surgery fellows, maxillofacial residents, and others. An informative and in-depth overview of the many available applications and techniques for limb lengthening and reconstruction, this guide provides step-by-step details on the latest surgical procedures for the correction of limb deformities due to congenital defects, growth disturbances, infection, and trauma in both children and adults. Supplying effective surgical approaches, technical tips, methods to manage complications, and clinical case studies in each chapter, this guide will be a constant companion for all orthopedic, reconstructive, pediatric, foot, ankle, upper extremity, tumor, and trauma surgeons. Covers lengthening of limbs for fracture treatment nonunion osteomyelitis, lengthening deformity correction, etc. In an organized, comprehensive, user-friendly style, this text presents state-of-the-art advances in orthodontics and surgical instrumentation, techniques, and adjunctive cosmetic procedures. It features coverage of conditions common to Class I, II, and III deformities, secondary cleft lip and palate dentofacial deformities, and nasal deformities associated with dentofacial deformities. Most of the chapters cover three major areas: most common orthodontic and surgical treatment of the deformity, adjunctive surgical techniques frequently helpful when added to the common technical approaches, and alternate treatment approaches describing treatment of less common variations of the deformity. * Takes the reader through the entire process from diagnosis of the deformity to postsurgical assessment of the correction. * Provides a detailed discussion of diagnosis and treatment planning of transverse discrepancies in the maxilla and mandible. * User-friendly appendix on facial skeleton growth includes methods of applying growth prediction and treatment planning to patient care. * Organized for quick and easy referral to practical information useful in clinical practice. * Focuses on patient assessment and awareness of psychological needs to encourage consideration of whole patient in treatment of deformities. * Depicts cosmetic procedures used to refine the esthetic results following orthognathic surgery, showing how to achieve overall improved patient results and satisfaction. A work on all aspects of paediatric orthopaedics, with contributions from a wide range of specialists. This book advises the reader how to approach a problem, make a diagnosis and plan a treatment regime. It gives guidance on how to perform routine operations in children's orthopaedics. Based on lectures from the Academy's 15th annual meeting in Las Vegas in 1989, this book covers such topics as the adult foot, ankle fractures, injury of the foot, external fixation, management decisions in complex upper-extremity fractures, gait analysis, amputatio and prosthetic management of the lower limb, skeletal dysplasia, thromboembolic disease, blood and blood products, total shoulder arthroplasty, musculoskeletal sepsis, infections of the hand, and the multiple injured patient. This volume deals with the transosseous external fixation techniques that I have been developing over the course of the past 40 years. During this time, our research in medicine, biology and engineering has led to the evolution of more than 800 unique, highly effective methods of treatment that extend beyond the realm of traumatology and orthopedics. The book features a comprehensive theoretical and clinical description of the biologic laws governing the dependence of the shape-forming processes of bones and joints upon the adequacy of blood supply, as well as a delineation of the effect of tension-stress upon the genesis and growth of tissues. I have included our latest data on tissue growth and regeneration during transosseous osteotomies. The book summarizes the biomechanical principles of application of my apparatus, clinical cases selected from more than 25000 patients illustrate the management of some of the most complex disorders of the locomotor system. New solutions to many therapeutic problems are described. In particular, severe limb trauma with large defects of bone, vessels, nerves and skin can be managed without resort to transplantation. Radial debridement surgery can be followed by a one-step restora tion of the missing tissue, thus decreasing the likelihood of a serious wound infection or an amputation. The best clinically-focused, illustrated reference covering the evaluation, management, and treatment of common orthopedic conditions. Emphasizes the changes in impact of imaging technology on the optimal approach to diagnosis and treatment. Includes a concise review of the basic science underlying current orthopedic surgery practice. Features more than 500 illustrations, an easy-access format, and a valuable chapter on orthopedic surgery in children.