Pediatric Bone Sarcomas
Editors
José Cañadell · Mikel San-Julian

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Epiphysiolysis Before Excision

Foreword by: Franklin H. Sim

Springer
Sparing of the growth plate is an early feature of diaphyseal and meta-diaphyseal osteosarcoma. Capitalising on this characteristic, Jose Cañadell has developed an innovative technique to preserve the epiphysis while resecting primary bone malignancies lying adjacent to the growth plate of skeletally immature patients. Using external fixation devices, controlled distraction of the epiphysis from the growth plate permits iatrogenic separation of the epiphysis from the affected region. Subsequent resection is enhanced by a safe distal margin and Cañadell’s local control rates attest to the success of the procedure as an oncologically sound technique. The Cañadell technique has been developed through rigorous examination of the behaviour of osteosarcoma, as well as an interrogation of the best modalities for assessing tumour invasion of the growth plate. Combining an innovative treatment philosophy with a sound knowledge of the behaviour of osteosarcoma and basic bone and growth plate biology, as well as an extensive experience with ancillary investigations and adjuvant therapies, Cañadell has developed a robust surgical technique for the management of a challenging tumour in selected patients.

This book is the culmination of Cañadell’s endeavours over the last two decades. It traces the steps that he has taken to validate the safety and efficacy of the Cañadell technique as we know it today. Carefully grouped into rationale chapters, this book guides those with a particular interest in musculoskeletal oncology through a technique that they may find valuable when the goal is epiphyseal sparing surgery. The diagrams are clear and the stepwise description of the technique is logical. The selection of histological and anatomic imaging frames has been careful and clearly highlights the important elements underpinning the success of this technique. As a special feature of this book, Cañadell has even included a question and answer section at the end which aims to test whether the educational objectives of his book are being met.

Jose Cañadell’s book of techniques is unique and innovative and justifies its place on the shelves of institutions which are focused on advancing the treatment of musculoskeletal tumours.

Rochester, Minnessota, USA

Franklin H. Sim
In the last 30 years, the outcomes achieved with patients affected by malignant bone tumours have improved dramatically. Better knowledge of the disease, improvement of imaging methods, new surgical techniques and particularly the advent of chemotherapy have brought about unanticipated therapeutic successes in this kind of patient.

Thirty years ago, physicians were content if they could preserve the life of these patients; nowadays, however, survival rates continue to improve and the challenge for the orthopaedic surgeon is to preserve the limb and its function and to avoid complications. Thirty years ago, anybody who tried to preserve a joint near a bone tumour would have been considered a fool. Nowadays, this is a realistic goal for everybody who treats these patients.

Since 1984, we have been using in our orthopaedics department a technique which has become increasingly popular among surgeons specialized in bone tumours: physeal distraction (epiphysiolysis) before excision to preserve the joint in metaphyseal bone tumours in children. This little book describes the technique and provides a synopsis of why we use it and how we select which patients to use it with.

Pamplona, Spain

José Cañadell
Mikel San-Julian
We like to express our gratitude to everyone who has contributed directly or indirectly to this book, especially to all the team at the Department of Orthopaedic Surgery and Traumatology at the University Clinic of Navarra, whose daily work in the outpatients department, in the operating room and in the laboratory, in conjunction with rigorous research projects, has helped to improve the techniques described and widen their indications.

Our thanks also go to all the specialists from other departments, in particular, the departments of radiology, pediatrics and pathology, who have collaborated with us in this venture, helping us to broaden our perspectives. Whilst this book and the work it outlines is clearly the result of a multidisciplinary effort, there are certain individuals without whom the development of these techniques might never have happened. One of these individuals is Dr. Luis Sierrasésúmaga, Director of the Department of Pediatrics. With his dedication to excellence in research and to the highest standards of treatment and care of children with cancer, he has inspired and supported us throughout our endeavours.

We also thank the nursing personnel: Maite Moyano, Pilar Lacasa, Ana Villanueva, Natividad Iribarren, Carmen Sánchez, Isabel San-Martin and many others, who at all times have been such a dependable and invaluable source of help both to doctors and patients.

Lastly, we like to mention Paz Gúrpide for providing the outline for the book, Javier Gardeta for his presentation of the iconography and David Burdon for his help with translation of the text.
# Contents

1 Treatment of Pediatric Bone Sarcomas ............................................................ 1  
   Luis Sierrasesúmaga-Ariznabarreta and Moira Garraus

2 Molecular Biology of Pediatric Bone Sarcomas .............................................. 19  
   Ana Patiño-Garcia, Marta Zalacain-Diez, and Fernando Lecanda

3 Surgical Options for Limb Salvage in Immature Patients with Extremity Sarcoma ............................... 33  
   Mathew J. Most and Franklin H. Sim

4 Location of Sarcomas Within Bone: The Growth Plate ............................................. 57  
   Francisco Forriol, Mikel San-Julian, and José Cañadell

5 A Histological Study of the Barrier Effect of the Physis Against Metaphyseal Osteosarcoma ..................................................... 71  
   Miguel Angel Idoate, Enrique de-Alava, Julio de Pablos, Maria Dolores Lozano, Jesús Vazquez, and José Cañadell

6 Growth Plate Involvement in Malignant Bone Tumours: Relationship Between Imaging Methods and Histological Findings .......... 79  
   Jesús Dámaso Aquerreta, Mikel San-Julián, Alberto Benito, and José Cañadell

7 Imaging-Based Indications for Resection with Epiphyseal Preservation ................................................................. 89  
   Mikel San-Julian and José Cañadell

8 Conservation of the Epiphysis While Removing Metaphyseal Bone Tumours: Epiphysiolysis Before Excision ..................................................... 101  
   José Cañadell, Mikel San-Julian, Jose A. Cara, and Francisco Forriol
9 Clinical Results ................................................................. 109
   Mikel San-Julian and José Cañadell

10 Other Techniques for Epiphyseal Preservation ......................... 137
    Mikel San-Julian

11 Questions and Answers ........................................................ 145
    Mikel San-Julian

Index ...................................................................................... 151
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†Dr Vázquez died several years ago, but he contributed very much to chapter 5 of this book.