

FOURTH EDITION



Enhanced
**DIGITAL
VERSION**
Included

ATLAS OF HEAD and NECK PATHOLOGY

BRUCE M. **WENIG**
JUAN C. **HERNANDEZ-PRERA**



Table of Contents

0	38
1Front-Matter_2023_Atlas-of-Head-and-Neck-Pathology	39
1 ATLAS OF HEAD and NECKPATHOLOGY	39
2Copyright_2023_Atlas-of-Head-and-Neck-Pathology	40
1 Copyright	40
3Preface_2023_Atlas-of-Head-and-Neck-Pathology	41
1 Preface	41
4Dedication_2023_Atlas-of-Head-and-Neck-Pathology	42
1 Dedication	42
5In-Memoriam_2023_Atlas-of-Head-and-Neck-Pathology	43
1 In Memoriam	43
6Section-1---Nasal-Cavity-and-Paranasal-Sin_2023_Atlas-of-Head-and-Neck-Patho	44
1 1 - Nasal Cavity andParanasal Sinuses	44
7Section-2---Oral-Cavity_2023_Atlas-of-Head-and-Neck-Pathology	45
1 2 - Oral Cavity	45
8Section-3---Pharynx--Including-Nasopharynx--Oroph_2023_Atlas-of-Head-and-Nec	46
1 3 - Pharynx, Including Nasopharynx,Oropharynx, and Hypopharynx	46
9Section-4---The-Neck_2023_Atlas-of-Head-and-Neck-Pathology	47
1 4 - The Neck	47
10Section-5---Larynx-and-Trachea_2023_Atlas-of-Head-and-Neck-Pathology	48
1 5 - Larynx and Trachea	48
11Section-6---Major-and-Minor-Salivary-Glan_2023_Atlas-of-Head-and-Neck-Pathol	49
1 6 - Major and MinorSalivary Glands	49
12Section-7---External--Middle--and-Internal_2023_Atlas-of-Head-and-Neck-Patho	50
1 7 - External, Middle, and Internal Ear	50
13Section-8---Thyroid-Gland_2023_Atlas-of-Head-and-Neck-Pathology	51
1 8 - Thyroid Gland	51
14Section-9---Parathyroid-Glands_2023_Atlas-of-Head-and-Neck-Pathology	52
1 9 - Parathyroid Glands	52
15Section-10---Multiple-Endocrine-Neoplasia--ME_2023_Atlas-of-Head-and-Neck-Pa	53
1 10 - Multiple Endocrine Neoplasia (MEN) Syndromes	53
Chapter-1---Embryology--Anatomy--and-Histology-o_2023_Atlas-of-Head-and-Neck	54
1 1. Embryology, Anatomy, and Histology of the Sinonasal Tract	54
1.1 Nasal Cavity	54
1.1.1 Embryology	54
1.1.2 Anatomic Borders (Figs. 1.1 and 1.2)	54
1.1.3 Innervation	54
1.1.4 Vascular Supply and Lymphatic Drainage	56
1.1.5 Histology (Fig. 1.3)	56
1.2 Paranasal Sinuses	56
1.2.1 Embryology	56
1.2.2 Anatomic Borders (See Fig. 1.1)	56
1.2.2.1 Maxillary Sinuses	56

1.2.2.2 Ethmoid Sinuses	58
1.2.2.3 Frontal Sinuses	58
1.2.2.4 Sphenoid Sinuses	58
1.2.3 Innervation	58
1.2.4 Vascular Supply and Lymphatic Drainage	59
1.2.4.1 Arteries and Veins	59
1.2.4.2 Lymphatics	60
1.2.5 Histology (See Fig. 1.3)	60
Chapter-2---Nonneoplastic-Lesions-of-the-Sino_2023_Atlas-of-Head-and-Neck-Pa	62
1 2. Nonneoplastic Lesions of the Sinonasal Tract	62
1.1 Classification of Nonneoplastic Lesions of the Sinonasal Tract (Box 2.1)	62
1.1.1 Rhinosinusitis (Fig. 2.1)	62
1.1.1.1 Clinical	62
1.1.1.2 Radiology of Rhinosinusitis	65
1.1.1.3 Pathology of Nonspecific Chronic Rhinosinusitis	65
1.1.1.4 Differential Diagnosis	66
1.1.1.5 Treatment and Prognosis	66
1.1.2 Sinonasal Inflammatory Polyps (Figs. 2.2–2.8)	66
1.1.2.1 Clinical	66
1.1.2.2 Pathology	68
1.1.2.3 Differential Diagnosis	71
1.1.2.4 Treatment and Prognosis	72
1.1.3 Antrochoanal Polyp (Figs. 2.9–2.11)	72
1.1.3.1 Clinical	72
1.1.3.2 Pathology	72
1.1.3.3 Differential Diagnosis	74
1.1.3.4 Treatment and Prognosis	74
1.1.4 Paranasal Sinus Mucocele (Figs. 2.12–2.15)	74
1.1.4.1 Clinical	74
1.1.4.2 Pathology	76
1.1.4.3 Differential Diagnosis	77
1.1.4.4 Treatment and Prognosis	77
1.1.5 Heterotopic Central Nervous System Tissue (HCNST) (Figs. 2.16–2.19)	77
1.1.5.1 Clinical	78
1.1.5.2 Pathology	79
1.1.5.3 Differential Diagnosis	80
1.1.5.4 Treatment and Prognosis	81
1.1.6 Sinonasal Encephalocele (Figs. 2.21–2.23)	81
1.1.6.1 Clinical	83
1.1.6.2 Pathology	84
1.1.6.3 Differential Diagnosis	84
1.1.6.4 Treatment and Prognosis	84
1.1.7 Nasal Dermoid Sinus and Cyst (Figs. 2.24 and 2.25)	84
1.1.7.1 Clinical	84
1.1.7.2 Pathologic	85

1.1.7.3	Differential Diagnosis	85
1.1.7.4	Treatment and Prognosis	85
1.1.8	Primary Ciliary Dyskinesia (PCD) (Figs. 2.26–2.28)	85
1.1.8.1	Clinical	85
1.1.8.2	Pathology	90
1.1.8.3	Differential Diagnosis	90
1.1.8.4	Treatment and Prognosis	91
1.1.9	Sinonasal Hamartomas	91
1.1.10	Respiratory Epithelial Adenomatoid Hamartoma (REAH) (Figs. 2.29 and 2.30)	92
1.1.10.1	Clinical	92
1.1.10.2	Pathology	93
1.1.10.3	Differential Diagnosis	95
1.1.10.4	Treatment and Prognosis	95
1.1.11	Seromucinous Hamartoma (SH) (Figs. 2.31 and 2.32)	95
1.1.11.1	Clinical	95
1.1.11.2	Pathology	95
1.1.11.3	Differential Diagnosis	98
1.1.11.4	Treatment and Prognosis	98
1.1.12	Chondro-osseous and Respiratory Epithelial (CORE) Hamartoma (Fig. 2.33)	98
1.1.12.1	Clinical	99
1.1.12.2	Pathology	99
1.1.12.3	Differential Diagnosis	99
1.1.12.4	Treatment and Prognosis	99
1.1.13	Nasal Chondromesenchymal Hamartoma (NCMH) (Figs. 2.34 and 2.35)	99
1.1.13.1	Clinical	100
1.1.13.2	Pathology	101
1.1.13.3	Differential Diagnosis	101
1.1.13.4	Treatment and Prognosis	101
1.2	Infectious-Related Diseases of the Sinonasal Tract	101
1.2.1	Fungal Rhinosinusitis (FRS)	101
1.2.2	Aspergillosis	101
1.3	Noninvasive FRS	101
1.3.1	Allergic Fungal Rhinosinusitis (AFRS)	101
1.3.1.1	Clinical	102
1.3.1.2	Pathology	104
1.3.1.3	Differential Diagnosis	104
1.3.1.4	Treatment and Prognosis	105
1.3.2	Mycetoma (“Fungus Ball”) (Figs. 2.38 and 2.39)	105
1.3.2.1	Clinical	105
1.3.2.2	Pathology	105
1.3.2.3	Differential Diagnosis	106
1.3.2.4	Treatment and Prognosis	106
1.4	Invasive Fungal Sinusitis (Figs. 2.40 and 2.41)	106
1.4.1	Acute Invasive FRS	106

1.4.1.1	Definition and Nomenclature	106
1.4.1.2	Clinical	106
1.4.1.3	Pathology	106
1.4.1.4	Treatment and Prognosis	106
1.4.2	Chronic Invasive and Chronic Granulomatous FRS (Fig. 2.42)	108
1.4.2.1	Definition and Nomenclature	108
1.4.2.2	Clinical Findings	108
1.4.2.3	Etiology and Pathogenesis	109
1.4.2.4	Pathology	109
1.4.2.5	Treatment and Prognosis	110
1.4.3	Sinonasal Mucormycosis (Figs. 2.43–2.45)	110
1.4.3.1	Clinical	110
1.4.3.2	Pathology	111
1.4.3.3	Differential Diagnosis	112
1.4.3.4	Treatment and Prognosis	112
1.4.4	Rhinosporidiosis (Figs. 2.46 and 2.47)	112
1.4.4.1	Clinical	112
1.4.4.2	Pathology	113
1.4.4.3	Differential Diagnosis	114
1.4.4.4	Treatment and Prognosis	114
1.5	Other Fungi (Fig. 2.48)	114
1.6	Bacterial Infections	114
1.6.1	Rhinoscleroma (Fig. 2.49)	114
1.6.1.1	Clinical	114
1.6.1.2	Pathology	116
1.6.1.3	Differential Diagnosis	116
1.6.1.4	Treatment and Prognosis	116
1.7	Miscellaneous Sinonasal Bacterial Infections	116
1.7.1	<i>Pseudomonas aeruginosa</i> (Botryomycosis) (Fig. 2.50)	116
1.7.2	<i>Mycobacteria leprae</i> (Fig. 2.51)	118
1.7.2.1	Other Mycobacterial Infections	119
1.7.2.2	Syphilis	120
1.8	Protozoal Nasal Infections	120
1.8.1	Mucocutaneous Leishmaniasis (Fig. 2.52)	120
1.9	Viral Infection	122
1.10	Sarcoidosis	122
1.11	Myospherulosis (Fig. 2.53)	122
1.11.1	Clinical	122
1.11.1.1	Pathology	123
1.11.1.2	Differential Diagnosis	124
1.11.1.3	Treatment and Prognosis	124
1.12	Extranodal Rosai-Dorfman Disease (ERDD) (Fig. 2.54)	124
1.12.1	Clinical	124
1.12.1.1	Pathology	126
1.12.1.2	Differential Diagnosis	127

