

Part A Clinical Evaluation of Laryngeal Disorders

1	Anatomy and Physiology of the Larynx	3
1.1	Anatomy	3
1.1.1	Laryngeal Cartilages	3
1.1.1.1	Thyroid	3
1.1.1.2	Cricoid	3
1.1.1.3	Arytenoid	3
1.1.1.4	Accessory Cartilages: Cuneiform and Corniculate	3
1.1.1.5	Epiglottitis	4
1.1.2	Laryngeal Joints	4
1.1.2.1	Cricothyroid Joint	4
1.1.2.2	Cricoarytenoid Joint	4
1.1.3	Laryngeal Musculature	4
1.1.3.1	Intrinsic Laryngeal Muscles	4
1.1.3.2	Extrinsic Laryngeal Muscles	5
1.1.4	Fibroelastic Tissue of the Larynx	5
1.1.4.1	Quadrangular Membrane	5
1.1.4.2	Conus Elasticus	5
1.1.5	Microanatomy of the Vocal Fold	6
1.1.6	Vasculature	6
1.1.7	Innervation	6
1.2	Physiology	7
1.2.1	Major Laryngeal Functions: Lower Airway Protection, Respiration, and Phonation	7
1.2.1.1	Phonation	7
	Key Points	8
	Selected Bibliography	8
2	Principles of Clinical Evaluation for Voice Disorders	9
2.1	Fundamental and Related Chapters	9
2.2	Introduction	9
2.3	Gathering a Patient History	9
2.4	History of Present Illness	9
2.5	Past Medical History	10
2.6	Past Surgical History	11
2.7	Social History	11
2.8	Occupational History	11
2.9	Listening to the Voice	11
2.10	Perceptual Analysis	12
2.11	Quality-of-Life Questionnaires	12
2.12	Professional Speaking/Singing Voice	12
	Key Points	14
	Selected Bibliography	14

3	Videostroboscopy and Dynamic Voice Evaluation with Flexible Laryngoscopy	17
3.1	Fundamental and Related Chapters	17
3.2	Introduction	17
3.3	Surgical Indications and Contraindications	17
3.4	Dynamic Voice Assessment with Flexible Laryngoscopy	18
3.4.1	Nasopharynx	19
3.4.2	Base of Tongue	19
3.4.3	Larynx (Global)	19
3.4.4	Vocal Fold (Focal)	19
3.5	Recording of Laryngeal Examination	19
	Key Points	20
	Selected Bibliography	20
4	Pathological Conditions of the Vocal Fold	21
4.1	Fundamental and Related Chapters	21
4.2	Introduction	21
4.3	Epithelial Pathology of the Vocal Folds	21
4.3.1	Recurrent Respiratory Papillomatosis of the Larynx	21
4.3.2	Leukoplakia of the Vocal Fold	21
4.3.3	Dysplasia–Carcinoma in Situ of the Vocal Folds	22
4.3.4	Carcinoma of the Vocal Fold	22
4.4	Benign Diseases of the Vocal Fold Lamina Propria	23
4.4.1	Overview of Midmembranous Vocal Fold Lesions	23
4.4.2	Approach to Midmembranous Vocal Fold Lesions	23
4.4.3	Vocal Fold Nodules	23
4.4.4	Vocal Fold Cyst (Subepithelial)	23
4.4.5	Vocal Fold Cyst (Ligament)	24
4.4.6	Vocal Fold Polyp	24
4.4.7	Fibrous Mass (Subepithelial)	24
4.4.8	Fibrous Mass (Ligament)	24
4.4.9	Reactive Lesion	25
4.5	Miscellaneous Disorders of the Vocal Fold	25
4.5.1	Polypoid Corditis (Reinke's Edema)	25
4.5.2	Vocal Fold Granuloma	25
4.5.3	Rheumatologic Lesions of the Vocal Folds	26
4.5.4	Vascular Lesions of the Vocal Folds	26
4.5.5	Vocal Fold Scar and Sulcus Vocalis	27
	Key Points	27
	Selected Bibliography	27

