

# Table of Contents

I     **Shoulder**

1

**Patient Positioning, Arthroscopic Portals, Diagnostic Arthroscopy, Arthroscopic Sliding Knots**

*P. Minzlaff, S. Braun*

1.1

**Patient Positioning**

1.1.1

Beach Chair (Sitting) Position

4

1.1.2

Lateral Decubitus Position

4

1.2

**Arthroscopic Portals**

4

1.3

**Diagnostic Arthroscopy**

4

1.3.1

Diagnostic Inspection/Examination

6

1.4

**Arthroscopic Sliding Knots**

8

1.5

**Tips & Tricks**

8

References

9

2

**Subacromial Space**

11

*M. Feucht, S. Baun*

2.1

**Arthroscopic Subacromial Decompression (ASAD)**

12

2.1.1

Indication

12

2.1.2

Operation Principle

12

2.1.3

Preoperative Assessment

12

2.1.4

Operative Technique

12

2.1.5

Postoperative Management

12

2.1.6

Follow-Up Management

12

2.1.7

Tips & Tricks

13

2.2

**Arthroscopic Resection of AC joint (ARAC)**

14

2.2.1

Indication

14

2.2.2

Operation Principle

14

2.2.3

Preoperative Assessment

14

2.2.4

Operative Technique

15

2.2.5

Postoperative Management

16

2.2.6

Follow-Up Management

16

2.2.7

Tips & Tricks

16

2.3

**AC joint Stabilization (Acute)**

16

2.3.1

Indication

16

2.3.2

Operation Principle

16

2.3.3

Preoperative Assessment

16

2.3.4

Operative Technique

17

2.3.5

Postoperative Management

17

2.3.6

Follow-Up Management

18

2.3.7

Tips & Tricks

18

2.4

**AC joint Stabilization (Chronic)**

21

2.4.1

Indication

21

2.4.2

Operation Principle

21

2.4.3

Preoperative Assessment

21

2.4.4

Operative Technique

22

2.4.5

Postoperative Management

23

2.4.6

Follow-Up Management

24

|       |                                                                           |    |
|-------|---------------------------------------------------------------------------|----|
| 2.4.7 | Tips & Tricks .....                                                       | 24 |
|       | References .....                                                          | 24 |
| 3     | <b>Rotator Cuff Repair</b> .....                                          | 25 |
|       | <i>M. Feucht, S. Baun, P. Minzlaff, N. Rosenstiel, M. Aboalata</i>        |    |
| 3.1   | <b>Repair of the Supraspinatus Tendon</b> .....                           | 27 |
| 3.1.1 | Indication .....                                                          | 27 |
| 3.1.2 | Operation Principle .....                                                 | 27 |
| 3.1.3 | Preoperative Assessment .....                                             | 27 |
| 3.1.4 | Operative Technique .....                                                 | 27 |
| 3.1.5 | Postoperative Management .....                                            | 31 |
| 3.1.6 | Follow-Up Management .....                                                | 31 |
| 3.1.7 | Tips & Tricks .....                                                       | 31 |
| 3.2   | <b>Repair of the Subscapularis Tendon</b> .....                           | 33 |
| 3.2.1 | Indication .....                                                          | 33 |
| 3.2.2 | Operation Principle .....                                                 | 33 |
| 3.2.3 | Preoperative Assessment .....                                             | 33 |
| 3.2.4 | Operative Technique .....                                                 | 34 |
| 3.2.5 | Postoperative Management .....                                            | 36 |
| 3.2.6 | Follow-Up Management .....                                                | 36 |
| 3.2.7 | Tips & Tricks .....                                                       | 36 |
| 3.3   | <b>Repair of the Infraspinatus and Teres Minor Tendons</b> .....          | 38 |
| 3.3.1 | Indication .....                                                          | 38 |
| 3.3.2 | Operation Principle .....                                                 | 38 |
| 3.3.3 | Preoperative Assessment .....                                             | 38 |
| 3.3.4 | Operative Technique .....                                                 | 38 |
| 3.3.5 | Postoperative Management .....                                            | 39 |
| 3.3.6 | Follow-Up Management .....                                                | 39 |
| 3.3.7 | Tips & Tricks .....                                                       | 39 |
| 3.4   | <b>Tenodesis and Tenotomy of the Long Head Biceps Tendon (LHBT)</b> ..... | 39 |
| 3.4.1 | Indication .....                                                          | 39 |
| 3.4.2 | Operation Principle .....                                                 | 39 |
| 3.4.3 | Preoperative Assessment .....                                             | 39 |
| 3.4.4 | Operative Technique .....                                                 | 40 |
| 3.4.5 | Postoperative Management .....                                            | 42 |
| 3.4.6 | Follow-Up Management .....                                                | 42 |
| 3.4.7 | Tips & Tricks .....                                                       | 42 |
| 3.5   | <b>Transfer of the M. Pectoralis Major Tendon</b> .....                   | 44 |
| 3.5.1 | Indication .....                                                          | 44 |
| 3.5.2 | Operation Principle .....                                                 | 44 |
| 3.5.3 | Preoperative Assessment .....                                             | 44 |
| 3.5.4 | Operative Technique .....                                                 | 44 |
| 3.5.5 | Postoperative Management .....                                            | 45 |
| 3.5.6 | Follow-Up Management .....                                                | 45 |
| 3.5.7 | Tips & Tricks .....                                                       | 46 |
| 3.6   | <b>Transfer of the Latissimus Dorsi Tendon</b> .....                      | 46 |
| 3.6.1 | Indication .....                                                          | 46 |
| 3.6.2 | Operation Principle .....                                                 | 46 |
| 3.6.3 | Preoperative Assessment .....                                             | 47 |
| 3.6.4 | Operative Technique .....                                                 | 47 |
| 3.6.5 | Postoperative Management .....                                            | 48 |
| 3.6.6 | Follow-Up Management .....                                                | 48 |

