

Contents

I DEVELOPMENT OF THE STERNOCOSTOCLAVICULAR REGION

1	Bones, Cartilages and Joints	3
1.1	Introduction	3
1.2	Sternum, Including Manubriosternal Joint	3
1.3	Clavicle	8
1.4	Joints and Costal Cartilages	8
1.5	Conclusions	9
	References	9

II NORMAL ANATOMY AND VARIANTS

2	Bones and Cartilages	13
2.1	Introduction	13
2.2	Sternum, Including Manubriosternal Joint	14
2.3	Clavicle	21
2.4	Cartilages and Their Articulation	23
2.5	Age Determination	25
2.6	Conclusions	26
	References	26
3	Sternoclavicular Joints	29
3.1	Introduction	29
3.2	Macroscopic Anatomy	29
3.3	Microscopic Anatomy	31
3.4	Appearance at Imaging	33
3.5	Conclusions	35
	References	35

III BIOMECHANICS OF THE STERNOCOSTOCLAVICULAR REGION

4 Biomechanics of Joints and Cartilages 39

4.1 Introduction 39

4.2 Sternoclavicular Joints 39

4.3 Manubriosternal Joint 40

4.4 Sternocostal Joints 41

4.5 Conclusions 42

References 42

IV IMAGING TECHNIQUES AND PROCEDURES

5 Conventional Radiography and Tomography 45

5.1 Conventional Radiography 45

5.2 Conventional Tomography 47

5.3 Conclusions 47

References 47

6 Computed Tomography 49

6.1 Introduction 49

6.2 Technical Aspects 50

6.3 Normal Computed Tomography Appearance
of the Sternocostoclavicular Region 51

6.4 Indications for Computed Tomography 54

6.5 Conclusions 55

References 55

7 Magnetic Resonance Imaging 59

7.1 Introduction 59

7.2 Technical Aspects 60

7.3 Normal Magnetic Resonance Imaging Appearance
of the Sternocostoclavicular Region 61

7.4 Indications for Magnetic Resonance Imaging 62

7.5 Conclusions 66

References 66

8 Ultrasonography 69

8.1 Introduction 69

8.2 Technical Aspects 69

8.3	Normal Ultrasonography Appearance of the Sternocostoclavicular Region	71
8.4	Indications for Ultrasonography	71
8.5	Conclusions	74
	References	74
9	Radionuclide Imaging	77
9.1	Introduction	77
9.2	Technical Aspects	78
9.3	Normal Appearance of the Sternocostoclavicular Region	78
9.4	Indications for Radionuclide Imaging	79
9.5	Conclusions	81
	References	81

V CLINICAL PROBLEMS

10	Congenital and Developmental Abnormalities	85
10.1	Introduction	85
10.2	Pectus Deformities	85
10.3	Sternal Fusion Anomalies	88
10.4	Other Sternal Abnormalities	90
10.5	Clavicular Abnormalities	90
10.6	Conclusions	92
	References	92
11	Traumatic and Post-traumatic Disorders	95
11.1	Introduction	95
11.2	Soft Tissue Injuries	96
11.3	Anterior Costal Fractures	97
11.4	Costal Cartilage Injuries	98
11.5	Sternal Fractures	101
11.6	Sternoclavicular Dislocations	103
11.7	Manubriosternal Dislocations	107
	References	107
12	Seronegative Arthritis and Sternocostoclavicular Syndromes	113
12.1	Introduction	113
12.2	Ankylosing Spondylitis	115
12.3	Osteoarthropathy Associated with Pustulosis Palmoplantaris	119
12.4	Psoriatic Arthritis	127

- 12.5 Reactive Arthritis 130
- 12.6 Enteropathic Arthropathy 132
- 12.7 SAPHO, Sternocostoclavicular Hyperostosis and Other “Syndromes” ... 134
- 12.8 Conclusions 136
 - References 136

- 13 Predominant Osseous Inflammatory Lesions 143
 - 13.1 Introduction 143
 - 13.2 Chronic Recurrent Multifocal Osteomyelitis 144
 - 13.3 Adult Osteoarthropathy 153
 - 13.4 Terminology 158
 - 13.5 Conclusions 159
 - References 160

- 14 Other Rheumatic Inflammatory Disorders 165
 - 14.1 Introduction 165
 - 14.2 Rheumatoid Arthritis 165
 - 14.3 Gout 167
 - 14.4 Pseudogout – Chondrocalcinosis 168
 - 14.5 Monarthritis 168
 - 14.6 Other Disorders 171
 - 14.7 Conclusion 172
 - References 172

- 15 Degenerative Joint Disorders, Including Condensing Osteitis 177
 - 15.1 Introduction 177
 - 15.2 Osteoarthritis of the Sternoclavicular Joint 177
 - 15.3 Condensing Osteitis 181
 - 15.4 Conclusions 190
 - References 190

- 16 Infectious Disorders 193
 - 16.1 Introduction 193
 - 16.2 Pyogenic Infections 194
 - 16.3 Tuberculosis 197
 - 16.4 Differential Diagnoses 203
 - 16.5 Conclusion 203
 - References 204

- 17 Primary Bone Tumours 207

17.1 Introduction	207
17.2 Primary Malignant Bone Tumours	208
17.3 Primary Benign Tumours	214
17.4 Tumour-like Lesions	218
17.5 Management of Primary Bone Tumours of the Sternocostoclavicular Region	220
17.6 Conclusion	225
References	226
18 Other Malignant Disorders	229
18.1 Introduction	229
18.2 Malignant Soft Tissue Tumours and Allied Disorders	230
18.3 Myeloproliferative and Allied Disorders	238
18.4 Conclusion	242
References	242
19 Miscellaneous Disorders	245
19.1 Introduction	245
19.2 Metabolic Disorders	245
19.3 Amyloidosis	246
19.4 Synovial Osteochondromatosis	246
19.5 Postoperative Disorders	247
19.6 Spontaneous Atraumatic Subluxation	247
19.7 Other Disorders	247
19.8 Conclusions	250
References	250
Subject Index	251