

**Features:**

- Reflects the current emphasis on holistic diagnosis and treatment not just of the TMJ but of all related structures that can be adversely affected by any TMJ dysfunction
- Examines a variety of presenting clinical signs or symptoms, discusses imaging strategies and the associated conditions revealed by imaging, and helps you develop differential diagnoses
- Provides current, detailed information on the relationship between TMJ disorders and SDB, how imaging shows the correlation between the two, and risk factors for SDB
- Includes upper respiratory tract diagnoses, with multiple subsections on the nasal cavity, paranasal sinuses, nasopharynx, oropharynx, and hypopharynx, each with multiple new chapters
- Features new chapters on ultrasonography of the TMJ and upper respiratory tract, new content on 3D and 4D modeling and surface rendering, a new section on imaging of upper respiratory tract procedures, and new content detailing the tie-in between occlusion and SDB
- Includes an expanded Modalities section that includes new chapters on formulating a TMJ/upper respiratory tract report; plain film imaging of the TMJ and upper respiratory tract; CBCT analysis of the upper respiratory tract; dynamic MR of the TMJ and upper respiratory tract, and ultrasound of the TMJ
- Covers the role that TMJ plays in facial growth and development, stomatognathic system function, and how TMJ abnormalities change the dimensions of the facial skeleton and surrounding structures
- Contains over 5,000 print and online-only images (more than 300 are new), including radiologic images, full-color medical illustrations, and histologic and gross pathology photographs
- Reflects updates to the Research Diagnostic Criteria for Temporomandibular Disorders (RDC-TMD)—the major clinical classification method and a key tool to assess/diagnose TMJ issues and facilitate communication for consultants, referrals, and prognoses
- Includes an eBook version that enables you to access all text, figures, and references, with the ability to search, customize your content, make notes and highlights, and have content read aloud

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*Bernadette L. Koch, MD and Dania Tamimi, BDS, DMSc*

**831 CHARGE Syndrome**

*William T. O'Brien, Sr., DO, FAOCR and Caroline D. Robson, MBChB*

**832 Cherubism**

*Bernadette L. Koch, MD and Dania Tamimi, BDS, DMSc*

**SINONASAL COMPLEX ENTITIES THAT NARROW AIRWAY**

**834 Nasal Cycle, Normal Physiology**

*Husniye Demirturk, DDS, MS, PhD*

**ANOMALIES AND CONGENITAL CONDITIONS, SINONASAL**

**836 Deviated Nasal Septum**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**838 Concha Bullosa**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**840 Accessory Ostia**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**842 Sinus Hypoplasia/Aplasia**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**846 Nasolacrimal Duct Mucocele**

*Bernadette L. Koch, MD and Surjith Vattoth, MD, FRCR*

**847 Choanal Atresia**

*Bernadette L. Koch, MD and Surjith Vattoth, MD, FRCR*

**848 Congenital Nasal Pyriform Aperture Stenosis**

*Bernadette L. Koch, MD*

**849 Nasal Glioma**

*Bernadette L. Koch, MD and Surjith Vattoth, MD, FRCR*

**850 Nasal Dermal Sinus**

*Bernadette L. Koch, MD and Surjith Vattoth, MD, FRCR*

**851 Frontoethmoidal Cephalocele**

*Bernadette L. Koch, MD and Surjith Vattoth, MD, FRCR*

**852 Upper Airway Infantile Hemangioma**

*Bernadette L. Koch, MD*

**853 Skull Base CSF Leak**

*Surjith Vattoth, MD, FRCR and Patricia A. Hudgins, MD, FACR*

**INFLAMMATORY CHANGES, SINONASAL**

**854 Acute Rhinosinusitis**

*Nicholas A. Koontz, MD*

**858 Chronic Rhinosinusitis**

*Philip R. Chapman, MD*

**859 Allergic Fungal Sinusitis**

*Bronwyn E. Hamilton, MD and H. Christian Davidson, MD*

**860 Odontogenic Sinusitis**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**862 Sinus Mycetoma**

*Aparna Singhal, MD and H. Christian Davidson, MD*

**863 Invasive Fungal Sinusitis**

*Nicholas A. Koontz, MD*

**864 Sinonasal Polyposis**

*Nicholas A. Koontz, MD*

**865 Solitary Sinonasal Polyp**

*Philip R. Chapman, MD*

**866 Sinonasal Mucocele**

*Philip R. Chapman, MD*

**870 Mucus Retention Pseudocyst**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**872 Sinonasal Organized Hematoma**