5	Glottic Insufficiency: Vocal Fold Paralysis, Paresis, and Atrophy	29	6.7.2	Criteria for Endoscopic Treatment for Subglottic Stenosis	41
5.1	Introduction	29	6.7.3	Criteria for T-Tube Stenting for Subglottic Stenosis	42
5.2	Unilateral Vocal Fold Paralysis	29	6.7.4	Criteria for External Treatment of Glottic/Subglottic Stenosis	42
5.2.1	Etiology	29		Key Points	42
5.3	Surgical Indications and Contraindications ..	30		Selected Bibliography	42
5.3.1	Vocal Quality and Swallowing	30			
5.4	Unilateral Vocal Fold Paralysis: Physical Examination	31	7	Nonsurgical Treatment of Voice Disorders ..	43
5.4.1	General	31	7.1	Fundamental and Related Chapters	43
5.4.2	Laryngeal	31	7.2	Introduction	43
5.5	Unilateral Vocal Fold Paralysis: Workup	32	7.3	Surgical Indications and Contraindications ..	43
5.5.1	Serology	32	7.4	Vocal Fold Granuloma	43
5.5.2	Imaging Studies	32	7.5	Infectious and Inflammatory Disorders	44
5.6	Unilateral Vocal Fold Paralysis: Treatment ..	32	7.6	Neurologic Disorders	45
5.7	Unilateral/Bilateral Vocal Fold Paresis	33	7.6.1	Spasmodic Dysphonia	45
5.7.1	Etiology	33	7.6.2	Essential Tremor	45
5.7.2	History	33	7.6.3	Parkinson's Disease	45
5.7.3	Physical Examination	33	7.6.4	Muscle Tension Dysphonia	45
5.7.4	Diagnostic Workup	33	7.6.5	Paradoxical Vocal Fold Motion Disorder	46
5.7.5	Treatment	33	7.6.6	Postviral Vagal Neuropathy	46
5.8	Presbylaryngis/Age-Related Changes in the Larynx	34	7.7	Allergy and Voice Disorders	46
5.8.1	General Considerations	34	7.8	Medications and Their Effects on Voice	46
5.8.2	Etiology, History, and Physical Findings	34	7.9	Vocal Hygiene	47
5.8.3	Workup	34	7.10	Role of the Speech-Language Pathologist in Voice Therapy	47
	Key Points	34		Key Points	48
	Selected Bibliography	35		Selected Bibliography	48
6	Glottic and Subglottic Stenosis: Evaluation and Surgical Planning	37	8	Timing, Planning, and Decision Making in Phonosurgery	49
6.1	Fundamental and Related Chapters	37	8.1	Fundamental and Related Chapters	49
6.2	Introduction	37	8.2	Key Components to Successful Care of Patients with Voice Disorders	49
6.3	Etiology of Glottic and Subglottic (Laryngotracheal) Narrowing	37	8.3	Surgical Indications and Contraindications ..	49
6.3.1	Common Clinical Conditions and Associated Risk Factors	37	8.3.1	Timing of Phonomicrosurgery	49
6.4	Glottic and Subglottic Stenosis: History	38	8.3.2	Preoperative Considerations for Phonomicrosurgery	49
6.4.1	Symptoms/Time Course	38	8.4	Decision Making in Phonosurgery	50
6.4.2	Medical Comorbidities	38	8.5	Informed Consent Regarding Phonosurgery ..	51
6.5	Glottic and Subglottic Stenosis: Physical Examination	38		Key Points	51
6.5.1	Local Anesthesia Techniques for Examination	38		Selected Bibliography	51
6.5.2	Documentation of Examination	38	9	Anesthesia and Airway Management for Laryngeal Surgery	53
6.5.2.1	Flexible Laryngoscopy/Tracheoscopy Protocol	39	9.1	Fundamental and Related Chapters	53
6.6	Additional Studies for the Evaluation of Glottic/Subglottic Stenosis	40	9.2	Equipment	53
6.6.1	Voice Evaluation (VHI-10, Audio Recording)	40	9.3	Surgical Indications and Contraindications ..	53
6.6.2	Air-Flow Measures	40	9.4	Principles of Airway Management: Subglottic and Tracheal Stenosis	54
6.6.3	Radiographic Studies	40	9.5	Special Circumstances: Difficult Exposure of the Larynx	55
6.6.4	Laboratory Testing	40	9.6	Anesthesia for Laryngeal Framework Surgery	58
6.7	Glottic and Subglottic Stenosis: Surgical Planning	41		Key Points	58
6.7.1	Corrective Surgical Procedures for Glottic/Subglottic Stenosis	41		Selected Bibliography	58