1.12.1.3 Treatment and Prognosis	127
1.13 Granulomatosis With Polyangiitis (GPA) (Figs. 2.55–2.58)	127
1.13.1 Localized Upper Aerodigestive Tract (UADT) GPA	128
1.13.1.1 Pathology	131
1.13.1.2 Differential Diagnosis	133
1.13.1.3 Treatment and Prognosis	136
1.14 Eosinophilic Angiocentric Fibrosis (EAF) (Fig. 2.60)	136
1.14.1 Clinical	136
1.14.1.1 Pathology	137
1.14.1.2 Differential Diagnosis	138
1.14.1.3 Treatment and Prognosis	138
1.15 IgG4-Related Diseases	138
1.16 Necrotizing Sialometaplasia (NS)	138
Chapter-3---Neoplasms-of-the-Sinonasal-Tr_2023_Atlas-of-Head-and-Neck-Pathol	146
1 3 - Neoplasms of the Sinonasal Tract	146
Chapter-4---Embryology--Anatomy--and-Histology-_2023_Atlas-of-Head-and-Neck-	351
1 4 - Embryology, anotomy, and Hiistology of the oral Cavity	351
1.1 EMBRYOLOGY	351
1.2 INNERVATION	358
1.3 VASCULAR SUPPLY ANDLYMPHATIC DRAINAGE	358
Chapter-5---Nonneoplastic-Lesions-of-the-Ora_2023_Atlas-of-Head-and-Neck-Pat	362
1 5. Nonneoplastic Lesions of the Oral Cavity	362
Chapter-6---Neoplasms-of-the-Oral-Cavit_2023_Atlas-of-Head-and-Neck-Patholog	426
1 6. Neoplasms of the Oral Cavity	426
1.1 BENIGN NEOPLASMS	426
1.1.1 Classification of Oral Cavity Benign Neoplasms (Box 6.1)	426
1.1.1.1 Clinical	426
1.1.2 Benign Minor Salivary Gland Tumors	429
1.1.3 Benign Mesenchymal Neoplasms	429
1.1.3.1 Ectomesenchymal Chondromyxoid Tumor (EMCMT) (Figs. 6.3 and 6.4)	429
1.1.3.2 Granular Cell Tumor	433
1.1.3.3 Mucosal Granular Cell Tumor	433
1.1.3.4 Congenital Granular Cell Epulis (Fig. 6.5)	433
1.1.3.5 Mucosal Neuroma (Fig. 6.6)	434
1.1.4 Pericytic (Perivascular) Tumors	437
1.1.4.1 Clinical	437
1.1.5 Benign Vascular Tumors	440
1.1.6 Benign Lipogenic Tumors	440
1.1.7 Benign Myogenic Tumors	440
1.1.8 Glioma-Associated Oncogene Homologue 1 (GLI1)-Altered Soft Tissue Tumor (Fig. 6.9)	440
1.1.8.1 Clinical	440
1.1.9 Benign Fibrohistiocytic Tumors	443
1.1.10 Benign Fibro-osseous Lesions of Craniofacial Bones	443
1.1.10.1 Ossifying Fibroma (Figs. 6.10 and 6.11)	443
1.1.10.2 Peripheral Ossifying Fibroma	446

1.1.10.3	Fibrous Dysplasia (Figs. 6.12 and 6.13)	446
1.1.10.4	Monostotic Fibrous Dysplasia	446
1.1.10.5	Polyostotic Fibrous Dysplasia	446
1.1.10.6	Polyostotic With Endocrinopathy or McCune-Albright Syndrome	447
1.1.10.7	Giant Cell Tumor (GCT) of the Head and Neck (Figs. 6.14 and 6.15)	449
1.1.10.8	Giant Cell Tumor of Soft Tissue (Osteoclastoma of Soft Tissue)	452
1.1.10.9	Osteoblastoma (Figs. 6.16 and 6.17)	452
1.1.11	Benign Odontogenic Neoplasms	455
1.1.11.1	Ameloblastoma (AM)	455
1.1.11.2	Ameloblastoma, Unicystic Type (Figs. 6.25 and 6.26)	462
1.1.11.3	Ameloblastoma, Adenoid Type	465
1.1.11.4	Ameloblastoma, Peripheral/Extrasosseous Type	465
1.1.11.5	Adenomatoid Odontogenic Tumor (AOT) (Figs. 6.27 and 6.28)	466
1.1.11.6	Calcifying Epithelial Odontogenic Tumor (CEOT) (Figs. 6.29 and 6.30)	468
1.1.11.7	Odontogenic Myxoma (Figs. 6.31 and 6.32)	470
1.1.12	Benign Teratoma	473
1.2	PREMALIGNANT ORAL DISEASES/LESIONS	473
1.2.1	Oral Potentially Malignant (Epithelial) Disorders (OPMD)	473
1.2.1.1	Predictive Biomarkers in OPMD	475
1.2.1.2	Oral Leukoplakia (Figs. 6.34–6.37)	475
1.2.1.3	Proliferative Verrucous Leukoplakia (PVL) (Figs. 6.38–6.41)	480
1.2.1.4	Oral Erythroplakia (Fig. 6.42)	486
1.2.1.5	Actinic Cheilitis/Actinic Cheilosis (Fig. 6.43)	487
1.2.1.6	Oral Epithelial Dysplasia (OED) (Fig. 6.44)	488
1.2.1.7	High-Risk Human Papillomavirus–Associated Oral Epithelial Dysplasia (HPV-OED) (Fig. 6.45)	491
1.2.1.8	Microinvasive, Superficial, or “Early” Invasive Squamous Cell Carcinoma	493
1.2.2	Site-Specific OSCC	508
1.2.2.1	Squamous Cell Carcinoma of the Oral Tongue (Fig. 6.52)	509
1.2.2.2	Squamous Cell Carcinoma of the Floor of Mouth (Fig. 6.53)	510
1.2.2.3	Squamous Cell Carcinoma of the Gingiva, Including Retromolar Trigone and Alveolar Mucosa (Fig. 6.54)	511
1.2.2.4	Squamous Cell Carcinoma of the Buccal Mucosa (Fig. 6.55)	512
1.2.2.5	Squamous Cell Carcinoma of the Hard Palate (Fig. 6.56)	513
1.2.2.6	Variants of Squamous Cell Carcinoma (SCC)	514
1.2.2.7	Carcinoma Cuniculatum (CC) (Fig. 6.58)	514
1.2.3	Malignant (Minor) Salivary Gland Tumors of the Oral Cavity	516
1.2.4	Nonepithelial Malignant Neoplasms	516
1.2.4.1	Oral Cavity Mucosal Malignant Melanoma	517
1.2.4.2	Neuroendocrine Carcinomas	519
1.2.5	Sarcomas of the Oral Cavity	522
1.2.5.1	Rhabdomyosarcoma (RMS)	522
1.2.5.2	Rhabdomyosarcoma With TFCP2 Rearrangement (TFCP2-RMS)	522
1.2.5.3	Leiomyosarcoma (LMS)	523
1.2.5.4	Liposarcoma	523
1.2.5.5	Malignant Peripheral Nerve Sheath Tumor (MPNST)	523

1.2.5.6 Undifferentiated Pleomorphic Sarcoma	523
1.2.5.7 Fibrosarcoma	523
1.2.5.8 Alveolar Soft Part Sarcoma (ASPS) (Fig. 6.61)	523
1.2.5.9 Angiosarcoma	526
1.2.5.10 Kaposi Sarcoma (KS) (Figs. 6.62–6.63)	526
1.2.6 Matrix-Forming and Related Malignant Neoplasms	533
1.2.6.1 General Considerations	533
1.2.7 Craniofacial Conventional Osteosarcoma (COS) (Excluding in Association With Paget Disease)	536
1.2.7.1 Pathology	538
1.2.7.2 Mesenchymal Chondrosarcoma (Fig. 6.73)	548
1.2.8 Malignant Odontogenic Neoplasms	551
1.2.9 Secondary Neoplasms to the Oral Cavity	553
Chapter-7---Intraoperative-Consultation-in-Oral-C_2023_Atlas-of-Head-and-Nec	566
1 7. Intraoperative Consultation in Oral Cavity Mucosal Lesions	566
1.1 Indications	566
1.2 Surgeon's Expectations	566
1.3 Specimen Handling and Orientation (Figs. 7.1 and 7.2)	566
1.4 Right-Angle (Perpendicular) Versus Parallel (En Face) Sections	567
1.5 Surgical Resection Margins	567
1.5.1 Definition of a "Positive" Margin (Fig. 7.3)	568
1.5.2 Dysplastic Epithelium (Fig. 7.4)	569
1.5.3 Adequacy of Resection Margins	569
1.5.4 Factors Affecting Margin Status and Prognosis (Fig. 7.5)	571
1.5.5 Tissue Shrinkage and Surgical Margins	572
1.6 Differential Diagnosis or Pitfalls in the Intraoperative Assessment of Squamous Cell Carcinoma, Including Intraepithelial Dyspla...	573
1.6.1 Reactive Epithelial Changes	573
1.6.2 Postirradiation Changes (Figs. 7.7–7.9)	573
1.6.3 Juxtaoral Organ of Chievitz (Fig. 7.10)	575
1.7 Contraindications (Fig. 7.11)	576
1.8 Intraoperative "Rapid" Immunohistochemical Assessment	576
1.9 Molecular Biology in the Assessment of Surgical Margins (Molecular Margins of Resection)	577
1.10 Accuracy	577
1.11 Lymph Nodes	578
1.11.1 Sentinel Lymph Nodes in Head and Neck Squamous Cell Carcinoma	578
Chapter-8---Embryology--Anatomy--and-Histology_2023_Atlas-of-Head-and-Neck-P	581
1 8. Embryology, Anatomy, and Histology of the Pharynx	581
1.1 Pharynx	581
1.1.1 Contents	582
1.1.1.1 Nasopharynx	582
1.1.2 Anatomic Borders	583
1.1.2.1 Nasopharynx	583
1.1.2.2 Oropharynx	583
1.1.2.3 Hypopharynx	583