|       |                                                                          |           |
|-------|--------------------------------------------------------------------------|-----------|
| 3.6.7 | Tips & Tricks .....                                                      | 49        |
| 3.7   | <b>Operative Removal of Calcium Deposits (Calcific Tendinitis) .....</b> | <b>49</b> |
| 3.7.1 | Indication.....                                                          | 49        |
| 3.7.2 | Operation Principle.....                                                 | 49        |
| 3.7.3 | Preoperative Assessment .....                                            | 49        |
| 3.7.4 | Operative Technique .....                                                | 51        |
| 3.7.5 | Postoperative Management.....                                            | 51        |
| 3.7.6 | Follow-Up Management .....                                               | 51        |
| 3.7.7 | Tips & Tricks .....                                                      | 51        |
|       | References .....                                                         | 52        |
| 4     | <b>Instability .....</b>                                                 | <b>55</b> |
|       | <i>M. Feucht, S. Braun, N. Rosenstiel</i>                                |           |
| 4.1   | <b>Anterior Shoulder Stabilization .....</b>                             | <b>57</b> |
| 4.1.1 | Indication.....                                                          | 57        |
| 4.1.2 | Operation Principle.....                                                 | 57        |
| 4.1.3 | Preoperative Assessment .....                                            | 57        |
| 4.1.4 | Operative Technique .....                                                | 57        |
| 4.1.5 | Postoperative Management.....                                            | 59        |
| 4.1.6 | Follow-Up Management .....                                               | 59        |
| 4.1.7 | Tips & Tricks.....                                                       | 59        |
| 4.2   | <b>Posterior Shoulder Stabilization.....</b>                             | <b>62</b> |
| 4.2.1 | Indication.....                                                          | 62        |
| 4.2.2 | Operation Principle.....                                                 | 62        |
| 4.2.3 | Preoperative Assessment .....                                            | 62        |
| 4.2.4 | Operative Technique .....                                                | 63        |
| 4.2.5 | Postoperative Management.....                                            | 66        |
| 4.2.6 | Follow-Up Management .....                                               | 66        |
| 4.2.7 | Tips & Tricks .....                                                      | 66        |
| 4.3   | <b>Multidirectional Shoulder Instability .....</b>                       | <b>66</b> |
| 4.3.1 | Indication.....                                                          | 66        |
| 4.3.2 | Operation Principle.....                                                 | 66        |
| 4.3.3 | Preoperative Assessment .....                                            | 66        |
| 4.3.4 | Operative Technique .....                                                | 67        |
| 4.3.5 | Postoperative Management.....                                            | 70        |
| 4.3.6 | Follow-Up Management .....                                               | 70        |
| 4.3.7 | Tips & Tricks .....                                                      | 70        |
| 4.4   | <b>SLAP Lesions Type II–V .....</b>                                      | <b>70</b> |
| 4.4.1 | Indication.....                                                          | 70        |
| 4.4.2 | Operation Principle.....                                                 | 70        |
| 4.4.3 | Preoperative Assessment .....                                            | 71        |
| 4.4.4 | Operative Technique .....                                                | 71        |
| 4.4.5 | Postoperative Management.....                                            | 72        |
| 4.4.6 | Follow-Up Management .....                                               | 72        |
| 4.4.7 | Tips & Tricks.....                                                       | 73        |
| 4.5   | <b>Posterosuperior Impingement .....</b>                                 | <b>73</b> |
| 4.5.1 | Indication.....                                                          | 73        |
| 4.5.2 | Operation Principle.....                                                 | 74        |
| 4.5.3 | Preoperative Assessment .....                                            | 74        |
| 4.5.4 | Operative Technique .....                                                | 75        |
| 4.5.5 | Postoperative Management .....                                           | 75        |
| 4.5.6 | Follow-Up Management .....                                               | 75        |
| 4.5.7 | Tips & Tricks.....                                                       | 75        |

|       |                                                                  |    |
|-------|------------------------------------------------------------------|----|
| 4.6   | <b>Reconstruction of Glenoid Bone Defects</b>                    | 75 |
| 4.6.1 | Indication                                                       | 75 |
| 4.6.2 | Operation Principle                                              | 76 |
| 4.6.3 | Preoperative Assessment                                          | 76 |
| 4.6.4 | Operative Technique                                              | 76 |
| 4.6.5 | Postoperative Management                                         | 78 |
| 4.6.6 | Follow-Up Management                                             | 78 |
| 4.6.7 | Tips & Tricks                                                    | 78 |
| 4.7   | <b>Remplissage of Hill-Sachs Lesions</b>                         | 79 |
| 4.7.1 | Indication                                                       | 79 |
| 4.7.2 | Operation Principle                                              | 79 |
| 4.7.3 | Preoperative Assessment                                          | 79 |
| 4.7.4 | Operative Technique                                              | 81 |
| 4.7.5 | Postoperative Management                                         | 81 |
| 4.7.6 | Follow-Up Management                                             | 81 |
| 4.7.7 | Tips & Tricks                                                    | 82 |
| 4.8   | <b>Laterjet Coracoid Transfer</b>                                | 82 |
| 4.8.1 | Indication                                                       | 82 |
| 4.8.2 | Operation Principle                                              | 82 |
| 4.8.3 | Preoperative Assessment                                          | 83 |
| 4.8.4 | Operative Technique                                              | 85 |
| 4.8.5 | Postoperative Management                                         | 85 |
| 4.8.6 | Follow-Up Management                                             | 85 |
| 4.8.7 | Tips & Tricks                                                    | 85 |
|       | References                                                       | 85 |
| 5     | <b>Chondral and Osteochondral Lesion</b>                         | 87 |
|       | <i>A. Schmitt, S. Vogt</i>                                       |    |
| 5.1   | <b>Microfracture</b>                                             | 88 |
| 5.1.1 | Indication                                                       | 88 |
| 5.1.2 | Operation principle                                              | 88 |
| 5.1.3 | Preoperative Assessment                                          | 88 |
| 5.1.4 | Surgical Technique                                               | 88 |
| 5.1.5 | Postoperative Management                                         | 88 |
| 5.1.6 | Follow-Up Management                                             | 88 |
| 5.1.7 | Tips & Tricks                                                    | 90 |
| 5.2   | <b>Chondrocyte Transplantation (ACT/MACT)</b>                    | 90 |
| 5.2.1 | Indication                                                       | 90 |
| 5.2.2 | Operation Principle                                              | 90 |
| 5.2.3 | Preoperative Assessment                                          | 90 |
| 5.2.4 | Surgical Technique                                               | 91 |
| 5.2.5 | Postoperative Management                                         | 92 |
| 5.2.6 | Follow-Up Management                                             | 92 |
| 5.2.7 | Tips & Tricks                                                    | 92 |
| 5.3   | <b>Autologous Osteochondral Transplantation and Mosaicplasty</b> | 93 |
| 5.3.1 | Indication                                                       | 93 |
| 5.3.2 | Operation Principle                                              | 94 |
| 5.3.3 | Preoperative Assessment                                          | 94 |
| 5.3.4 | Surgical Technique                                               | 94 |
| 5.3.5 | Postoperative Management                                         | 95 |
| 5.3.6 | Follow-Up Management                                             | 95 |
| 5.3.7 | Tips & Tricks                                                    | 95 |
|       | References                                                       | 95 |