Part B Phonomicrosurgery for Benign Laryngeal Pathology

I Fundamentals of Phonomicrosurgery

10	Principles of Phonomicrosurgery	63
10.1	Fundamental and Related Chapters	63
10.2	Introduction	63
10.3	Surgical Indications and Contraindications ...	63
10.4	Equipment for Phonomicrosurgery	65
10.5	Phonomicrosurgery Procedures, Techniques, and Methods	67
10.5.1	Anesthesia	67
10.5.2	Patient Position	68
10.5.3	Laryngoscope Placement	68
10.5.4	Suspension Device	70
10.5.5	External Counter-Pressure	71
10.5.6	Telescopic Evaluation of Vocal Fold Pathology	71
10.5.7	Operating Microscope and Surgeon Ergonomics	72
10.5.8	Microflap Approach to Submucosal Pathology	73
10.6	Postoperative Care and Complications	75
	Key Points	75
	Selected Bibliography	75
11	Perioperative Care for Phonomicrosurgery ...	77
11.1	Fundamental and Related Chapters	77
11.2	Timing of Phonomicrosurgery	77
11.3	Surgical Indications and Contraindications ...	77
11.4	Considerations for the Day of Phonomicrosurgery	78
11.5	Postoperative Voice Rest	78
11.6	Postoperative Voice Care	78
11.7	Intralaryngeal Steroid Injection to Soften Postoperative Scar in the Vocal Fold	78
	Key Points	79
	Selected Bibliography	79
12	Management and Prevention of Complications Related to Phonomicrosurgery	81
12.1	Fundamental and Related Chapters	81
12.2	Overview of Management and Prevention of Complications Related to Phonomicrosurgery	81
12.3	Surgical Indications and Contraindications ...	81
12.4	Postoperative Dysphonia	81
12.5	Medical Complications Associated with Phonomicrosurgery	82
	Key Points	82
	Selected Bibliography	83
13	Principles of Laser Microlaryngoscopy	85
13.1	Fundamental and Related Chapters	85
13.2	Laser Physics	85
13.2.1	Wavelength	85

13.2.2	Tissue Interaction	85
13.2.3	Delivery Systems	85
13.2.4	Types of Laser	86
13.3	Surgical Indications and Contraindications ..	86
13.4	Equipment: Laser Microlaryngoscopy Setup ..	87
13.5	CO ₂ Laser Safety Guidelines	87
13.5.1	General Guidelines (Fig. 13.1)	87
13.5.2	CO ₂ Laser Settings	88
13.5.3	Safety Protocol	88
13.6	Surgical Principles	88
13.6.1	Smoke Evacuation	88
13.6.2	Protecting Surrounding Tissue from Laser Damage	88
13.6.3	Maintenance of a Clean Surgical Field	88
13.7	Complications and Their Treatments	89
13.7.1	Laser Fire	89
13.7.2	Tracheal Perforation	89
	Key Points	89
	Selected Bibliography	89
14	Principles of Vocal Fold Augmentation	91
14.1	Fundamental and Related Chapters	91
14.2	Vocal Fold Augmentation: Advantages, Disadvantages, and Clinical Utility	91
14.3	Surgical Indications and Contraindications ..	91
14.4	Characteristics of Vocal Fold Augmentation Materials	92
14.4.1	Overview	92
14.4.2	Categories of Vocal Fold Augmentation Materials	92
14.4.3	Description of Vocal Fold Augmentation Materials Characteristics	92
14.5	General Principles of Vocal Fold Augmentation	94
	Key Points	95
	Selected Bibliography	96