1.1.2.4 Innervation	583
1.1.3 Vascular Supply and Lymphatic Drainage	583
1.2 Histology	584
1.2.1 Nasopharynx (Fig. 8.4)	584
1.2.2 Oropharynx (Figs. 8.6 and 8.7)	584
1.2.3 Hypopharynx	588
Chapter-9---Nonneoplastic-Lesions-of-the-P_2023_Atlas-of-Head-and-Neck-Patho	590
1 9. Nonneoplastic Lesions of the Pharynx	590
1.1 Classification of Nonneoplastic Lesions of the Pharynx (Box 9.1)	590
1.2 Nasopharyngeal Cysts	590
1.2.1 Rathke Pouch (Cleft) Cyst (Figs. 9.1–9.3)	590
1.2.1.1 Embryology and Anatomy	590
1.2.1.2 Clinical	590
1.2.1.3 Pathology	592
1.2.1.4 Differential Diagnosis	592
1.2.1.5 Treatment and Prognosis	592
1.2.2 Thornwaldt Cyst (Fig. 9.4)	593
1.2.2.1 Embryology and Anatomy	593
1.2.2.2 Clinical	594
1.2.2.3 Pathology	594
1.2.2.4 Differential Diagnosis	594
1.2.2.5 Treatment and Prognosis	594
1.2.3 Other Nasopharyngeal Cysts	594
1.3 Pharyngeal Hamartomas, Choristomas, and Teratomatous Lesions	594
1.3.1 Definitions	594
1.3.2 Nasopharyngeal Hamartoma	594
1.3.2.1 Clinical	594
1.3.2.2 Pathology	594
1.3.2.3 Differential Diagnosis	594
1.3.2.4 Treatment and Prognosis	595
1.3.3 Pharyngeal/Nasopharyngeal Central Nervous System (Glial) Heterotopia	595
1.3.3.1 Clinical	595
1.3.3.2 Pathology	595
1.3.3.3 Treatment and Prognosis	595
1.3.4 Other Pharyngeal Heterotopias/Choristomas (Fig. 9.5)	595
1.3.5 Nasopharyngeal Dermoid (Fig. 9.6)	596
1.3.5.1 Clinical	596
1.3.5.2 Pathology	596
1.3.5.3 Differential Diagnosis	596
1.3.5.4 Treatment and Prognosis	596
1.3.6 Lymphangiomatous Polyp of the Tonsil (Figs. 9.7 and 9.8)	596
1.3.6.1 Clinical	597
1.3.6.2 Pathology	597
1.3.6.3 Differential Diagnosis	597
1.3.6.4 Treatment and Prognosis	598

1.3.7 Salivary Gland Anlage Tumor (SGAT) (Fig. 9.9)	598
1.3.7.1 Clinical	598
1.3.7.2 Pathology	599
1.3.7.3 Treatment and Prognosis	601
1.4 Infectious Diseases	601
1.4.1 Tonsillitis	601
1.4.1.1 Clinical	601
1.4.1.2 Pathology	601
1.4.1.3 Differential Diagnosis	601
1.4.1.4 Treatment and Prognosis	602
1.4.2 Peritonsillar Abscess	602
1.4.2.1 Clinical	602
1.4.2.2 Pathology	602
1.4.2.3 Differential Diagnosis	602
1.4.2.4 Treatment and Prognosis	602
1.5 Viral Diseases	602
1.5.1 Human Papillomavirus–Associated Diseases	602
1.5.2 Cytomegalovirus and Herpes Virus	603
1.5.3 Epstein-Barr Virus (EBV)–Associated Diseases	603
1.5.4 Infectious Mononucleosis (IM) (Fig. 9.10)	604
1.5.4.1 Clinical	604
1.5.4.2 Pathology	606
1.5.4.3 Differential Diagnosis	607
1.5.4.4 Treatment and Prognosis	607
1.5.5 Epstein-Barr Virus–Positive Mucocutaneous Ulcer (EBVMCU) (Figs. 9.11 and 9.12)	608
1.5.5.1 Clinical	608
1.5.5.2 Pathology	609
1.5.5.3 Differential Diagnosis	610
1.5.5.4 Treatment and Prognosis	610
1.5.6 Human Immunodeficiency Virus (HIV) Infection and Acquired Immunodeficiency Syndrome (AIDS)	610
1.5.6.1 Pathogenesis	610
1.5.6.2 Epidemiology	611
1.5.6.3 Spectrum of Disease	611
1.5.7 HIV Infection of Extranodal Lymphoid Tissues of Waldeyer Tonsillar Ring (Figs. 9.13 and 9.14)	614
1.5.7.1 Clinical	614
1.5.7.2 Pathology	614
1.5.7.3 Differential Diagnosis	617
1.5.7.4 Treatment and Prognosis	617
1.5.8 AIDS-Related Opportunistic Infectious Diseases of the Pharynx	617
1.5.8.1 Viruses	617
1.5.8.2 Pathology	618
1.5.8.3 Pathology	619
1.5.8.4 Treatment	619

1.5.9 Other Viruses	619
1.6 Fungi	620
1.7 Bacteria and Spirochetes	620
1.7.1 Gonorrhea	620
1.7.1.1 Clinical	620
1.7.1.2 Pathology	621
1.7.1.3 Treatment and Prognosis	621
1.7.2 Syphilis (Fig. 9.19)	621
1.7.2.1 Clinical	621
1.7.2.2 Pathology	621
1.7.2.3 Differential Diagnosis	622
1.7.2.4 Treatment and Prognosis	622
1.7.2.5 Additional Notes	623
1.7.3 Bacillary Angiomatosis (BA) (Fig. 9.20)	623
1.7.3.1 Pathogenesis	623
1.7.3.2 Clinical	623
1.7.3.3 Pathology	623
1.7.3.4 Differential Diagnosis	623
1.7.3.5 Treatment and Prognosis	625
1.8 Protozoa (Fig. 9.21)	625
1.8.1 Pathology	625
1.8.1.1 Gross	625
1.8.1.2 Histology	625
1.8.2 Treatment	625
1.9 Tangier Disease (Fig. 9.22)	625
1.9.1 Clinical	625
1.9.2 Pathology	626
1.9.2.1 Gross	626
1.9.2.2 Histology	626
1.9.3 Differential Diagnosis	626
1.9.4 Treatment and Prognosis	626
Chapter-10---Neoplasms-of-the-Pharynx_2023_Atlas-of-Head-and-Neck-Pathology	631
1 10. Neoplasms of the Pharynx	631
1.1 Neoplasms of the Pharynx (Box 10.1)	631
1.1.1 General Considerations	631
1.1.2 Benign Neoplasms	631
1.1.2.1 Squamous Papilloma (Fig. 10.1)	631
1.1.3 Benign Minor Salivary Gland Neoplasms	633
1.1.4 (Nasopharyngeal) Angiofibroma	634
1.1.5 Craniopharyngioma (Figs. 10.2 and 10.3)	635
1.1.5.1 Clinical	635
1.2 Malignant Tumors	637
1.2.1 Epithelial Malignant Neoplasms	637
1.2.1.1 Viral-Associated Head and Neck Squamous Cell Carcinomas	637
1.2.1.2 Nasopharyngeal Carcinoma (NPC)	637

