

Contents

| | |
|------------------------------------|------|
| Foreword - R. Cattaneo | VII |
| Foreword - M. A. Catagni..... | VIII |
| Preface - A. Bianchi-Maiocchi..... | X |

General principles

SECTION 1

| | |
|--|----------|
| INDICATIONS | 1 |
| CHAPTER 1 Materials and methods | 3 |
| 1.1 The Ilizarov compression-distraction apparatus | 3 |
| 1.2 Special apparatus for the proximal sites of the femur and humerus..... | 6 |
| 1.3 New accessories | 8 |
| 1.4 Strain analysis | 13 |

Lengthening

SECTION 2

| | |
|--|----|
| CHAPTER 2 Lengthening | 15 |
| Introduction | 15 |
| 2.1 Lengthening of the humerus | 17 |
| 2.2 Lengthening of the radius-ulna | 19 |
| 2.2.1 <i>Isolated radial lengthening</i> | 21 |
| 2.3 Lengthening of the femur..... | 22 |
| 2.4 Lengthening of the tibia-fibula | 25 |
| 2.4.1 <i>Assembly for adults</i> | 25 |
| 2.4.2 <i>Assembly for children</i> | 26 |
| 2.4.3 <i>Bifocal lengthening</i> | 27 |
| Material of use | 29 |

Congenital and acquired deformities

SECTION 3

| | |
|---|----|
| CHAPTER 3 Correction of angular deformities | 31 |
| 3.1 Humerus - Proximal varus - Distal valgus deformities | 31 |
| 3.2 Forearm - Radial Clubhand | 33 |
| 3.3 Femoral correction of genu-valgum..... | 35 |
| 3.4 Tibial angular deformity | 38 |
| 3.4.1 <i>Proximal valgus - Genu valgum</i> | 38 |
| 3.4.2 <i>Tibial Correction of Genu varum</i> | 39 |
| 3.4.3 <i>Pseudarthrosis. Hypertrophic with varus deformity, simultaneous lengthening</i> | 40 |
| 3.4.4 <i>Correction of varus deformity</i> | 42 |
| 3.4.5 <i>Correction of distal varus deformity</i> | 44 |
| Material of use | 46 |

| | | | |
|---------|----------|---|-----------|
| CHAPTER | 4 | Congenital and acquired foot deformities | 49 |
| | 4.1 | Equinus foot | 49 |
| | 4.2 | Clubfoot | 51 |
| | 4.3 | Cavovarus | 53 |

Special techniques

SECTION 4

| | | | |
|---------|----------|---------------------------------|-----------|
| CHAPTER | 5 | Joint contractures | 55 |
| | | Introduction | 55 |
| | 5.1 | Elbow | 55 |
| | 5.2 | Wrist | 57 |
| | 5.3 | Knee | 58 |
| | 5.4 | Ankle (Equinus Foot) | 60 |

Fractures treatment

SECTION 5

| | | | |
|---------|----------|--|-----------|
| CHAPTER | 6 | Fractures | 61 |
| | | Introduction | 61 |
| | 6.1 | Fractures of the humerus | 63 |
| | 6.1.1 | Proximal | 63 |
| | 6.1.2 | Diaphysis | 64 |
| | 6.1.3 | Articular (<i>fractures of the elbow</i>) | 67 |
| | 6.2 | Fractures of the radius-ulna..... | 71 |
| | 6.2.1 | Diaphysis | 71 |
| | 6.2.2 | Distal articular (<i>fractures of the wrist</i>) | 74 |
| | 6.3 | Fractures of the femur | 76 |
| | 6.3.1 | Proximal | 77 |
| | 6.3.2 | Proximal-diaphysis | 78 |
| | 6.3.3 | Diaphysis | 79 |
| | 6.3.4 | Distal articular (<i>fractures of the knee</i>) | 81 |
| | 6.4 | Fractures of the tibia-fibula | 82 |
| | 6.4.1 | Proximal (<i>tibial plateau fractures</i>) | 84 |
| | 6.4.2 | Diaphysis | 86 |
| | 6.4.3 | Distal articular (<i>tibial plafond fractures</i>) | 89 |
| | 6.4.4 | Malleolar fractures | 91 |
| | | Material of use | 93 |