II Phonomicrosurgical Voice Procedures

15	Vocal Fold Polyp	99
15.1	Fundamental and Related Chapters	99
15.2	Disease Characteristics and Differential Diagnosis	99
15.3	Surgical Indications and Contraindications ..	99
15.4	Surgical Equipment	99
15.5	Surgical Procedures	100
15.6	Postoperative Care/Complications	103
	Key Points	103
	Selected Bibliography	103
16	Vocal Fold Nodules	105
16.1	Fundamental and Related Chapters	105
16.2	Disease Characteristics and Differential Diagnosis	105
16.3	Surgical Indications and Contraindications ..	105
16.4	Surgical Equipment	105
16.5	Surgical Procedure	106

16.6	Postoperative Care and Complications	107	21.4	Surgical Equipment	130
	Key Points	107	21.5	Surgical Procedure	130
	Selected Bibliography	107	21.6	Postoperative Care and Complications	133
				Key Points	134
				Selected Bibliography	134
17	Vocal Fold Cyst and Vocal Fold Fibrous Mass	109	22	Surgical Management of Vocal Fold Vascular Lesions	135
17.1	Fundamental and Related Chapters	109	22.1	Fundamental and Related Chapters	135
17.2	Diagnostic Characteristics and Differential Diagnosis	109	22.2	Diagnostic Characteristics and Differential Diagnosis of Vocal Fold Varicosities	135
17.3	Surgical Indications and Contraindications	109	22.3	Surgical Indications and Contraindications	136
17.4	Surgical Equipment	109	22.4	Surgical Equipment	136
17.5	Surgical Procedure	109	22.5	Surgical Procedure	136
17.6	Postoperative Care and Complications	111	22.6	Postoperative Care and Complications	138
	Key Points	112		Key Points	139
	Selected Bibliography	112		Selected Bibliography	139
18	Polypoid Corditis	113	23	Vocal Fold Scar and Sulcus Vocalis	141
18.1	Fundamental and Related Chapters	113	23.1	Fundamental and Related Chapters	141
18.2	Disease Characteristics	113	23.2	Disease Characteristics and Differential Diagnosis	141
18.3	Surgical Indications and Contraindications	113	23.3	Surgical Indications and Contraindications	142
18.4	Surgical Equipment	114	23.4	Surgical Equipment	143
18.5	Surgical Procedure	114	23.5	Surgical Procedure	143
18.6	Postoperative Care and Complications	116	23.6	Postoperative Care and Complications	150
	Key Points	116		Key Points	150
	Selected Bibliography	117		Selected Bibliography	150
19	Vocal Fold Granuloma	119	24	Endoscopic Management of Teflon Granuloma	151
19.1	Fundamental and Related Chapters	119	24.1	Fundamental and Related Chapters	151
19.2	Disease Characteristics and Differential Diagnosis	119	24.2	Disease Characteristics and Differential Diagnosis	151
19.3	Surgical Indications and Contraindications	119	24.3	Surgical Indications and Contraindications	151
19.4	Surgical Equipment	119	24.4	Surgical Equipment	151
19.5	Surgical Procedure	120	24.5	Surgical Procedure	151
19.6	Postoperative Care and Complications	121	24.6	Postoperative Care and Complications	153
	Key Points	121		Key Points	153
	Selected Bibliography	121		Selected Bibliography	154
20	Vocal Fold Leukoplakia and Hyperkeratosis	123	25	Endoscopic Excision of Saccular Cyst	155
20.1	Fundamental and Related Chapters	123	25.1	Fundamental and Related Chapters	155
20.2	Diagnostic Characteristics and Differential Diagnosis	123	25.2	Disease Characteristics and Differential Diagnosis	155
20.3	Surgical Indications and Contraindications	123	25.3	Surgical Indications and Contraindications	156
20.4	Surgical Equipment	123	25.4	Surgical Equipment	156
20.5	Surgical Procedure	123	25.5	Surgical Procedure for Saccular Cyst	156
20.6	Postoperative Care and Complications	126	25.6	Postoperative Care and Complications	157
	Key Points	126		Key Points	158
	Selected Bibliography	127		Selected Bibliography	158
21	Surgical Treatment of Recurrent Respiratory Papillomatosis of the Larynx	129	26	Anterior Glottic Web	159
21.1	Fundamental and Related Chapters	129	26.1	Fundamental and Related Chapters	159
21.2	Disease Characteristics and Differential Diagnosis	129			
21.3	Surgical Indications and Contraindications	129			