1.2.1.3	Basaloid Squamous Cell Carcinoma (BSCC) of the Nasopharynx	652
1.2.1.4	Oropharyngeal Squamous Cell Carcinoma	652
1.2.1.5	Squamous Cell Carcinoma, HPV Associated	653
1.2.1.6	HPV-Associated Basaloid Squamous Cell Carcinoma (Fig. 10.28)	667
1.2.1.7	Squamous Cell Carcinoma, HPV-Independent	679
1.2.1.8	Squamous Cell Carcinoma of the Soft Palate and Uvula	679
1.2.1.9	Squamous Cell Carcinoma of the Oropharyngeal Wall	681
1.2.1.10	Squamous Cell Carcinoma of the Hypopharynx	682
1.2.1.11	Patterns of Spread	684
1.2.1.12	Neuroendocrine Carcinomas (NECs)	684
1.2.1.13	Malignant (Minor) Salivary Gland Tumors	685
1.2.1.14	Low-Grade Nasopharyngeal Papillary Adenocarcinoma (Fig. 10.38)	685
1.2.2	Nonepithelial Malignant Neoplasms	687
1.2.2.1	Lymphomas of the Waldeyer Tonsillar Ring (Nasopharynx, Tonsils, and Base of Tongue)	688
1.2.2.2	Definition: Primary malignant lymphoid cell neoplasms with the bulk of tumor formed by a ring or group of extranodal lymphoid ti...	688
1.2.2.3	Plasma Cell Neoplasms and Other Diseases With Paraproteins	697
1.2.2.4	Plasmacytoma	698
1.2.2.5	Extramedullary Plasmacytoma (Fig. 10.42)	698
1.2.2.6	Mucosal Malignant Melanoma	701
1.2.2.7	Sarcomas	701
1.2.2.8	Rhabdomyosarcoma (RMS)	701
1.2.2.9	Head and Neck RMS	702
1.2.2.10	Synovial Sarcoma	716
1.2.2.11	Head and Neck Synovial Sarcoma	717
1.2.2.12	Chordoma of the Craniocervical Region (Base of Skull)	725
1.2.2.13	Chordoma of the Head and Neck	725
1.2.2.14	Chondroid Chordoma (see Fig. 10.45)	730
1.2.2.15	Dedifferentiated Chordoma	731
1.2.2.16	Poorly Differentiated Chordoma	731
1.2.2.17	Follicular Dendritic Cell Sarcoma (FDCS) (Fig. 10.54)	732
1.2.2.18	Leiomyosarcoma	738
1.2.2.19	Liposarcoma	738
1.2.2.20	Malignant Peripheral Nerve Sheath Tumors	738
1.2.2.21	Angiosarcoma	740
1.2.2.22	Malignant Teratoma of the Pharynx	740
1.2.2.23	Secondary Neoplasms to the Pharynx	740
Chapter-11---Anatomy-of-the-Neck_2023_Atlas-of-Head-and-Neck-Pathology		750
1	11. Anatomy of the Neck	750
Chapter-12---Nonneoplastic-Lesions-of-the-_2023_Atlas-of-Head-and-Neck-Patho		752
1	12. Nonneoplastic Lesions of the Neck	752
1.1	Classification of Nonneoplastic Lesions of the Neck (Box 12.1)	752
1.1.1	Nonneoplastic Lesions	752
1.1.1.1	Cystic (Nonneoplastic) Lesions	752
1.2	Benign Cystic Lesions of the Cervical Neck	752

1.2.1	Branchial Anomalies (BAs)	752
1.2.1.1	Embryology	752
1.2.1.2	Clinical	752
1.2.2	Branchial Cysts, Sinuses, and Fistulas	752
1.2.2.1	Clinical	754
1.2.3	First Branchial Anomalies (Fig. 12.1)	754
1.2.3.1	Clinical	754
1.2.3.2	Pathology	754
1.2.3.3	Differential Diagnosis	755
1.2.3.4	Treatment and Prognosis	755
1.2.4	Second Branchial Anomalies (Figs. 12.2–12.6)	755
1.2.4.1	Clinical	756
1.2.4.2	Pathology	757
1.2.4.3	Differential Diagnosis	759
1.2.4.4	Treatment and Prognosis	761
1.2.5	Third Branchial Anomalies	761
1.2.5.1	Pathology	761
1.2.5.2	Treatment and Prognosis	762
1.2.6	Fourth Branchial Anomalies	762
1.2.7	Thyroglossal Duct Cyst	762
1.2.7.1	Embryology	762
1.2.7.2	Clinical/Pathology	762
1.2.8	Cervical Thymic Cyst (Fig. 12.7)	762
1.2.8.1	Embryology and Anatomy	763
1.2.8.2	Clinical	763
1.2.8.3	Pathology	764
1.2.8.4	Differential Diagnosis	764
1.2.8.5	Treatment and Prognosis	764
1.2.9	Bronchogenic Cyst (Fig. 12.8)	764
1.2.9.1	Clinical	764
1.2.9.2	Pathology	765
1.2.9.3	Differential Diagnosis	765
1.2.9.4	Treatment and Prognosis	765
1.2.10	Dermoid Cyst (Fig. 12.9)	765
1.2.10.1	Clinical	765
1.2.10.2	Pathology	765
1.2.10.3	Differential Diagnosis	766
1.2.10.4	Treatment and Prognosis	766
1.2.11	Infectious Diseases of the Neck	766
1.3	Mycobacterial and Other Granulomatous Diseases	766
1.3.1	Mycobacterial Infections	766
1.3.1.1	Clinical	766
1.3.1.2	Pathology (Fig. 12.10)	767
1.3.1.3	Differential Diagnosis	767
1.3.1.4	Treatment and Prognosis	768

1.3.2 Scrofula (Fig. 12.11)	768
1.3.2.1 Clinical	768
1.3.2.2 Pathology	768
1.3.2.3 Differential Diagnosis	770
1.3.2.4 Treatment and Prognosis	770
1.3.3 Mycobacterial Spindle Cell Pseudotumor (Fig. 12.12)	770
1.3.3.1 Clinical	771
1.3.3.2 Pathology	771
1.3.3.3 Differential Diagnosis	771
1.3.3.4 Treatment and Prognosis	771
1.3.4 Cervicofacial Actinomycosis (Fig. 12.13)	771
1.3.4.1 Clinical	771
1.3.4.2 Pathology	772
1.3.4.3 Differential Diagnosis	772
1.3.4.4 Treatment and Prognosis	772
1.3.5 Sarcoidosis (Fig. 12.14)	773
1.3.5.1 Clinical	773
1.3.5.2 Pathology	773
1.3.5.3 Differential Diagnosis	773
1.3.5.4 Treatment and Prognosis	775
1.4 Bacterial Diseases	775
1.4.1 Cat Scratch Disease (Fig. 12.15)	775
1.4.1.1 Clinical	775
1.4.1.2 Pathology	776
1.4.1.3 Differential Diagnosis	776
1.4.1.4 Treatment and Prognosis	776
1.4.2 Bacillary Angiomatosis (Fig. 12.16)	776
1.4.2.1 Clinical	776
1.4.2.2 Pathology	776
1.4.2.3 Differential Diagnosis	777
1.4.2.4 Treatment and Prognosis	777
1.4.3 Fungal, Viral, and Protozoal Diseases	778
Chapter-13---Neoplasms-of-the-Neck_2023_Atlas-of-Head-and-Neck-Pathology	783
1 13. Neoplasms of the Neck	783
1.1 Classification of Neoplasms of the Neck (Box 13.1)	783
1.1.1 General Considerations	783
1.2 Surgical Specimens	785
1.2.1 Neck Dissection	785
1.2.2 Benign Neoplasms	788
1.2.3 Fibroblastic/Myofibroblastic	788
1.2.3.1 Nodular Fasciitis (NF) (Fig. 13.2)	788
1.2.3.2 Nuchal-Type Fibroma (NTF) (Fig. 13.3)	790
1.2.4 Lymphatic Malformation (Lymphangioma)	792
1.2.4.1 General Considerations	792
1.2.4.2 Lymphatic Malformation (Lymphangioma) of the Head and Neck (Cystic Hygroma) (Figs. 13.4–13.6)	792

1.2.4.3	Benign Tumors of Adipose Tissue	795
1.2.4.4	Lipomas	795
1.2.4.5	Spindle Cell Lipoma (SCL) and Pleomorphic Lipoma (PL) (Figs. 13.9 and 13.10)	799
1.2.4.6	Hibernoma (Fig. 13.13)	802
1.2.4.7	Lipoblastoma and Lipoblastomatosis (Fig. 13.14)	805
1.2.5	Benign Nerve Sheath Neoplasms (Table 13.2)	806
1.2.5.1	General Considerations	806
1.2.5.2	Schwannoma (Figs. 13.15–13.18)	807
1.2.5.3	Neurofibroma	815
1.2.5.4	Solitary Neurofibroma (See Table 13.2 and Fig. 13.18)	815
1.2.5.5	Plexiform Neurofibroma (Figs. 13.19 and 13.20; See Table 13.2)	816
1.2.5.6	Diffuse Neurofibroma	819
1.2.5.7	Granular Cell Tumor	819
1.2.5.8	Mucosal Granular Cell Tumor	819
1.2.5.9	Congenital Granular Cell Epulis	820
1.2.5.10	Solitary Circumscribed Neuroma (Palisaded Encapsulated Neuroma)	820
1.2.5.11	Mucosal Neuroma	820
1.2.5.12	Dermal Nerve Sheath Myxoma (Fig. 13.21)	820
1.2.5.13	Perineurioma (Fig. 13.22)	821
1.2.5.14	Neurofibromatoses	824
1.2.5.15	Neurofibromatosis Type 1 (NF-1)	824
1.2.5.16	Neurofibromatosis Type 2 (NF-2)	825
1.2.6	Benign Myogenic Tumors	829
1.2.6.1	Rhabdomyoma	829
1.2.6.2	Adult-Type Rhabdomyoma (Fig. 13.23)	829
1.2.6.3	Fetal-Type Rhabdomyoma (Figs. 13.25 and 13.26)	831
1.2.6.4	Branchioma (See Fig. 13.27)	833
1.2.6.5	Teratoma (Fig. 13.28)	835
1.2.7	Paragangliomas (PGLs)	837
1.2.7.1	General Considerations	837
1.2.7.2	Carotid Body Paraganglioma (Figs. 13.29–13.33)	838
1.3	Borderline or Intermediate Fibroblastic/Myofibroblastic Tumors	847
1.3.1	Fibroblastic/Myofibroblastic Neoplasms	847
1.3.1.1	Desmoid Fibromatosis (Figs. 13.34 and 13.35)	847
1.3.1.2	Head and Neck Fibromatosis	847
1.3.1.3	Superficial CD34-Positive Fibroblastic Tumor (SCD34FT) (Fig. 13.36)	852
1.4	Malignant Tumors	854
1.4.1	Hematolymphoid Malignant Neoplasms	854
1.4.1.1	General Considerations	854
1.4.1.2	Sarcomas of the Neck	854
1.4.1.3	Malignant Peripheral Nerve Sheath Tumors (MPNSTs) (Figs. 13.37 and 13.38)	854
1.4.1.4	Malignant Melanotic Nerve Sheath Tumor (MMNST) (Melanotic Schwannoma)	860
1.4.1.5	Myoepithelial Tumors of Soft Tissue (Figs. 13.39–13.41)	861