|              |                                                    |            |
|--------------|----------------------------------------------------|------------|
| <b>6</b>     | <b>Shoulder Osteoarthritis</b> .....               | <b>97</b>  |
|              | <i>I. Banke, S. Lorenz</i>                         |            |
| <b>6.1</b>   | <b>Resurfacing Arthroplasty</b> .....              | <b>98</b>  |
| <b>6.1.1</b> | Indication .....                                   | <b>98</b>  |
| <b>6.1.2</b> | Operation Principle .....                          | <b>98</b>  |
| <b>6.1.3</b> | Preoperative Assessment .....                      | <b>98</b>  |
| <b>6.1.4</b> | Operative Technique .....                          | <b>98</b>  |
| <b>6.1.5</b> | Postoperative Management .....                     | <b>98</b>  |
| <b>6.1.6</b> | Follow-Up Management .....                         | <b>99</b>  |
| <b>6.1.7</b> | Tips & Tricks .....                                | <b>100</b> |
|              | References .....                                   | <b>100</b> |
| <b>7</b>     | <b>Miscellaneous</b> .....                         | <b>101</b> |
|              | <i>S. Lorenz, M. Feucht, T. Kraus</i>              |            |
| <b>7.1</b>   | <b>Arthrolysis</b> .....                           | <b>102</b> |
| <b>7.1.1</b> | Indication .....                                   | <b>102</b> |
| <b>7.1.2</b> | Operation Principle .....                          | <b>102</b> |
| <b>7.1.3</b> | Preoperative Assessment .....                      | <b>102</b> |
| <b>7.1.4</b> | Surgical Technique .....                           | <b>102</b> |
| <b>7.1.5</b> | Postoperative Management .....                     | <b>104</b> |
| <b>7.1.6</b> | Follow-Up Management .....                         | <b>104</b> |
| <b>7.1.7</b> | Tips & Tricks .....                                | <b>105</b> |
| <b>7.2</b>   | <b>Repair of the Pectoralis Major Tendon</b> ..... | <b>105</b> |
| <b>7.2.1</b> | Indication .....                                   | <b>105</b> |
| <b>7.2.2</b> | Operation Principle .....                          | <b>106</b> |
| <b>7.2.3</b> | Preoperative Assessment .....                      | <b>106</b> |
| <b>7.2.4</b> | Surgical Technique .....                           | <b>106</b> |
| <b>7.2.5</b> | Postoperative Management .....                     | <b>107</b> |
| <b>7.2.6</b> | Follow-Up Management .....                         | <b>107</b> |
| <b>7.3</b>   | <b>Suprascapular Nerve Release</b> .....           | <b>108</b> |
| <b>7.3.1</b> | Indication .....                                   | <b>108</b> |
| <b>7.3.2</b> | Operation Principle .....                          | <b>108</b> |
| <b>7.3.3</b> | Preoperative Assessment .....                      | <b>108</b> |
| <b>7.3.4</b> | Operative Technique .....                          | <b>109</b> |
| <b>7.3.5</b> | Postoperative Management .....                     | <b>110</b> |
| <b>7.3.6</b> | Follow-Up Management .....                         | <b>110</b> |
|              | References .....                                   | <b>110</b> |

## **II Elbow**

|              |                                                                           |            |
|--------------|---------------------------------------------------------------------------|------------|
| <b>8</b>     | <b>Positioning, Arthroscopic Portals and Diagnostic Arthroscopy</b> ..... | <b>113</b> |
|              | <i>J. Plath, A. Lenich, S. Vogt</i>                                       |            |
| <b>8.1</b>   | <b>Patient Positioning</b> .....                                          | <b>114</b> |
| <b>8.1.1</b> | Supine Position .....                                                     | <b>114</b> |
| <b>8.1.2</b> | Prone Position .....                                                      | <b>114</b> |
| <b>8.1.3</b> | Lateral Decubitus Position .....                                          | <b>114</b> |
| <b>8.2</b>   | <b>Arthroscopic Portals</b> .....                                         | <b>114</b> |
| <b>8.2.1</b> | Anterolateral Portal .....                                                | <b>114</b> |
| <b>8.2.2</b> | Anteromedial Portal .....                                                 | <b>114</b> |
| <b>8.2.3</b> | Superoposterior Portal .....                                              | <b>114</b> |