*Philip R. Chapman, MD*

**873 Silent Sinus Syndrome**

*Philip R. Chapman, MD*

**874 Granulomatosis With Polyangiitis (Wegener)**

*Philip R. Chapman, MD*

**875 Nasal Cocaine Necrosis**

*Philip R. Chapman, MD*

**BENIGN LESIONS, SINONASAL**

**876 Sinonasal Fibrous Dysplasia**

*Yoshimi Anzai, MD, MPH*

**877 Sinonasal Osteoma**

*Daniel E. Meltzer, MD*

**878 Sinonasal Ossifying Fibroma**

*Axel Ruprecht, DDS, MScD, FRCD(C) and Michelle A.*

*Michel, MD*

**879 Juvenile Angiofibroma**

*Bernadette L. Koch, MD and Surjith Vattoth, MD, FRCR*

**880 Sinonasal Inverted Papilloma**

*Yoshimi Anzai, MD, MPH*

**881 Sinonasal Hemangioma**

*Yoshimi Anzai, MD, MPH*

**882 Sinonasal Nerve Sheath Tumor**

*Yoshimi Anzai, MD, MPH*

**883 Sinonasal Benign Mixed Tumor**

*Yoshimi Anzai, MD, MPH*

**MALIGNANT LESIONS, SINONASAL**

**884 Sinonasal Squamous Cell Carcinoma**

*Yoshimi Anzai, MD, MPH*

**888 Esthesioneuroblastoma**

*Yoshimi Anzai, MD, MPH*

**889 Sinonasal Melanoma**

*Yoshimi Anzai, MD, MPH*

**890 Sinonasal Adenocarcinoma**

*Blair A. Winegar, MD*

**891 Sinonasal Non-Hodgkin Lymphoma**

*Yoshimi Anzai, MD, MPH*

**892 Sinonasal Neuroendocrine Carcinoma**

*Blair A. Winegar, MD*

**893 Sinonasal Adenoid Cystic Carcinoma**

*Blair A. Winegar, MD*

**894 Sinonasal Chondrosarcoma**

*Blair A. Winegar, MD*

**895 Sinonasal Osteosarcoma**

*Blair A. Winegar, MD*

**896 Rhabdomyosarcoma**

*Bernadette L. Koch, MD*

**897 Skull Base Langerhans Cell Histiocytosis**

*C. Douglas Phillips, MD, FACR*

**NASOPHARYNGEAL ENTITIES THAT NARROW AIRWAY**

ANOMALIES AND CONGENITAL CONDITIONS, NASOPHARYNX

**898 Tornwaldt Cyst**

*Surjith Vattoth, MD, FRCR and Patricia A. Hudgins, MD, FACR*

**899 Fossa Navicularis Magna**

*H. Ric Harnsberger, MD and Sara Strauss, MD*

**900 Persistent Craniopharyngeal Canal**

*C. Douglas Phillips, MD, FACR*

**INFLAMMATORY CHANGES, NASOPHARYNX**

**901 Suppurative Adenopathy of Retropharyngeal Space**

*Bernadette L. Koch, MD and H. Ric Harnsberger, MD*

**902 Adenoid Vegetation/Hypertrophy**

*Husniye Demirturk, DDS, MS, PhD*

**BENIGN LESIONS, NASOPHARYNX**

**906 Benign Mixed Tumor of Pharyngeal Mucosal Space**

*Surjith Vattoth, MD, FRCR and Patricia A. Hudgins, MD, FACR*

**907 Plexiform Neurofibroma of Head and Neck**

*Daniel E. Meltzer, MD and Luke N. Ledbetter, MD*

**908 Posttransplantation Lymphoproliferative Disorder**

*Surjith Vattoth, MD, FRCR and Patricia A. Hudgins, MD, FACR*