1.4.1.6	Liposarcoma (Figs. 13.42–13.48)	866
1.4.1.7	Atypical Lipomatous Tumor/Well-Differentiated Liposarcoma (ALT/WDLPS) (Figs. 13.42 and 13.43)	867
1.4.1.8	Dedifferentiated Liposarcoma (Fig. 13.44)	867
1.4.1.9	Myxoid Liposarcoma (Fig. 13.45)	871
1.4.1.10	High-Grade Myxoid Liposarcoma (Fig. 13.46)	872
1.4.1.11	Pleomorphic Liposarcoma (Fig. 13.47)	872
1.4.1.12	Myxoid Pleomorphic Liposarcoma (Fig. 13.48)	872
1.4.1.13	Rhabdomyosarcoma (RMS)	876
1.4.1.14	Leiomyosarcoma (LMS)	876
1.4.1.15	Angiosarcoma	876
1.4.1.16	Synovial Sarcoma	876
1.4.1.17	Malignant Teratoma and Germ Cell Tumors (Fig. 13.49)	876
1.4.1.18	Clinical	877
1.4.1.19	Pathology	885
1.4.1.20	Differential Diagnosis	889
1.4.1.21	Detection of the Primary Neoplasm	890
1.4.1.22	Treatment and Prognosis	890
1.5	Evaluation of Posttreated Neck for Metastatic Carcinoma (Fig. 13.60)	891
1.6	Secondary Tumors to the Neck (Other Than Carcinoma From Head and Neck Sites)	891
Chapter-14---Embryology--Anatomy--and-Histology-o_2023_Atlas-of-Head-and-Nec		901
1	14. Embryology, Anatomy, and Histology of the Larynx and Trachea	901
1.1	Larynx	901
1.1.1	Embryology	901
1.1.2	Anatomy (Figs. 14.1–14.5)	901
1.1.2.1	Anatomic Borders	901
1.1.2.2	Anatomic Compartments	901
1.1.3	Laryngeal Cartilage (Fig. 14.6)	903
1.1.4	Innervation	905
1.1.5	Vascular Supply and Lymphatic Drainage	905
1.1.6	Histology (Figs. 14.7–14.10)	905
1.2	Hypopharynx	907
1.3	Trachea	907
1.3.1	Embryology	907
1.3.2	Anatomic Borders	907
1.3.3	Anatomic Borders	907
1.3.4	Innervation	907
1.3.5	Vascular Supply and Lymphatic Drainage	908
1.3.6	Histology	908
Chapter-15---Nonneoplastic-Lesions-of-the-Lary_2023_Atlas-of-Head-and-Neck-P		910
1	15. Nonneoplastic Lesions of the Larynx and Trachea	910
1.1	Classification of Nonneoplastic Lesions of the Larynx and Trachea (Box 15.1)	910
1.2	Acquired and Congenital Lesions	910
1.2.1	Vocal Cord Nodules and Polyps (Figs. 15.1–15.4)	910
1.2.1.1	Clinical	910

1.2.1.2	Pathology	911
1.2.1.3	Differential Diagnosis	914
1.2.1.4	Treatment and Prognosis	914
1.3	Laryngocele and Laryngeal Cysts	914
1.3.1	Laryngocele (Figs. 15.5–15.9)	914
1.3.1.1	Clinical	915
1.3.1.2	Pathology	915
1.3.1.3	Differential Diagnosis	915
1.3.1.4	Treatment	916
1.3.2	Laryngeal Cysts (Figs. 15.10–15.13)	917
1.3.2.1	Classification	917
1.3.2.2	Clinical	917
1.3.2.3	Pathology	920
1.3.2.4	Differential Diagnosis	920
1.3.2.5	Treatment	920
1.3.3	Contact Ulcers of the Larynx (Figs. 15.14 and 15.15)	920
1.3.3.1	Clinical	921
1.3.3.2	Pathology	922
1.3.3.3	Differential Diagnosis	923
1.3.3.4	Treatment	923
1.3.4	Amyloidosis (Figs. 15.16 and 15.17)	923
1.3.5	Laryngeal Amyloidosis	924
1.3.5.1	Clinical	924
1.3.6	Lingual Amyloidosis	925
1.3.6.1	Pathology	925
1.3.6.2	Differential Diagnosis	925
1.3.6.3	Treatment and Prognosis	925
1.3.7	Subglottic Stenosis (SS) (Figs. 15.18 and 15.19)	926
1.3.7.1	Clinical	926
1.3.7.2	Pathology	928
1.3.7.3	Differential Diagnosis	928
1.3.7.4	Treatment and Prognosis	928
1.3.8	Teflon Granuloma (Figs. 15.20–15.22)	929
1.3.8.1	Clinical	930
1.3.8.2	Pathology	931
1.3.8.3	Treatment and Prognosis	931
1.3.9	Tracheopathia Osteoplastica (TPO) (Figs. 15.23 and 15.24)	931
1.3.9.1	Clinical	931
1.3.9.2	Pathology	932
1.3.9.3	Differential Diagnosis	933
1.3.9.4	Treatment and Prognosis	933
1.3.10	Infectious Diseases of the Larynx and Trachea (Figs. 15.25 and 15.26)	933
1.3.11	Necrotizing Sialometaplasia (Fig. 15.27)	936
1.3.12	Radiation-Associated Changes (Fig. 15.28)	937
1.3.13	Laryngeal Benign (Nonneoplastic) Epithelial Changes (Figs. 15.29–15.32)	938

1.3.13.1 Clinical Terms	938
1.3.13.2 Histopathologic Terminology	938
1.3.14 Hyperplastic Epithelial Changes	938
1.3.14.1 Clinical	940
1.3.14.2 Pathology	942
1.3.14.3 Differential Diagnosis	944
1.3.14.4 Treatment	944
Chapter-16---Neoplasms-of-the-Larynx-and-T_2023_Atlas-of-Head-and-Neck-Patho	948
1 16. Neoplasms of the Larynx and Trachea	948
Chapter-17---Intraoperative-Consultation-of-Larynx_2023_Atlas-of-Head-and-Nec	1065
1 17. Intraoperative Consultation of Laryngeal and Tracheal Lesions	1065
Chapter-18---Embryology--Anatomy--and-Histology-o_2023_Atlas-of-Head-and-Nec	1068
1 18. Embryology, Anatomy, and Histology of the Salivary Glands	1068
1.1 Embryology	1068
1.2 Anatomic Borders (Fig. 18.1)	1068
1.3 Innervation	1071
1.4 Histology (Figs. 18.2–18.5; Tables 18.1 and 18.2)	1071
Chapter-19---Nonneoplastic-Diseases-of-Saliv_2023_Atlas-of-Head-and-Neck-Pat	1080
1 19. Nonneoplastic Diseases of Salivary Glands	1080
Chapter-20---Neoplasms-of-the-Salivary-Gl_2023_Atlas-of-Head-and-Neck-Pathol	1137
1 20. Neoplasms of the Salivary Glands	1137
1.1 Classification of Neoplasms of Salivary Glands (Box 20.1)	1137
1.1.1 General Considerations	1137
1.2 Benign Neoplasms	1143
1.3 Pleomorphic Adenoma (PA) (Figs. 20.2–20.18)	1143
1.3.1 Clinical	1143
1.3.1.1 Pathology	1145
1.3.1.2 Histology	1146
1.3.1.3 Differential Diagnosis (Table 20.3)	1154
1.3.1.4 Treatment and Prognosis	1156
1.4 Basal Cell Adenoma (BCA)(Figs. 20.19–20.25)	1159
1.4.1 Clinical	1160
1.4.1.1 Pathology	1162
1.4.1.2 Differential Diagnosis	1169
1.4.1.3 Treatment and Prognosis	1169
1.5 Warthin Tumor (WT) (Figs. 20.26–20.32)	1169
1.5.1 Clinical	1169
1.5.1.1 Pathology	1171
1.5.1.2 Treatment and Prognosis	1174
1.6 Canalicular Adenoma (CA)(Figs. 20.33–20.35)	1174
1.6.1 Clinical	1174
1.6.1.1 Pathology	1175
1.6.1.2 Differential Diagnosis	1177
1.6.1.3 Treatment and Prognosis	1177
1.7 Oncocytoma (Fig. 20.36)	1177

1.7.1 Clinical	1179
1.7.1.1 Pathology	1179
1.7.1.2 Differential Diagnosis (Table 20.4)	1180
1.7.1.3 Treatment and Prognosis	1181
1.8 Myoepithelioma (Figs. 20.37–20.41)	1181
1.8.1 Clinical	1182
1.8.1.1 Pathology	1183
1.8.1.2 Differential Diagnosis	1185
1.8.1.3 Treatment and Prognosis	1185
1.9 Cystadenoma (Fig. 20.42)	1186
1.9.1 Clinical	1186
1.9.1.1 Pathology	1186
1.9.1.2 Differential Diagnosis	1188
1.9.1.3 Treatment and Prognosis	1188
1.10 Ductal Papillomas	1188
1.10.1 Sialadenoma Papilliferum (Fig. 20.43)	1188
1.10.1.1 Clinical	1188
1.10.1.2 Pathology	1190
1.10.1.3 Differential Diagnosis	1190
1.10.1.4 Treatment and Prognosis	1190
1.10.2 Intraductal Papilloma (Fig. 20.44)	1190
1.10.2.1 Clinical	1190
1.10.2.2 Pathology	1190
1.10.2.3 Differential Diagnosis	1191
1.10.2.4 Treatment and Prognosis	1192
1.10.3 Inverted Ductal Papilloma (Fig. 20.45)	1192
1.10.3.1 Clinical	1192
1.10.3.2 Pathology	1192
1.10.3.3 Differential Diagnosis	1193
1.10.3.4 Treatment and Prognosis	1193
1.11 Other Uncommon Benign Epithelial Neoplasms	1193
1.11.1 Sclerosing Polycystic Adenoma (Figs. 20.46 and 20.47)	1193
1.11.1.1 Clinical	1193
1.11.1.2 Pathology	1193
1.11.1.3 Differential Diagnosis	1196
1.11.1.4 Treatment and Prognosis	1196
1.11.2 Striated Duct Adenoma (Fig. 20.48)	1197
1.11.2.1 Clinical	1197
1.11.2.2 Pathology	1197
1.11.2.3 Treatment and Prognosis	1198
1.11.3 Intercalated Duct Adenoma (Fig. 20.49)	1198
1.11.3.1 Clinical	1198
1.11.3.2 Pathology	1198
1.11.3.3 Differential Diagnosis	1198
1.11.3.4 Treatment and Prognosis	1198