|        |                                                                              |     |
|--------|------------------------------------------------------------------------------|-----|
| 8.2.4  | Posterolateral Portal (Mid-Lateral Portal) .....                             | 115 |
| 8.2.5  | High Posterolateral Portal .....                                             | 115 |
| 8.3    | Diagnostic Arthroscopy .....                                                 | 115 |
| 8.4    | Tips & Tricks .....                                                          | 117 |
|        | References .....                                                             | 118 |
| 9      | <b>Osteochondral Lesion</b> .....                                            | 119 |
|        | <i>J. Plath, S. Vogt</i>                                                     |     |
| 9.1    | <b>Autologous Osteochondral Transplantation and Mosaicplasty</b> .....       | 120 |
| 9.1.1  | Indication .....                                                             | 120 |
| 9.1.2  | Operation Principle .....                                                    | 120 |
| 9.1.3  | Preoperative Assessment .....                                                | 120 |
| 9.1.4  | Surgical Technique .....                                                     | 120 |
| 9.1.5  | Postoperative Management .....                                               | 120 |
| 9.1.6  | Follow-Up Management .....                                                   | 120 |
| 9.1.7  | Tips & Tricks .....                                                          | 121 |
|        | References .....                                                             | 122 |
| 10     | <b>Tendons</b> .....                                                         | 123 |
|        | <i>J. Plath, S. Vogt, A. Lenich</i>                                          |     |
| 10.1   | <b>Repair of the Biceps Tendon</b> .....                                     | 125 |
| 10.1.1 | Indication .....                                                             | 125 |
| 10.1.2 | Operation Principle .....                                                    | 125 |
| 10.1.3 | Preoperative Assessment .....                                                | 125 |
| 10.1.4 | Surgical Technique .....                                                     | 125 |
| 10.1.5 | Postoperative Management .....                                               | 126 |
| 10.1.6 | Follow-Up Management .....                                                   | 126 |
| 10.1.7 | Tips & Tricks .....                                                          | 128 |
| 10.2   | <b>Repair of the Triceps Tendon</b> .....                                    | 128 |
| 10.2.1 | Indication .....                                                             | 128 |
| 10.2.2 | Operation Principle .....                                                    | 128 |
| 10.2.3 | Preoperative Assessment .....                                                | 128 |
| 10.2.4 | Surgical Technique .....                                                     | 129 |
| 10.2.5 | Postoperative Management .....                                               | 129 |
| 10.2.6 | Follow-Up Management .....                                                   | 129 |
| 10.2.7 | Tips & Tricks .....                                                          | 129 |
| 10.3   | <b>Surgical Treatment of Lateral Epicondylitis (Hohmann Technique)</b> ..... | 129 |
| 10.3.1 | Indication .....                                                             | 129 |
| 10.3.2 | Operation Principle .....                                                    | 131 |
| 10.3.3 | Preoperative Assessment .....                                                | 131 |
| 10.3.4 | Surgical Technique .....                                                     | 131 |
| 10.3.5 | Postoperative Management .....                                               | 132 |
| 10.3.6 | Follow-Up Management .....                                                   | 132 |
| 10.3.7 | Tips & Tricks .....                                                          | 132 |
| 10.4   | <b>Radial Stabilization</b> .....                                            | 133 |
| 10.4.1 | Indication .....                                                             | 133 |
| 10.4.2 | Operation Principle .....                                                    | 133 |
| 10.4.3 | Preoperative Assessment .....                                                | 133 |
| 10.4.4 | Surgical Technique .....                                                     | 133 |
| 10.4.5 | Postoperative Management .....                                               | 135 |
| 10.4.6 | Follow-Up Management .....                                                   | 135 |
| 10.4.7 | Tips & Tricks .....                                                          | 135 |

|        |                          |     |
|--------|--------------------------|-----|
| 10.5   | <b>Arthrolysis</b>       | 136 |
| 10.5.1 | Indication               | 136 |
| 10.5.2 | Operation Principle      | 136 |
| 10.5.3 | Preoperative Assessment  | 136 |
| 10.5.4 | Surgical Technique       | 137 |
| 10.5.5 | Postoperative Management | 138 |
| 10.5.6 | Follow-Up Management     | 139 |
| 10.5.7 | Tips & Tricks            | 139 |
|        | References               | 139 |

### III Hip and Pelvis

|        |                                                                          |     |
|--------|--------------------------------------------------------------------------|-----|
| 11     | <b>Patient Positioning, Portals, and Impingement</b>                     | 143 |
|        | <i>C. Mella</i>                                                          |     |
| 11.1   | <b>Patient Positioning, Arthroscopic Portals, Diagnostic Arthroscopy</b> | 144 |
| 11.1.1 | Indication                                                               | 144 |
| 11.1.2 | Patient Positioning and Preparation                                      | 144 |
| 11.1.3 | Arthroscopic Portals                                                     | 144 |
| 11.1.4 | Diagnostic Arthroscopy/Arthroscopic Examination                          | 147 |
| 11.1.5 | Postoperative Management                                                 | 149 |
| 11.1.6 | Tips & Tricks                                                            | 149 |
| 11.2   | <b>Femoroacetabular Impingement</b>                                      | 149 |
| 11.2.1 | Indications                                                              | 149 |
| 11.2.2 | Operation Principle                                                      | 149 |
| 11.2.3 | Preoperative Assessment                                                  | 149 |
| 11.2.4 | Surgical Technique                                                       | 151 |
| 11.2.5 | Postoperative Management                                                 | 155 |
| 11.2.6 | Follow-Up Management                                                     | 155 |
| 11.2.7 | Tips & Tricks                                                            | 155 |
| 11.3   | <b>Labral Reconstruction/Repair/Refixation</b>                           | 160 |
| 11.3.1 | Indication                                                               | 160 |
| 11.3.2 | Operation Principle                                                      | 160 |
| 11.3.3 | Preoperative Assessment                                                  | 160 |
| 11.3.4 | Surgical Technique                                                       | 160 |
| 11.3.5 | Postoperative Management                                                 | 172 |
| 11.3.6 | Follow-Up Management                                                     | 172 |
|        | References                                                               | 172 |
| 12     | <b>Tendons</b>                                                           | 173 |
|        | <i>T. Saier, P. Brucker, K. Müller-Wohlfahrt</i>                         |     |
| 12.1   | <b>Proximal Hamstring Tendons Repair</b>                                 | 174 |
| 12.1.1 | Indication                                                               | 174 |
| 12.1.2 | Operation Principle                                                      | 174 |
| 12.1.3 | Preoperative Assessment                                                  | 174 |
| 12.1.4 | Surgical Technique                                                       | 174 |
| 12.1.5 | Postoperative Management                                                 | 177 |
| 12.1.6 | Follow-Up Management                                                     | 177 |
| 12.1.7 | Tips & Tricks                                                            | 178 |
| 12.2   | <b>Rectus Femoris Tendon Refixation</b>                                  | 178 |
| 12.2.1 | Indication                                                               | 178 |

|        |                                                 |     |
|--------|-------------------------------------------------|-----|
| 12.2.2 | Operation Principle.....                        | 178 |
| 12.2.3 | Preoperative Assessment .....                   | 178 |
| 12.2.4 | Surgical Technique .....                        | 179 |
| 12.2.5 | Postoperative Management.....                   | 179 |
| 12.2.6 | Follow-Up Management .....                      | 179 |
| 12.2.7 | Tips & Tricks.....                              | 180 |
| 12.3   | <b>Refixation of the Adductor Tendons</b> ..... | 180 |
| 12.3.1 | Indication.....                                 | 180 |
| 12.3.2 | Operation Principle.....                        | 180 |
| 12.3.3 | Preoperative Assessment .....                   | 180 |
| 12.3.4 | Surgical Technique .....                        | 181 |
| 12.3.5 | Postoperative Management.....                   | 181 |
| 12.3.6 | Follow-Up Management .....                      | 181 |
| 12.3.7 | Tips & Tricks.....                              | 182 |
|        | References .....                                | 182 |