26.2	Disease Characteristics and Differential	
	Diagnosis	159
26.3	Surgical Indications and Contraindications ..	159
26.4	Surgical Equipment	159
26.5	Surgical Procedure	160
26.6	Postoperative Care and Complications	164
	Key Points	164
	Selected Bibliography	164

III Laser Microlaryngeal Surgery (Airway/Neoplastic Conditions)

27	Bilateral Vocal Fold Paralysis	167
27.1	Fundamental and Related Chapters	167
27.2	Disease Characteristics and Differential	
	Diagnosis	167
27.3	Surgical Indication and Contraindications ..	167
27.4	Surgical Equipment	168
27.5	Surgical Procedure	168
27.6	Postoperative Care and Complications	171
	Key Points	173
	Selected Bibliography	173
28	Posterior Glottic Stenosis: Endoscopic	
	Approach	175
28.1	Fundamental and Related Chapters	175
28.2	Diagnostic Characteristics and Differential	
	Diagnosis	175
28.3	Surgical Indications and Contraindications ..	176
28.4	Surgical Equipment	176
28.5	Surgical Procedure	176
28.6	Postoperative Care	179
	Key Points	179
	Selected Bibliography	180
29	Subglottic/Tracheal Stenosis: Laser/	
	Endoscopic Management	181
29.1	Fundamental and Related Chapters	181
29.2	Disease Characteristics and Differential	
	Diagnosis	181
29.3	Surgical Indications and Contraindications ..	181
29.4	Surgical Equipment	182
29.5	Surgical Procedure	182
29.6	Postoperative Care and Complications	185
29.7	T-Tube Stenting of SGS	185
29.8	Surgical Equipment	185
29.9	Surgical Procedure	185
29.10	Postoperative Care	189
29.11	Special Considerations in T-Tube Stenting ..	189
	Key Points	189
	Selected Bibliography	190
30	Carcinoma of the Vocal Fold	191
30.1	Fundamental and Related Chapters	191

30.2	Disease Characteristics and Differential	
	Diagnosis	191
30.3	Surgical Indications and Contraindications ..	191
30.4	Surgical Equipment	191
30.5	Surgical Procedure	192
30.6	Postoperative Care and Complications	192
	Key Points	193
	Selected Bibliography	193