1.11.4 Lymphadenoma (Nonsebaceous) (Fig. 20.50)	1198
1.11.4.1 Clinical	1198
1.11.4.2 Pathology	1200
1.11.4.3 Treatment and Prognosis	1200
1.12 Tumors With Sebaceous Differentiation	1200
1.12.1 Sebaceous Adenoma (Fig. 20.51)	1200
1.12.1.1 Clinical	1200
1.12.1.2 Pathology	1201
1.12.1.3 Differential Diagnosis	1202
1.12.1.4 Treatment and Prognosis	1202
1.12.2 Sebaceous Lymphadenoma (Fig. 20.52)	1202
1.12.2.1 Clinical	1202
1.12.2.2 Pathology	1202
1.12.2.3 Differential Diagnosis	1204
1.12.2.4 Treatment and Prognosis	1204
1.12.3 Keratocystoma (Fig. 20.53)	1204
1.12.3.1 Clinical	1205
1.12.3.2 Pathology	1205
1.12.3.3 Treatment and Prognosis	1205
1.12.4 Lipoadenoma	1205
1.12.4.1 Clinical	1205
1.12.4.2 Pathology	1205
1.12.4.3 Treatment and Prognosis	1205
1.12.5 Apocrine Adenoma	1205
1.12.6 Adenofibroma	1205
1.12.7 Salivary Gland Anlage Tumor	1205
1.13 Benign Soft Tissue Tumors	1206
1.13.1 Hemangioma, Capillary Type, or Infantile (Juvenile) Hemangioma (Fig. 20.54)	1206
1.13.1.1 Clinical	1206
1.13.1.2 Pathology	1206
1.13.1.3 Differential Diagnosis	1208
1.13.1.4 Treatment and Prognosis	1209
1.14 Malignant Neoplasms	1209
1.14.1 Mucoepidermoid Carcinoma (MEC)(Figs. 20.55–20.65)	1209
1.14.1.1 Clinical	1209
1.14.1.2 Pathology	1210
1.14.1.3 Histology	1214
1.14.1.4 Differential Diagnosis (Table 20.6)	1223
1.14.1.5 Treatment and Prognosis	1223
1.14.2 Acinic Cell Carcinoma (Figs. 20.66–20.71)	1225
1.14.2.1 Clinical	1225
1.14.2.2 Pathology	1228
1.14.2.3 Differential Diagnosis	1232
1.14.2.4 Treatment and Prognosis	1233
1.14.3 Adenoid Cystic Carcinoma (AdCC)(Figs. 20.72–20.81)	1233

1.14.3.1 Clinical	1233
1.14.3.2 Pathology	1239
1.14.3.3 Differential Diagnosis (Table 20.8)	1242
1.14.3.4 Treatment and Prognosis	1244
1.14.4 Secretory Carcinoma (SC) (Figs. 20.82–20.86)	1245
1.14.4.1 Clinical	1245
1.14.4.2 Pathology	1245
1.14.4.3 Differential Diagnosis	1251
1.14.4.4 Treatment and Prognosis	1251
1.14.5 Polymorphous Adenocarcinoma (PAC)	1251
1.14.6 Polymorphous Adenocarcinoma, Conventional (Figs. 20.87–20.93)	1252
1.14.6.1 Clinical	1252
1.14.6.2 Pathology	1253
1.14.6.3 Histology	1253
1.14.7 Differential Diagnosis (Table 20.10)	1259
1.14.7.1 Treatment and Prognosis	1259
1.14.7.2 Clinical	1261
1.14.7.3 Pathology	1261
1.14.7.4 Differential Diagnosis (See Table 20.10)	1263
1.14.7.5 Treatment and Prognosis	1263
1.14.8 Malignant Mixed Tumors of Salivary Glands	1264
1.14.9 Carcinoma Ex Pleomorphic Adenoma (CEPA) (Figs. 20.97–20.100)	1265
1.14.9.1 Clinical	1265
1.14.9.2 Pathology	1265
1.14.9.3 Differential Diagnosis	1271
1.14.9.4 Treatment and Prognosis	1271
1.14.10 Noninvasive or Intracapsular Carcinoma Ex Pleomorphic Adenoma (Fig. 20.101)	1272
1.14.10.1 Clinical	1272
1.14.10.2 Pathology	1272
1.14.10.3 Differential Diagnosis	1274
1.14.10.4 Treatment and Prognosis	1274
1.14.11 Carcinosarcoma (Figs. 20.102–20.104)	1274
1.14.11.1 Clinical	1274
1.14.11.2 Pathology	1276
1.14.11.3 Differential Diagnosis	1276
1.14.11.4 Treatment and Prognosis	1276
1.14.12 Metastasizing Pleomorphic Adenoma (Fig. 20.105)	1276
1.14.12.1 Clinical	1276
1.14.12.2 Pathology	1279
1.14.12.3 Differential Diagnosis	1279
1.14.12.4 Treatment and Prognosis	1279
1.14.13 Basal Cell Adenocarcinoma (BCAC)(Figs. 20.106 and 20.107)	1280
1.14.13.1 Clinical	1280
1.14.13.2 Pathology	1281
1.14.13.3 Differential Diagnosis	1282

1.14.13.4 Treatment and Prognosis	1284
1.14.14 Epithelial-Myoepithelial Carcinoma (EM) (Figs. 20.109–20.114)	1284
1.14.14.1 Clinical	1284
1.14.14.2 Pathology	1286
1.14.14.3 Differential Diagnosis (Table 20.11)	1289
1.14.14.4 Treatment and Prognosis	1292
1.14.15 Hyalinizing Clear Cell Carcinoma (HCCC) (Figs. 20.116–20.124)	1292
1.14.15.1 Clinical	1292
1.14.15.2 Pathology	1292
1.14.15.3 Differential Diagnosis (See Table 20.11)	1294
1.14.15.4 Treatment and Prognosis	1295
1.14.16 Salivary Duct Carcinoma (SDC)(Figs. 20.125–20.131)	1296
1.14.16.1 Clinical	1298
1.14.16.2 Pathology	1300
1.14.16.3 Differential Diagnosis	1308
1.14.16.4 Treatment and Prognosis	1308
1.14.17 Intraductal Carcinoma (IDC) (Fig. 20.132–20.138)	1308
1.14.17.1 Clinical	1308
1.14.17.2 Pathology	1311
1.14.17.3 Differential Diagnosis	1316
1.14.17.4 Treatment and Prognosis	1316
1.14.18 Myoepithelial Carcinoma (Figs. 20.139–20.144)	1316
1.14.18.1 Clinical	1316
1.14.18.2 Pathology	1317
1.14.18.3 Differential Diagnosis	1321
1.14.18.4 Treatment and Prognosis	1321
1.14.19 Cystadenocarcinoma (Figs. 20.145–20.148)	1323
1.14.19.1 Clinical	1323
1.14.19.2 Pathology	1323
1.14.19.3 Differential Diagnosis	1326
1.14.19.4 Treatment and Prognosis	1326
1.14.20 Microsecretory Adenocarcinoma (Figs. 20.149 and 20.150)	1326
1.14.20.1 Clinical	1326
1.14.20.2 Pathology	1326
1.14.20.3 Differential Diagnosis	1326
1.14.20.4 Treatment and Prognosis	1326
1.14.21 Sclerosing Microcystic Adenocarcinoma (Fig. 20.151)	1328
1.14.21.1 Clinical	1328
1.14.21.2 Pathology	1328
1.14.21.3 Differential Diagnosis	1328
1.14.21.4 Treatment and Prognosis	1328
1.14.22 Mucinous Adenocarcinoma (Fig. 20.152)	1328
1.14.22.1 Clinical	1328
1.14.22.2 Pathology	1330
1.14.22.3 Differential Diagnosis	1331