## IV Knee

|        |                                                                                                               |     |
|--------|---------------------------------------------------------------------------------------------------------------|-----|
| 13     | <b>Patient Positioning, Arthroscopic Portals, Diagnostic Arthroscopy, and Tendon (Graft) Harvesting</b> ..... | 185 |
|        | <i>M. Feucht, S. Döbele, S. Hinterwimmer</i>                                                                  |     |
| 13.1   | <b>Patient Positioning</b> .....                                                                              | 186 |
| 13.2   | <b>Arthroscopic Portals</b> .....                                                                             | 186 |
| 13.2.1 | Anterolateral Portal.....                                                                                     | 186 |
| 13.2.2 | Anteromedial Portal .....                                                                                     | 186 |
| 13.2.3 | Central (Transpatellar) Portal.....                                                                           | 186 |
| 13.2.4 | Accessory Medial and Lateral Portals .....                                                                    | 186 |
| 13.2.5 | Posteromedial Portal .....                                                                                    | 186 |
| 13.2.6 | Posterolateral Portal .....                                                                                   | 186 |
| 13.2.7 | Lateral and Medial Suprapatellar Portals .....                                                                | 189 |
| 13.3   | <b>Diagnostic Arthroscopy</b> .....                                                                           | 189 |
| 13.4   | <b>Tendon (Graft) Harvesting</b> .....                                                                        | 189 |
| 13.4.1 | Harvesting the Semitendinosus and Gracilis .....                                                              | 189 |
| 13.4.2 | Harvesting of the Quadriceps Tendon .....                                                                     | 190 |
| 13.5   | <b>Tips &amp; Tricks</b> .....                                                                                | 191 |
|        | References .....                                                                                              | 192 |
| 14     | <b>Meniscus</b> .....                                                                                         | 193 |
|        | <i>S. Döbele, S. Hinterwimmer, G. Meidinger</i>                                                               |     |
| 14.1   | <b>Meniscectomy</b> .....                                                                                     | 194 |
| 14.1.1 | Indication.....                                                                                               | 194 |
| 14.1.2 | Operation Principle.....                                                                                      | 194 |
| 14.1.3 | Preoperative Assessment .....                                                                                 | 194 |
| 14.1.4 | Surgical Technique .....                                                                                      | 194 |
| 14.1.5 | Postoperative Management .....                                                                                | 194 |
| 14.1.6 | Follow-up Management .....                                                                                    | 195 |
| 14.1.7 | Tips & Tricks.....                                                                                            | 195 |
| 14.2   | <b>Meniscal Repair and Meniscal Root Fixation</b> .....                                                       | 197 |
| 14.2.1 | Indication .....                                                                                              | 197 |
| 14.2.2 | Operation Principle.....                                                                                      | 197 |