IV Laryngeal Injection Techniques

31	Vocal Fold Augmentation via Direct	
	Microlaryngoscopy	197
31.1	Fundamental and Related Chapters	197
31.2	Disease Characteristics	197
31.2.1	Material Selection	197
31.3	Surgical Indications and Contraindications ..	198
31.4	Surgical Equipment	198
31.5	Surgical Procedure	198
31.5.1	Principles of Deep Vocal Fold	
	Augmentation	198
31.5.2	Vocal Fold Augmentation via	
	Microlaryngoscopy	199
31.5.3	Endoscopic Vocal Fold Injection	199
31.5.4	Lipoinjection of the Vocal Fold	200
31.6	Postoperative Care and Complications	202
	Key Points	203
	Selected Bibliography	203
32	Superficial Vocal Fold Injection	205
32.1	Fundamental and Related Chapters	205
32.2	Disease Characteristics	
	and Differential Diagnosis	205
32.3	Surgical Indications and Contraindications ..	205
32.4	Surgical Equipment	205
32.5	Surgical Procedure	205
32.6	Postoperative Care and Complications	206
	Key Points	207
	Selected Bibliography	207
33	Peroral Vocal Fold Augmentation	
	in the Clinic Setting	209
33.1	Fundamental and Related Chapters	209
33.2	Disease Characteristics and Differential	
	Diagnosis	209
33.3	Surgical Indications and Contraindications ..	209
33.3.1	Suitability for Peroral Vocal Fold	
	Augmentation in the Clinic Setting	210
33.4	Surgical Equipment	210
33.5	Surgical Procedure	210
33.6	Postoperative Care and Complications	213
	Key Points	213
	Selected Bibliography	213

34	Percutaneous Vocal Fold Augmentation in the Clinic Setting	215	37.5	Long-Term Surgical Issues	239
34.1	Fundamentals and Related Chapters	215		Key Points	239
34.2	Disease Characteristics and Differential Diagnosis	215		Selected Bibliography	239
34.3	Surgical Indications and Contraindications ..	215	38	Silastic Medialization Laryngoplasty for Unilateral Vocal Fold Paralysis	241
34.3.1	Suitability for Percutaneous Vocal Fold Augmentation in the Clinic Setting	216	38.1	Fundamental and Related Chapters	241
34.4	Surgical Equipment	216	38.2	Disease Characteristics and Differential Diagnosis	241
34.5	Surgical Procedure	216	38.3	Surgery Indications and Contraindications ..	241
34.6	Postoperative Care and Complications	219	38.4	Surgical Equipment	241
	Key Points	219	38.5	Surgical Procedure	242
	Selected Bibliography	220	38.6	Postoperative Care and Complications	250
				Key Points	251
				Selected Bibliography	251
35	Botulinum Toxin Injection of the Larynx	221	39	GORE-TEX® Medialization Laryngoplasty	253
35.1	Fundamental and Related Chapters	221	39.1	Fundamental and Related Chapters	253
35.2	Disease Characteristics and Differential Diagnosis	221	39.2	Disease Characteristics and Differential Diagnosis	253
35.2.1	Botulinum Toxin Fundamentals	221	39.3	Surgical Indications and Contraindications ..	253
35.2.2	Spasmodic Dysphonia and Essential Tremor	221	39.4	Surgical Equipment	253
35.2.3	Different Botulinum Toxin Injection Approaches	222	39.5	Surgical Procedure	254
35.3	Surgical Indications and Contraindications ..	222	39.6	Postoperative Care and Complications	255
35.4	Equipment	223		Key Points	256
35.5	Procedure	223		Selected Bibliography	256
35.6	Postprocedure Care and Complications	227			
	Key Points	227	40	Arytenoid Adduction	257
	Selected Bibliography	227	40.1	Fundamental and Related Chapters	257
			40.2	Fundamentals of Arytenoid Adduction	257
			40.3	Surgical Indications and Contraindications ..	257
			40.4	Surgical Equipment	257
			40.5	Surgical Procedure	257
			40.6	Postoperative Care and Complications	262
				Key Points	262
				Selected Bibliography	262
			41	Cricothyroid Subluxation	263
			41.1	Fundamental and Related Chapters	263
			41.2	Disease Characteristics and Differential Diagnosis	263
			41.3	Surgical Indications and Contraindications ..	263
			41.4	Surgical Equipment	263
			41.5	Surgical Procedure	263
			41.6	Postoperative Care and Complications	264
				Key Points	265
				Bibliography	265
			42	Translaryngeal Removal of Teflon Granuloma	267
			42.1	Fundamental and Related Chapters	267
			42.2	Disease Characteristics and Differential Diagnosis	267