1.14.22.4 Treatment and Prognosis	1331
1.14.23 Adenocarcinoma, Not Otherwise Specified (Figs. 20.153–20.157)	1331
1.14.23.1 Clinical	1331
1.14.23.2 Pathology	1332
1.14.23.3 Differential Diagnosis	1335
1.14.23.4 Treatment and Prognosis	1335
1.14.24 Primary Squamous Cell Carcinoma (SCC) (Figs. 20.158 and 20.159)	1335
1.14.24.1 Clinical	1337
1.14.24.2 Pathology	1337
1.14.24.3 Differential Diagnosis	1338
1.14.24.4 Treatment and Prognosis	1338
1.14.25 Lymphoepithelial Carcinoma (LEC) (Figs. 20.160 and 20.161)	1339
1.14.25.1 Clinical	1339
1.14.25.2 Pathology	1339
1.14.25.3 Differential Diagnosis	1342
1.14.25.4 Treatment and Prognosis	1342
1.15 Neuroendocrine Neoplasms	1342
1.15.1 NEC, Small Cell Neuroendocrine Carcinoma (Fig. 20.162)	1342
1.15.1.1 Clinical	1342
1.15.1.2 Pathology	1344
1.15.1.3 Differential Diagnosis	1347
1.15.1.4 Treatment and Prognosis	1347
1.15.2 Large Cell Undifferentiated Carcinoma (Fig. 20.164)	1347
1.15.2.1 Clinical	1347
1.15.2.2 Pathology	1347
1.15.2.3 Differential Diagnosis	1349
1.15.2.4 Treatment and Prognosis	1349
1.15.3 Oncocytic Carcinoma (Fig. 20.165)	1349
1.15.3.1 Clinical	1349
1.15.3.2 Pathology	1349
1.15.3.3 Differential Diagnosis	1352
1.15.3.4 Treatment and Prognosis	1352
1.16 Malignant Sebaceous Tumors	1352
1.16.1 Sebaceous Adenocarcinoma (Figs. 20.166 and 20.167)	1352
1.16.1.1 Clinical	1352
1.16.1.2 Pathology	1354
1.16.1.3 Differential Diagnosis	1354
1.16.1.4 Treatment and Prognosis	1355
1.16.2 Sebaceous Lymphadenocarcinoma	1355
1.16.2.1 Clinical	1355
1.16.2.2 Pathology	1355
1.16.2.3 Differential Diagnosis	1355
1.16.2.4 Treatment and Prognosis	1355
1.16.3 Sialoblastoma (Fig. 20.168)	1355
1.16.3.1 Clinical	1355

1.16.3.2 Pathology	1357
1.16.3.3 Differential Diagnosis	1358
1.16.3.4 Treatment and Prognosis	1358
1.17 Nonepithelial Malignant Salivary Gland Tumors	1358
1.17.1 Primary Malignant Lymphoma (PML) of Salivary Glands	1358
1.17.2 MALT Lymphoma of Salivary Glands (Figs. 20.169–20.171)	1359
1.17.2.1 Clinical	1359
1.17.2.2 Pathology	1361
1.17.2.3 Differential Diagnosis	1362
1.17.2.4 Treatment and Prognosis	1362
1.17.3 Diffuse Large B-Cell Lymphoma (DLBCL) (Figs. 20.172–20.174)	1362
1.17.3.1 Clinical	1362
1.17.3.2 Pathology	1363
1.17.3.3 Differential Diagnosis	1364
1.17.3.4 Treatment and Prognosis	1364
1.17.4 Other Types of Salivary Gland Non-Hodgkin Lymphoma	1365
1.17.5 Hodgkin Lymphomas of Salivary Glands	1365
1.18 Sarcomas of Salivary Glands	1365
1.19 Secondary Tumors	1366
1.19.1 Clinical	1366
1.19.1.1 General Considerations	1367
Chapter-21---Intraoperative-Consultation-in-Salivary-GI_2023_Atlas-of-Head-a	1388
1 21. Intraoperative Consultation in Salivary Glands and Biopsy Diagnosis of Salivary Gland Neoplasms	1388
1.1 Intraoperative Consultation in Salivary Glands (Figs. 21.1–21.13)	1388
1.1.1 General Considerations	1388
1.2 Indications for Intraoperative Consultation in Salivary Gland Neoplasms	1393
1.2.1 Major Glands	1393
1.2.2 Minor Glands	1394
1.3 Surgeon's Expectations of the Intraoperative Assessment of Salivary Gland Neoplasms	1395
1.3.1 Major Glands	1395
1.3.2 Minor Salivary Gland Tumors	1396
1.4 Approach to Handling of Resected Tissue	1397
1.4.1 Major Glands	1397
1.4.2 Minor Glands	1398
1.4.3 For Both Major and Minor Glands	1398
1.5 Diagnostic Considerations	1398
1.6 Accuracy of Intraoperative Diagnosis	1401
1.7 Biopsy Diagnosis of Salivary Gland Neoplasms (Figs. 21.14 to 21.19)	1401
1.8 CONCLUSIONS	1410
Chapter-22---Embryology--Anatomy--and-Histolog_2023_Atlas-of-Head-and-Neck-P	1414
1 22. Embryology, Anatomy, and Histology of the Ear	1414
1.1 Embryology	1414
1.1.1 External Ear	1414
1.1.2 Middle Ear	1414

1.1.3 Inner Ear	1414
1.2 Anatomy (Figs. 22.1 to 22.3)	1414
1.2.1 External Ear	1414
1.2.2 Borders	1416
1.2.3 Middle Ear (Tympanic Cavity)	1416
1.3 Eustachian (Auditory) Tube	1416
1.3.1 Borders	1416
1.3.2 Function	1417
1.3.3 Inner Ear (Labyrinth)	1417
1.3.4 Function	1417
1.4 Innervation	1417
1.4.1 External Ear	1417
1.4.2 Middle Ear	1417
1.4.3 Internal Ear	1417
1.5 Blood Supply and Lymphatic Drainage	1417
1.5.1 External Ear	1417
1.5.2 Middle Ear	1417
1.5.3 Inner Ear	1417
1.6 Histology (Fig. 22.4)	1418
1.6.1 External Ear	1418
1.7 Auditory Epithelial Migration	1418
1.8 Middle Ear (Figs. 22.5 and 22.6)	1419
1.8.1 Mastoid Air Cells	1419
1.8.2 Pneumatization of the Temporal Bone	1420
1.8.3 Middle Ear Ossicles	1420
1.8.4 Middle Ear Joints	1420
1.8.5 Inner Ear	1421
Chapter-23---Nonneoplastic-Lesions-of-the-Ear-a_2023_Atlas-of-Head-and-Neck-	1423
1 23. Nonneoplastic Lesions of the Ear and Temporal Bone	1423
1.1 Classification of Nonneoplastic Lesions of the Ear (Box 23.1)	1423
1.2 Congenital and Developmental Abnormalities of the Ear	1423
1.3 External Ear	1423
1.3.1 Accessory Tragi (Figs. 23.1 and 23.2)	1423
1.3.1.1 Clinical	1423
1.3.1.2 Pathology	1423
1.3.1.3 Differential Diagnosis	1423
1.3.2 Treatment and Prognosis	1423
1.3.3 Branchial Cleft Anomalies	1424
1.4 Middle and Inner Ear	1424
1.4.1 Developmental Defects	1424
1.4.1.1 Autosomal-Recessive Hereditary Sensorineural Hearing Loss	1425
1.5 Heterotopias (Choristomas) of the Middle Ear and Mastoid	1426
1.5.1 Clinical	1426
1.5.2 Middle Ear Salivary Gland Heterotopia (Fig. 23.3)	1426
1.5.2.1 Pathology	1427

1.5.2.2 Treatment and Prognosis	1427
1.5.3 Middle Ear Neuroglial Heterotopia	1427
1.5.4 Acquired Encephalocele (Fig. 23.4)	1427
1.5.4.1 Pathology	1428
1.5.4.2 Differential Diagnosis	1428
1.5.4.3 Treatment and Prognosis	1428
1.6 Acquired Lesions of the Ear	1428
1.6.1 Keloid (Figs. 23.5 and 23.6)	1428
1.6.1.1 Clinical	1428
1.6.1.2 Pathology	1429
1.6.1.3 Differential Diagnosis	1429
1.6.1.4 Treatment and Prognosis	1430
1.6.2 Cystic Chondromalacia of the Auricular Cartilage (Figs. 23.7 and 23.8)	1430
1.6.2.1 Clinical	1430
1.6.2.2 Pathology	1431
1.6.2.3 Differential Diagnosis	1432
1.6.2.4 Treatment and Prognosis	1432
1.6.3 Chondrodermatitis Nodularis Chronicus Helicis (CNCH) (Figs. 23.9 and 23.10)	1432
1.6.3.1 Clinical	1432
1.6.3.2 Pathology	1432
1.6.3.3 Differential Diagnosis	1434
1.6.3.4 Treatment and Prognosis	1434
1.6.4 Exostosis of the External Auditory Canal (Figs. 23.11 and 23.12)	1434
1.6.4.1 Clinical	1434
1.6.4.2 Pathologic	1435
1.6.4.3 Differential Diagnosis	1435
1.6.4.4 Treatment and Prognosis	1435
1.7 Middle Ear and Temporal Bone	1435
1.7.1 Cholesteatoma (Keratoma) (Figs. 23.13 to 23.18)	1435
1.7.2 Acquired Cholesteatoma	1436
1.7.2.1 Clinical	1436
1.7.3 Congenital Cholesteatoma	1438
1.7.3.1 Clinical	1438
1.7.3.2 Pathology (Similar Pathologic Findings for Both Acquired and Congenital Cholesteatomas)	1438
1.7.3.3 Differential Diagnosis	1439
1.7.3.4 Treatment and Prognosis	1441
1.8 Infectious and Inflammatory Lesions	1442
1.9 Necrotizing External Otitis (NEO) (Figs. 23.21 to 23.23)	1442
1.9.1 Clinical	1442
1.9.1.1 Pathogenesis	1442
1.9.2 Pathology	1442
1.9.2.1 Gross	1442
1.9.2.2 Histology	1442
1.9.3 Differential Diagnosis	1443