14.2.3 Preoperative Assessment .....198

14.2.4 Surgical Technique .....198

14.2.5 Postoperative Management .....201

14.2.6 Follow-up Management .....205

14.2.7 Tips & Tricks.....205

14.3 Meniscus Replacement .....206

14.3.1 Indication .....206

14.3.2 Operation Principle .....206

14.3.3 Preoperative Assessment .....206

14.3.4 Surgical Technique .....207

14.3.5 Postoperative Management .....208

14.3.6 Follow-up Management .....208

14.3.7 Tips & Tricks.....208

References.....210

15 Ligaments .....211

*M. Feucht, S. Hinterwimmer, S. Döbele, G. Meidinger*

15.1 ACL Reconstruction .....213

15.1.1 Indication.....213

15.1.2 Operation Principle.....213

15.1.3 Preoperative Assessment .....213

15.1.4 Surgical Technique .....213

15.1.5 Postoperative Management.....219

15.1.6 Follow-up Management .....220

15.1.7 Tips & Tricks.....220

15.2 ACL Revision and Bone Grafting of the Tunnels .....220

15.2.1 Indication .....220

15.2.2 Operation Principle .....221

15.2.3 Preoperative Assessment .....221

15.2.4 Surgical Technique .....222

15.2.5 Postoperative Management.....225

15.2.6 Follow-up Management .....225

15.2.7 Tips & Tricks.....226

15.3 Tibial Eminence Fracture .....227

15.3.1 Indication.....227

15.3.2 Operation Principle .....227

15.3.3 Preoperative Assessment .....227

15.3.4 Surgical Technique .....227

15.3.5 Postoperative Management.....228

15.3.6 Follow-up Management .....228

15.3.7 Tips & Tricks.....228

15.4 PCL Reconstruction .....228

15.4.1 Indication.....228

15.4.2 Operation Principle.....230

15.4.3 Preoperative Assessment .....231

15.4.4 Surgical Technique .....231

15.4.5 Postoperative Management.....236

15.4.6 Follow-up Management .....236

15.4.7 Tips & Tricks.....236

15.5 Posterolateral Reconstruction .....237

15.5.1 Indication .....237

15.5.2 Operation Principle .....237

|        |                                                                   |     |
|--------|-------------------------------------------------------------------|-----|
| 15.5.3 | Preoperative Assessment .....                                     | 237 |
| 15.5.4 | Surgical Technique .....                                          | 239 |
| 15.5.5 | Postoperative Management .....                                    | 241 |
| 15.5.6 | Follow-up Management .....                                        | 241 |
| 15.5.7 | Tips & Tricks .....                                               | 241 |
| 15.6   | <b>Medial Collateral Ligament Reconstruction</b> .....            | 242 |
| 15.6.1 | Indication .....                                                  | 242 |
| 15.6.2 | Operation Principle .....                                         | 242 |
| 15.6.3 | Preoperative Assessment .....                                     | 242 |
| 15.6.4 | Surgical Technique .....                                          | 242 |
| 15.6.5 | Postoperative Management .....                                    | 243 |
| 15.6.6 | Follow-up Management .....                                        | 243 |
| 15.6.7 | Tips & Tricks .....                                               | 243 |
|        | References .....                                                  | 244 |
| 16     | <b>Tendons</b> .....                                              | 245 |
|        | <i>T. Saier, P. Brucker</i>                                       |     |
| 16.1   | <b>Quadriceps Tendon Repair</b> .....                             | 246 |
| 16.1.1 | Indication .....                                                  | 246 |
| 16.1.2 | Operation Principle .....                                         | 246 |
| 16.1.3 | Preoperative Assessment .....                                     | 246 |
| 16.1.4 | Surgical Technique .....                                          | 246 |
| 16.1.5 | Postoperative Management .....                                    | 246 |
| 16.1.6 | Follow-Up Management .....                                        | 247 |
| 16.1.7 | Tips & Tricks .....                                               | 247 |
| 16.2   | <b>Patellar Tendon Repair</b> .....                               | 247 |
| 16.2.1 | Indication .....                                                  | 247 |
| 16.2.2 | Operation Principle .....                                         | 247 |
| 16.2.3 | Preoperative Assessment .....                                     | 247 |
| 16.2.4 | Surgical Technique .....                                          | 250 |
| 16.2.5 | Postoperative Management .....                                    | 250 |
| 16.2.6 | Follow-Up Management .....                                        | 251 |
| 16.2.7 | Tips & Tricks .....                                               | 251 |
| 16.3   | <b>Repair of the Distal Hamstring Tendons</b> .....               | 252 |
| 16.3.1 | Indication .....                                                  | 252 |
| 16.3.2 | Operation Principle .....                                         | 252 |
| 16.3.3 | Preoperative Assessment .....                                     | 252 |
| 16.3.4 | Surgical Technique .....                                          | 252 |
| 16.3.5 | Postoperative Management .....                                    | 252 |
| 16.3.6 | Follow-Up Management .....                                        | 252 |
| 16.3.7 | Tips & Tricks .....                                               | 253 |
|        | References .....                                                  | 253 |
| 17     | <b>Patella</b> .....                                              | 255 |
|        | <i>M. Feucht, S. Hinterwimmer, G. Meidinger</i>                   |     |
| 17.1   | <b>Reconstruction of the Medial Patellofemoral Ligament</b> ..... | 256 |
| 17.1.1 | Indication .....                                                  | 256 |
| 17.1.2 | Operation Principle .....                                         | 256 |
| 17.1.3 | Preoperative Assessment .....                                     | 256 |
| 17.1.4 | Surgical Technique .....                                          | 256 |
| 17.1.5 | Postoperative Management .....                                    | 260 |
| 17.1.6 | Follow-up Management .....                                        | 260 |

|        |                                                                                               |     |
|--------|-----------------------------------------------------------------------------------------------|-----|
| 17.1.7 | Tips & Tricks .....                                                                           | 260 |
| 17.2   | <b>Trochleoplasty</b> .....                                                                   | 260 |
| 17.2.1 | Indication .....                                                                              | 260 |
| 17.2.2 | Operation Principle .....                                                                     | 260 |
| 17.2.3 | Preoperative Assessment .....                                                                 | 261 |
| 17.2.4 | Surgical Technique .....                                                                      | 261 |
| 17.2.5 | Postoperative Management .....                                                                | 262 |
| 17.2.6 | Follow-up Management .....                                                                    | 262 |
| 17.3   | <b>Lateral Release and Lateral Retinaculum Lengthening</b> .....                              | 262 |
| 17.3.1 | Indication .....                                                                              | 262 |
| 17.3.2 | Preoperative Assessment .....                                                                 | 264 |
| 17.3.3 | Preoperative Preparation .....                                                                | 264 |
| 17.3.4 | Surgical Technique .....                                                                      | 264 |
| 17.3.5 | Postoperative Management .....                                                                | 265 |
| 17.3.6 | Follow-up Management .....                                                                    | 265 |
| 17.3.7 | Tips & Tricks .....                                                                           | 265 |
| 17.4   | <b>Tibial Tuberosity Transfer</b> .....                                                       | 266 |
| 17.4.1 | Indication .....                                                                              | 266 |
| 17.4.2 | Operation Principle .....                                                                     | 266 |
| 17.4.3 | Preoperative Assessment .....                                                                 | 266 |
| 17.4.4 | Surgical Technique .....                                                                      | 266 |
| 17.4.5 | Postoperative Management .....                                                                | 268 |
| 17.4.6 | Follow-up Management .....                                                                    | 268 |
|        | References .....                                                                              | 268 |
| 18     | <b>Chondral and Osteochondral Lesions</b> .....                                               | 271 |
|        | <i>M. Berninger, S. Vogt</i>                                                                  |     |
| 18.1   | <b>Microfracture</b> .....                                                                    | 272 |
| 18.1.1 | Indication .....                                                                              | 272 |
| 18.1.2 | Operation Principle .....                                                                     | 272 |
| 18.1.3 | Preoperative Assessment .....                                                                 | 272 |
| 18.1.4 | Surgical Technique .....                                                                      | 272 |
| 18.1.5 | Postoperative Management .....                                                                | 272 |
| 18.1.6 | Follow-Up Management .....                                                                    | 273 |
| 18.1.7 | Tips & Tricks .....                                                                           | 273 |
| 18.2   | <b>Chondrocyte Transplantation</b> .....                                                      | 274 |
| 18.2.1 | Indication .....                                                                              | 274 |
| 18.2.2 | Operation Principle .....                                                                     | 274 |
| 18.2.3 | Preoperative Assessment .....                                                                 | 275 |
| 18.2.4 | Surgical Technique .....                                                                      | 276 |
| 18.2.5 | Postoperative Management .....                                                                | 277 |
| 18.2.6 | Follow-Up Management .....                                                                    | 277 |
| 18.2.7 | Tips & Tricks .....                                                                           | 278 |
| 18.3   | <b>Autologous Osteochondral Transplantation</b> .....                                         | 278 |
| 18.3.1 | Indication .....                                                                              | 278 |
| 18.3.2 | Operation Principle .....                                                                     | 279 |
| 18.3.3 | Preoperative Assessment .....                                                                 | 279 |
| 18.3.4 | Surgical Technique .....                                                                      | 279 |
| 18.3.5 | Postoperative Management .....                                                                | 283 |
| 18.3.6 | Follow-Up Management .....                                                                    | 283 |
| 18.3.7 | Tips & Tricks .....                                                                           | 285 |
| 18.4   | <b>Cancellous Bone Grafting and Chondrocytes Transplantation with Collagen Membrane</b> ..... | 285 |