Part C Laryngeal Framework Surgery

36	Principles of Laryngeal Framework Surgery	231
36.1	Fundamental and Related Chapters	231
36.2	Introduction	231
36.3	Surgical Indications and Contraindications ..	231
36.3.1	Medialization Laryngoplasty	231
36.3.2	Arytenoid Adduction	231
36.3.3	Cricothyroid Subluxation	232
36.4	Patient Selection for Laryngeal Framework Surgery	232
36.5	Timing of Medialization Laryngoplasty	232
36.6	Technical Notes and Pertinent Anatomic Landmarks for Medialization Laryngoplasty	232
	Key Points	234
	Selected Bibliography	234
37	Perioperative Care for Laryngeal Framework Surgery	235
37.1	Fundamental and Related Chapters	235
37.2	Perioperative Issues in Laryngeal Framework Surgery	235
37.3	Surgical Indications and Contraindications ..	235
37.4	Suboptimal Results/Surgical Errors	236
37.4.1	Revision Surgery	237

42.3	Surgical Indications and Contraindications ..	267	46	Glottic and Subglottic Stenosis: Cricotracheal Resection with Primary Anastomosis	289
42.4	Surgical Equipment	268	46.1	Fundamental and Related Chapters	289
42.5	Surgical Procedure	268	46.2	Diagnostic Characteristics for Open Treatment of Subglottic Stenosis	289
42.6	Postoperative Care and Complications	271	46.3	Surgical Indications and Contraindications ..	289
	Key Points	271	46.4	Surgical Equipment	289
	Selected Bibliography	271	46.5	Surgical Procedure	289
43	Excision of Combined Laryngocele	273	46.6	Postoperative Management	292
43.1	Fundamental and Related Chapters	273		Key Points	292
43.2	Disease Characteristics and Differential Diagnosis	273		Selected Bibliography	293
43.2.1	Anatomy and Classification	273	47	Tracheal Stenosis: Tracheal Resection with Primary Anastomosis	295
43.2.2	Clinical Presentation and Differential Diagnosis	274	47.1	Fundamental and Related Chapters	295
43.3	Surgical Indications and Contraindications ..	274	47.2	Background Information and Diagnosis of Tracheal Stenosis	295
43.4	Surgical Equipment	275	47.3	Surgical Indications and Contraindications ..	295
43.5	Surgical Procedure	275	47.4	Surgical Equipment	295
43.6	Postoperative Care and Complications	277	47.5	Surgical Procedure	295
	Key Points	277	47.6	Postoperative Care and Complications	298
	Selected Bibliography	277		Key Points	298
44	Repair of Laryngeal Fracture	279		Selected Bibliography	298
44.1	Fundamental and Related Chapters	279	48	The Gray Minithyrotomy for Vocal Fold Scar/Sulcus Vocalis	299
44.2	Disease Characteristics	279	48.1	Fundamental and Related Chapters	299
44.3	Surgical Indications and Contraindications ..	279	48.2	General Considerations	299
44.4	Surgical Equipment	280	48.3	Surgical Indications and Contraindications ..	299
44.5	Surgical Procedure	280	48.4	Surgical Equipment	299
44.6	Postoperative Care and Complications	282	48.5	Surgical Procedure	299
	Key Points	282	48.6	Postoperative Care and Complications	303
	Selected Bibliography	282		Key Points	304
45	Glottic and Subglottic Stenosis: Laryngotracheal Reconstruction with Grafting	283		Selected Bibliography	304
45.1	Fundamental and Related Chapters	283	Subject Index		305
45.2	Disease Characteristics and Differential Diagnosis	283			
45.3	Surgical Indications and Contraindications ..	283			
45.4	Surgical Equipment	283			
45.5	Surgical Procedure	284			
45.6	Postoperative Care and Complications	287			
	Key Points	287			
	Selected Bibliography	288			