1.9.4 Treatment and Prognosis	1444
1.10 Otitis Media (Figs. 23.24 to 23.27)	1444
1.10.1 Clinical	1444
1.10.2 Pathology	1445
1.10.2.1 Gross	1445
1.10.2.2 Histology	1445
1.10.3 Differential Diagnosis	1447
1.10.4 Treatment and Prognosis	1447
1.10.4.1 Intratemporal Complications of Otitis Media	1447
1.10.4.2 Intracranial (Endocranial) Complications	1448
1.10.5 Miscellaneous Infections of the Ear and Temporal Bone	1448
1.10.5.1 Differential Diagnosis	1449
1.10.6 Otic (Aural) Polyp (Figs. 23.29 and 23.30)	1449
1.10.6.1 Clinical	1450
1.10.6.2 Pathology	1450
1.10.6.3 Differential Diagnosis	1450
1.10.6.4 Treatment and Prognosis	1451
1.10.7 Malakoplakia (Fig. 23.31)	1451
1.10.7.1 Clinical	1451
1.10.7.2 Pathology	1451
1.10.7.3 Treatment and Prognosis	1451
1.11 Autoimmune, Systemic, and Degenerative Diseases of the Ear	1451
1.12 Relapsing Polychondritis (RP) (Figs. 23.32 and 23.33)	1451
1.12.1 Clinical	1451
1.12.1.1 Pathology	1453
1.12.1.2 Differential Diagnosis	1453
1.12.1.3 Treatment and Prognosis	1453
1.13 Tophaceous Gout (Figs. 23.34 and 23.35)	1454
1.13.1 Clinical Features	1454
1.13.1.1 Pathologic Features	1455
1.13.1.2 Differential Diagnosis	1455
1.13.1.3 Treatment and Prognosis	1457
1.14 Granulomatosis With Polyangiitis (GPA) (See Chapter 2)	1458
1.14.1 Clinical	1458
1.14.1.1 Pathology	1458
1.14.1.2 Differential Diagnosis	1458
1.14.1.3 Treatment and Prognosis	1459
1.15 Otosclerosis (Fig. 23.38)	1459
1.15.1 Clinical	1459
1.15.1.1 Pathology	1460
1.15.1.2 Differential Diagnosis	1461
1.15.1.3 Treatment and Prognosis	1461
1.16 Paget Disease of Bone (Figs. 23.39 and 23.40)	1461
1.16.1 Clinical	1461
1.16.1.1 Pathology	1463

1.16.1.2 Differential Diagnosis	1463
1.16.1.3 Treatment and Prognosis	1463
1.17 Ménière Disease	1463
1.17.1 Clinical	1463
1.17.1.1 Pathology	1464
1.17.1.2 Treatment and Prognosis	1464
Chapter-24---Neoplasms-of-the-Ear-and-Tempor_2023_Atlas-of-Head-and-Neck-Pat	1470
1 24. Neoplasms of the Ear and Temporal Bone	1470
1.1 Classification of Neoplasms of the Ear (Box 24.1)	1470
1.1.1 Benign Ceruminous Gland Neoplasms	1470
1.1.1.1 General Comments	1470
1.1.1.2 Ceruminous Adenoma (CEA) (Figs. 24.1 to 24.3)	1470
1.1.1.2.1 Clinical	1470
1.1.1.2.2 Pathology	1471
1.1.1.2.3 Differential Diagnosis	1472
1.1.1.2.4 Treatment and Prognosis	1472
1.1.1.3 Other Ceruminous Gland Benign Neoplasms	1472
1.1.1.3.1 Pleomorphic Adenoma of Ceruminous Gland Origin (Fig. 24.4)	1472
1.1.1.3.2 Syringocystadenoma Papilliferum of Ceruminous Gland Origin (Figs. 24.5 and 24.6)	1472
1.1.1.4 Benign Mesenchymal Tumors of the External Ear	1472
1.1.1.4.1 Epithelioid Hemangioma (EH) (Figs. 24.7 and 24.8)	1472
1.1.1.4.2 Clinical	1473
1.1.1.4.3 Pathogenesis	1474
1.1.1.4.4 Pathologic Features	1474
1.1.1.4.5 Differential Diagnosis	1476
1.1.1.4.6 Treatment and Prognosis	1476
1.1.1.5 Kimura Disease (Fig. 24.9)	1476
1.1.1.5.1 Clinical	1476
1.1.1.5.2 Pathology	1476
1.1.1.5.3 Differential Diagnosis	1476
1.1.1.5.4 Treatment and Prognosis	1476
1.1.1.6 Other Benign Mesenchymal Neoplasms of the External Ear and Auditory Canal	1477
1.1.1.6.1 Osteoma	1477
1.1.1.6.2 Pathology	1477
1.1.1.6.3 Differential Diagnosis	1477
1.1.1.6.4 Treatment and Prognosis	1477
1.1.1.7 Myxomas of the External Ear and External Auditory Canal (Fig. 24.10)	1477
1.1.1.7.1 Clinical	1477
1.1.1.7.2 Pathology	1478
1.1.1.7.3 Differential Diagnosis	1478
1.1.1.7.4 Treatment and Prognosis	1479
1.2 Benign Neoplasms of the Middle Ear and Temporal Bone	1479
1.2.1 Middle Ear Adenoma (MEA) and Middle Ear Neuroendocrine Tumor (MeNET) (Figs. 24.11 to 24.14)	1479

1.2.1.1	Clinical (Similar for Both MEA and MeNET)	1480
1.2.1.2	Pathology	1483
1.2.1.3	Middle Ear Adenoma	1483
1.2.1.4	Middle Ear Neuroendocrine Tumor (MeNET)	1483
1.2.1.5	Differential Diagnosis (for Both MEA and MeNET)	1484
1.2.1.6	Treatment and Prognosis (for Both MEA and MeNET)	1484
1.2.2	Jugulotympanic Paraganglioma (JTP) (Figs. 24.15 to 24.21)	1485
1.2.2.1	Clinical	1486
1.2.2.2	Pathology	1489
1.2.2.3	Differential Diagnosis	1490
1.2.2.4	Treatment and Prognosis	1490
1.2.3	Vestibular Schwannoma (VS) (Figs. 24.22 and 24.23)	1491
1.2.3.1	Clinical	1492
1.2.3.2	Pathology	1494
1.2.3.3	Differential Diagnosis	1494
1.2.3.4	Treatment and Prognosis	1494
1.2.4	Meningioma (Figs. 24.24 and 24.25)	1494
1.2.4.1	Clinical	1494
1.2.4.2	Pathology	1496
1.2.4.3	Differential Diagnosis	1497
1.2.4.4	Treatment and Prognosis	1497
1.2.5	Synovial Chondromatosis of the Temporomandibular Joint (TMJ) (Figs. 24.26 and 24.27)	1497
1.2.5.1	Clinical	1497
1.2.5.2	Pathology	1499
1.2.5.3	Differential Diagnosis	1499
1.2.5.4	Treatment and Prognosis	1499
1.2.6	Other Benign Tumors of the Middle Ear and Temporal Bone	1499
1.2.7	Middle Ear Papilloma (See Fig. 24.28)	1499
1.2.7.1	Clinical	1500
1.2.7.2	Pathology	1500
1.2.7.3	Differential Diagnosis	1500
1.2.7.4	Treatment and Prognosis	1500
1.3	Malignant Neoplasms of the External Ear	1500
1.3.1	Basal Cell Carcinoma (BCC) (Figs. 24.29 to 24.31)	1500
1.3.1.1	Clinical	1500
1.3.1.2	Pathology	1504
1.3.1.3	Differential Diagnosis	1505
1.3.1.4	Treatment and Prognosis	1505
1.3.2	Keratoacanthoma (KA) (Fig. 24.32)	1506
1.3.2.1	Clinical	1507
1.3.2.2	Pathology	1507
1.3.2.3	Differential Diagnosis	1508
1.3.2.4	Treatment and Prognosis	1508
1.3.3	Squamous Cell Carcinoma (SCC) of the External Ear and External Auditory Canal (Figs. 24.33 to 24.36)	1508

1.3.3.1 Clinical	1508
1.3.3.2 Pathology	1510
1.3.3.3 Differential Diagnosis	1514
1.3.3.4 Treatment and Prognosis	1515
1.3.4 Merkel Cell Carcinoma (MCC) (Figs. 24.38)	1516
1.3.4.1 Clinical	1518
1.3.4.2 Pathology	1518
1.3.4.3 Differential Diagnosis	1519
1.3.4.4 Treatment and Prognosis	1519
1.3.5 Ceruminous Adenocarcinoma (Figs. 24.39 to 24.41)	1520
1.3.5.1 Clinical	1520
1.3.5.2 Pathology	1520
1.3.5.3 Differential Diagnosis	1522
1.3.5.4 Treatment and Prognosis	1522
1.3.6 Atypical Fibroxanthoma (AFX) (Fig. 24.42)	1523
1.3.6.1 Clinical	1523
1.3.6.2 Pathology	1525
1.3.6.3 Differential Diagnosis	1526
1.3.6.4 Treatment and Prognosis	1526
1.3.7 Dermatofibrosarcoma Protuberans (DFSP) (Fig. 24.43)	1526
1.3.7.1 Clinical	1527
1.3.7.2 Pathology	1528
1.3.7.3 Differential Diagnosis	1529
1.3.7.4 Treatment and Prognosis	1529
1.3.8 Langerhans Cell Histiocytosis (LCH) (Figs. 24.44 to 24.48)	1530
1.3.8.1 Clinical	1530
1.3.8.2 Pathology	1531
1.3.8.3 Differential Diagnosis	1532
1.3.8.4 Treatment and Prognosis	1533
1.4 Malignant Neoplasms of the Middle Ear	1534
1.4.1 Middle Ear Squamous Cell Carcinoma (ME-SCC) (Figs. 24.50 and 24.51)	1534
1.4.1.1 Clinical	1534
1.4.1.2 Pathology	1534
1.4.1.3 Differential Diagnosis	1534
1.4.1.4 Treatment and Prognosis	1536
1.4.2 Middle Ear Adenocarcinoma, Including Aggressive Papillary Tumor (APT) (Figs. 24.52 to 24.54)	1536
1.4.2.1 Clinical	1536
1.4.2.2 Pathology	1537
1.4.3 Aggressive Papillary Tumor (APT) (See Fig. 24.54)	1538
1.4.3.1 Clinical	1538
1.4.3.2 Pathology	1538
1.4.3.3 Differential Diagnosis	1538
1.4.3.4 Treatment and Prognosis	1540
1.4.4 Endolymphatic Sac Tumor (ELST) (Figs. 24.55 to 24.57)	1540
1.4.4.1 Clinical	1540