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## Preface

Throughout the long history of military medicine, the advances in the treatment of combat casualties paralleled the development of weapons and their destructive properties. The diversity and gravity of tissue damage depend primarily on the released energy. The use of modern high-velocity military weapons with high-energy potential results in more deep tissue damage than that caused by military weapons used in previous wars. The severe bone and soft tissue loss in patients from modern local war conflicts and terrorist activities requires special and specific approaches and methods of management.

Modern approach of such extensive damage, especially in the management of the limbs involved, requires an appropriate treatment protocol, based on the staging principles of damage control surgery.

Extensive experience of military medical personnel in different modern local military conflicts allowed the implementation of new protocols in each area of treatment including the general stabilization of patients, anesthesia, fluid and bleeding control, and infection prevention.

Simultaneous long-term complex reconstructive operations performed in the acute period immediately after the injury event (“first hit”) prove to be deleterious as a new significant additional traumatic factor (“second hit”) exacerbates both the general condition of the patient and the local status of the injured limb. The focus of this book is staged treatment protocol based on damage control principles.

At present, routes of patients’ evacuation from the battlefield to definitive care involve a number of echelons of medical care, while at each stage treatment procedures are carried out by different medical groups. Thus, in some patients this results in an interruption in the continuity of the complex treatment process.

This book presents an organized, comprehensive approach to war injuries to the limbs and summarizes the authors’ accumulated experience in the complex treatment of severe combat injuries to the limbs. We gathered a multidisciplinary international team of authors with diverse experience in different fields and aspects of the treatment of such challenging injuries. However, most of the chapters are presented by Israeli authors. Due to the difficult local geopolitical conditions, vast experience in the treatment of severe war injuries to the musculoskeletal system is gained. The reality here is different from wars in other war arenas since the small size of the country permits a quick medical evacuation of the battlefield casualties to modern trauma centers within the first hours after injury events. This factor coupled with quality resuscitation, effective general stabilization at the site of injury and during rapid transport, and modern medical equipment allows the saving of the lives of a large number of patients with multiple injuries, particularly those with severe trauma to extremities.

However, management of these patients is performed using a single predetermined plan and under the permanent control of the same reconstructive medicine specialists, starting from the early stages of treatment until the final surgical reconstruction. Moreover, even after discharge from the hospital, most of these patients who posed a surgical challenge continued rehabilitation treatment under the guidance of the operating surgeon with continuous outpatient follow-up at the same trauma center. This not only facilitates the entire treatment process using a single predetermined plan and under unified supervision but also allows observing the treatment's results and, if necessary, to make all timely needed adjustments and corrections. This unique situation allows exercising the healing process in all its phases, starting from the first hours after the injury, observing and studying its results, developing an optimal treatment plan and recommendations for the management of these complex surgical patients, and providing necessary instructions and treatment protocols.

The staged treatment protocol, based on the minimally invasive methods of surgical fixation and the biological principles of tissue reconstruction by distraction tissue genesis using the versatile Ilizarov technique, permits the reconstruction of severely injured limbs and at the same time prevents and avoids serious complications.

We hope that this book will be helpful to orthopaedic, trauma, and military surgeons treating severe high-energy limb trauma, especially limb salvage in severe war injuries, and also elective limb reconstruction surgery and rehabilitation. We dedicate this book to our patients without whose courage, fortitude, and motivation to be rehabilitated our attempts would not have been successful.

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