|        |                                                         |     |
|--------|---------------------------------------------------------|-----|
| 18.4.1 | Indications .....                                       | 285 |
| 18.4.2 | Operation Principle .....                               | 285 |
| 18.4.3 | Preoperative Assessment .....                           | 286 |
| 18.4.4 | Surgical Technique .....                                | 286 |
| 18.4.5 | Postoperative Management .....                          | 286 |
| 18.4.6 | Follow-Up Management .....                              | 286 |
| 18.4.7 | Tips & Tricks .....                                     | 287 |
|        | References .....                                        | 288 |
| 19     | <b>Osteotomy</b> .....                                  | 289 |
|        | <i>M. Feucht, S. Hinterwimmer</i>                       |     |
| 19.1   | <b>High Tibial Osteotomy (Valgus Producing)</b> .....   | 290 |
| 19.1.1 | Indication .....                                        | 290 |
| 19.1.2 | Operation Principle .....                               | 290 |
| 19.1.3 | Preoperative Assessment .....                           | 290 |
| 19.1.4 | Surgical Technique .....                                | 292 |
| 19.1.5 | Postoperative Management .....                          | 295 |
| 19.1.6 | Follow-up Management .....                              | 295 |
| 19.1.7 | Tips & Tricks .....                                     | 295 |
| 19.2   | <b>Distal Femoral Osteotomy (Varus Producing)</b> ..... | 297 |
| 19.2.1 | Indication .....                                        | 297 |
| 19.2.2 | Operation Principle .....                               | 297 |
| 19.2.3 | Preoperative Assessment .....                           | 297 |
| 19.2.4 | Surgical Technique .....                                | 299 |
| 19.2.5 | Postoperative Management .....                          | 300 |
| 19.2.6 | Follow-up Management .....                              | 300 |
| 19.2.7 | Tips & Tricks .....                                     | 300 |
|        | References .....                                        | 301 |
| 20     | <b>Gonarthrosis</b> .....                               | 303 |
|        | <i>T. Kraus, I. Banke, S. Lorenz,</i>                   |     |
| 20.1   | <b>Tibiofemoral Resurfacing Arthroplasty</b> .....      | 304 |
| 20.1.1 | Indication .....                                        | 304 |
| 20.1.2 | Operation Principle .....                               | 304 |
| 20.1.3 | Preoperative Assessment .....                           | 304 |
| 20.1.4 | Surgical Technique .....                                | 304 |
| 20.1.5 | Postoperative Management .....                          | 304 |
| 20.1.6 | Follow-up Management .....                              | 304 |
| 20.2   | <b>Patellofemoral Resurfacing</b> .....                 | 306 |
| 20.2.1 | Indication .....                                        | 306 |
| 20.2.2 | Operation Principle .....                               | 306 |
| 20.2.3 | Preoperative Assessment .....                           | 306 |
| 20.2.4 | Surgical Technique .....                                | 307 |
| 20.2.5 | Postoperative Management .....                          | 307 |
| 20.2.6 | Follow-up Management .....                              | 307 |
| 20.2.7 | Tips & Tricks .....                                     | 307 |
| 20.3   | <b>Arthrolysis</b> .....                                | 307 |
| 20.3.1 | Indication .....                                        | 307 |
| 20.3.2 | Operation Principle .....                               | 307 |
| 20.3.3 | Preoperative Assessment .....                           | 310 |
| 20.3.4 | Surgical Technique .....                                | 311 |
| 20.3.5 | Postoperative Management .....                          | 311 |

|        |                            |     |
|--------|----------------------------|-----|
| 20.3.6 | Follow-up Management ..... | 311 |
| 20.3.7 | Tips & Tricks .....        | 312 |
|        | References .....           | 312 |