| | | | |
|---------|----------|--|-----------|
| CHAPTER | 7 | Emergency care of open fractures | 97 |
| | 7.1 | Examples of assembly in open fractures of the leg | 98 |
| | 7.2 | Fractures of the humerus | 101 |
| | 7.3 | Fractures of the femur | 103 |
| | 7.4 | Pseudarthroses with loss of bone and soft tissues | 103 |
| | 7.5 | The role of the apparatus in burns and extended loss of skin | 103 |

Pseudarthroses

SECTION 6

| | | |
|---------|---|------------|
| CHAPTER | 8 Pseudarthroses of the humerus, radius/ulna, femur | 105 |
| | Introduction | 105 |
| | 8.1 Pseudarthroses of the humerus | 106 |
| | 8.1.1 <i>Diaphysis</i> | 106 |
| | 8.1.2 <i>With deformity</i> | 108 |
| | 8.1.3 <i>With bone defect</i> | 110 |
| | 8.2 Pseudarthroses of the radius-ulna..... | 112 |
| | 8.2.1 <i>Diaphysis</i> | 112 |
| | 8.2.2 <i>Ulna at two levels</i> | 113 |
| | 8.2.3 <i>Ulnar bone defect</i> | 114 |
| | 8.3 Pseudarthroses of the femur | 116 |
| | 8.3.1 <i>Hypertrophic at middle third (with varus-anteversion deformity)</i> | 116 |
| | 8.3.2 <i>With bone defect</i> | 120 |
| | Material of use | 122 |
| CHAPTER | 9 Pseudarthroses of the tibia | 125 |
| | Introduction | 125 |
| | Levels of the anatomical cuts – Tibia and fibula left | 126 |
| | 9.1 Hypertrophic vascular and stiff. <i>Monofocal treatment with compression</i> | 130 |
| | 9.2 Hypertrophic – Proximal Epiphyseal. <i>Monofocal treatment with compression</i> | 132 |
| | 9.3 Hypertrophic Distal Epiphyseal. <i>Monofocal treatment with compression</i> | 134 |
| | 9.4 Posttraumatic foot deformities – <i>Equinus Foot</i> | 136 |
| | 9.5 Hypertrophic with deformity. <i>Monofocal treatment with deformity correction</i> | 138 |
| | 9.6 Hypertrophic with shortening. <i>Monofocal treatment with distraction alone</i> | 140 |
| | 9.7 Hypotrophic, Lax. <i>Bifocal treatment without bone transport</i> | 142 |
| | 9.8 Hypotrophic with bone loss. <i>Bifocal treatment with bone transport</i> | 146 |
| | 9.9 Atrophic infected. <i>Bifocal treatment with bone transport</i> | 148 |
| | 9.10 Atrophic – Mid-Diaphyseal defect . <i>Converging trifocal treatment</i> | 150 |
| | 9.11 Atrophic – Bone segment shorter. <i>Tandem trifocal treatment</i> | 152 |
| | 9.12 Atrophic with partial bone loss. <i>Treatment with partial bone transport</i> | 154 |

Special devices

SECTION 7

| | | |
|---------|--|------------|
| CHAPTER | 10 Rancho system components | 157 |
| CHAPTER | 11 Small bone fixator | 159 |
| | Introduction | 159 |
| | 11.1 Material and methods | 160 |
| | 11.2 Clinical Examples..... | 162 |
| | 11.2.1 <i>Elbow fractures</i> | 162 |
| | 11.2.2 <i>Isolated radial lengthening-Clubhand</i> | 163 |
| | 11.2.3 <i>Tibia-Fibula distal fractures</i> | 163 |
| | References | 165 |