**V     Ankle and Foot**

|        |                                                                                |     |
|--------|--------------------------------------------------------------------------------|-----|
| 21     | <b>Patient Positioning, Arthroscopic Portals, Diagnostic Arthroscopy</b> ..... | 315 |
|        | <i>R. Schuh, S. Hofstätter, H.-J. Trnka</i>                                    |     |
| 21.1   | <b>Patient Positioning</b> .....                                               | 316 |
| 21.2   | <b>Distraction</b> .....                                                       | 316 |
| 21.3   | <b>Arthroscopic Portals</b> .....                                              | 316 |
| 21.3.1 | Anteromedial Portal .....                                                      | 316 |
| 21.3.2 | Anterolateral Portal .....                                                     | 316 |
| 21.3.3 | Posteromedial and Posterolateral Portal .....                                  | 316 |
| 21.4   | <b>Diagnostic Arthroscopy</b> .....                                            | 316 |
| 21.4.1 | Anterior Compartment .....                                                     | 316 |
| 21.4.2 | Posterior Coaxial Portals .....                                                | 317 |
| 21.4.3 | Posterior Compartment and Hind Foot .....                                      | 317 |
| 21.4.4 | Tips & Tricks .....                                                            | 320 |
|        | References .....                                                               | 320 |
| 22     | <b>Achilles Tendon</b> .....                                                   | 321 |
|        | <i>S. Hofstätter R. Schuh, H.-J. Trnka</i>                                     |     |
| 22.1   | <b>Achilles Tendon Repair (Acute Rupture)</b> .....                            | 322 |
| 22.1.1 | Indication .....                                                               | 322 |
| 22.1.2 | Operation Principle .....                                                      | 322 |
| 22.1.3 | Preoperative Assessment .....                                                  | 322 |
| 22.1.4 | Surgical Technique .....                                                       | 322 |
| 22.1.5 | Postoperative Management .....                                                 | 324 |
| 22.1.6 | Follow-Up Management .....                                                     | 324 |
| 22.1.7 | Tips & Tricks .....                                                            | 326 |
| 22.2   | <b>Achilles Tendon Reconstruction (Chronic Rupture)</b> .....                  | 326 |
| 22.2.1 | Indication .....                                                               | 326 |
| 22.2.2 | Operation Principle .....                                                      | 326 |
| 22.2.3 | Preoperative Assessment .....                                                  | 326 |
| 22.2.4 | Surgical Technique .....                                                       | 327 |
| 22.2.5 | Postoperative Management .....                                                 | 329 |
| 22.2.6 | Follow-Up Management .....                                                     | 329 |
| 22.2.7 | Tips & Tricks .....                                                            | 329 |
| 22.3   | <b>Achillodynia and Achilles Tendonitis</b> .....                              | 329 |
| 22.3.1 | Indication .....                                                               | 329 |
| 22.3.2 | Operation Principle .....                                                      | 329 |
| 22.3.3 | Preoperative Assessment .....                                                  | 329 |
| 22.3.4 | Surgical Technique .....                                                       | 330 |
| 22.3.5 | Postoperative Management .....                                                 | 330 |
| 22.3.6 | Follow-Up Management .....                                                     | 330 |
| 22.3.7 | Tips & Tricks .....                                                            | 330 |
| 22.4   | <b>Resection of Haglund's Deformity</b> .....                                  | 330 |
| 22.4.1 | Indication .....                                                               | 330 |
| 22.4.2 | Operation Principle .....                                                      | 330 |
| 22.4.3 | Preoperative Assessment .....                                                  | 331 |

22.4.4 Surgical Technique .....331

22.4.5 Postoperative Management .....334

22.4.6 Follow-Up Management .....334

22.4.7 Tips & Tricks .....334

References .....334

23 **Instability** .....335

*H.-J. Trnka, M. Feucht, S. Hofstätter, R. Schuh*

23.1 **Lateral Ligament Reconstruction** .....336

23.1.1 Indication .....336

23.1.2 Operation Principle .....336

23.1.3 Preoperative Assessment .....336

23.1.4 Surgical Technique .....336

23.1.5 Postoperative Management .....339

23.1.6 Follow-up Management .....339

23.1.7 Tips & Tricks .....339

23.2 **Syndesmosis Reconstruction** .....339

23.2.1 Indication .....339

23.2.2 Operation Principle .....339

23.2.3 Preoperative Assessment .....339

23.2.4 Surgical Technique .....341

23.2.5 Postoperative Management .....342

23.2.6 Follow-Up Management .....342

23.3 **Stabilization of the Peroneal Tendons** .....343

23.3.1 Indication .....343

23.3.2 Operation Principle .....343

23.3.3 Preoperative Assessment .....343

23.3.4 Surgical Technique .....343

23.3.5 Postoperative Management .....344

23.3.6 Follow-up Management .....344

23.3.7 Tips & Tricks .....344

References .....345

24 **Chondral and Osteochondral Lesions** .....347

*A. Schmitt, S. Vogt*

24.1 **Microfracture** .....348

24.1.1 Indication .....348

24.1.2 Operation Principle .....348

24.1.3 Preoperative Assessment .....348

24.1.4 Surgical Technique .....348

24.1.5 Postoperative Management .....348

24.1.6 Follow-Up Management .....349

24.1.7 Tips & Tricks .....349

24.2 **Autologous Osteochondral Transplantation** .....350

24.2.1 Indication .....350

24.2.2 Operation Principle .....350

24.2.3 Preoperative Assessment .....350

24.2.4 Surgical Technique .....351

24.2.5 Postoperative Management .....353

24.2.6 Follow-Up Management .....353

24.2.7 Tips & Tricks .....354

References .....354

|        |                                                                  |     |
|--------|------------------------------------------------------------------|-----|
| 25     | <b>Arthrosis</b> .....                                           | 355 |
|        | <i>R. Schuh, S. Hofstätter, H.-J. Trnka, A. Schmitt, S. Vogt</i> |     |
| 25.1   | <b>Anterior Ankle Impingement "Soccer's Ankle"</b> .....         | 356 |
| 25.1.1 | Indication .....                                                 | 356 |
| 25.1.2 | Operation Principle .....                                        | 356 |
| 25.1.3 | Preoperative Assessment .....                                    | 356 |
| 25.1.4 | Surgical Technique .....                                         | 356 |
| 25.1.5 | Postoperative Management .....                                   | 357 |
| 25.1.6 | Follow-up Management .....                                       | 357 |
| 25.1.7 | Tips & Tricks .....                                              | 358 |
| 25.2   | <b>Cheilectomy and MTP Arthrodesis for Hallux Rigidus</b> .....  | 358 |
| 25.2.1 | Indication .....                                                 | 358 |
| 25.2.2 | Operative Principle .....                                        | 358 |
| 25.2.3 | Preoperative Assessment .....                                    | 358 |
| 25.2.4 | Surgical Technique .....                                         | 358 |
| 25.2.5 | Postoperative Management .....                                   | 361 |
| 25.2.6 | Follow-up Management .....                                       | 361 |
| 25.2.7 | Tips & Tricks .....                                              | 361 |
| 25.3   | <b>Arthrodesis</b> .....                                         | 361 |
| 25.3.1 | Indication .....                                                 | 361 |
| 25.3.2 | Operation Principle .....                                        | 362 |
| 25.3.3 | Preoperative Assessment .....                                    | 362 |
| 25.3.4 | Surgical Technique .....                                         | 363 |
| 25.3.5 | Postoperative Management .....                                   | 364 |
| 25.3.6 | Follow-up Management .....                                       | 364 |
| 25.3.7 | Tips & Tricks .....                                              | 364 |
|        | References .....                                                 | 366 |
|        | <b>Backmatter</b> .....                                          | 367 |
|        | Subject Index .....                                              | 368 |