**909 Sinus Histiocytosis (Rosai-Dorfman) of Head and Neck**

*H. Ric Harnsberger, MD and Kathryn E. Dean, MD*

**910 Invasive Pituitary Macroadenoma**

*C. Douglas Phillips, MD, FACR*

**MALIGNANT LESIONS, NASOPHARYNX**

**911 Nasopharyngeal Carcinoma**

*Aparna Singhal, MD and Luke N. Ledbetter, MD*

**912 Non-Hodgkin Lymphoma of Pharyngeal Mucosal**

**Space**

*Surjith Vattoth, MD, FRCR and Patricia A. Hudgins, MD, FACR*

**913 Extraosseous Chordoma**

*Surjith Vattoth, MD, FRCR*

**914 Skull Base Plasmacytoma**

*Philip R. Chapman, MD*

**OROPHARYNGEAL ENTITIES THAT NARROW AIRWAY**

**ANOMALIES AND CONGENITAL CONDITIONS, OROPHARYNX**

**915 Congenital Vallecular Cyst**

*Bernadette L. Koch, MD*

**916 Thyroglossal Duct Cyst**

*Bernadette L. Koch, MD*

**917 Lingual Thyroid**

*Daniel E. Meltzer, MD*

**INFLAMMATORY CHANGES, OROPHARYNX**

**918 Retropharyngeal Space Abscess**

*Bernadette L. Koch, MD*

**919 Retention Cyst of Pharyngeal Mucosal Space**

*Surjith Vattoth, MD, FRCR*

**920 Tonsillar Inflammation**

*Bernadette L. Koch, MD and H. Ric Harnsberger, MD*

**921 Tonsillar/Peritonsillar Abscess**

*Bernadette L. Koch, MD and H. Ric Harnsberger, MD*

**BENIGN LESIONS, OROPHARYNX**

**922 Parotid Benign Mixed Tumor**

*Bronwyn E. Hamilton, MD and H. Ric Harnsberger, MD*

**923 Carotid Space Schwannoma**

*Karen L. Salzman, MD*

**924 Parapharyngeal Space Benign Mixed Tumor**

*Aparna Singhal, MD and H. Ric Harnsberger, MD*

**MALIGNANT LESIONS, OROPHARYNX**

**925 Parotid Malignant Mixed Tumor**

*Bronwyn E. Hamilton, MD*

**926 Nodal Non-Hodgkin Lymphoma in Retropharyngeal Space**

*Bronwyn E. Hamilton, MD*

**927 Minor Salivary Gland Malignancy of Pharyngeal Mucosal Space**

*Surjith Vattoth, MD, FRCR and Patricia A. Hudgins, MD, FACR*

**928 Non-Hodgkin Lymphoma of Head and Neck**

*Surjith Vattoth, MD, FRCR*

**929 Base of Tongue Squamous Cell Carcinoma**

*Aparna Singhal, MD*

**930 Palatine Tonsil Squamous Cell Carcinoma**

*Bronwyn E. Hamilton, MD and Luke N. Ledbetter, MD*

**931 Nodal Squamous Cell Carcinoma of Retropharyngeal Space**

*Bronwyn E. Hamilton, MD*

**932 Soft Palate Squamous Cell Carcinoma**

*Kathryn E. Dean, MD and Luke N. Ledbetter, MD*

**934 HPV-Related Oropharyngeal Squamous Cell Carcinoma**

*Surjith Vattoth, MD, FRCR and Philip R. Chapman, MD*

**SECTION 7: TMJ RADIOGRAPHIC DIFFERENTIAL DIAGNOSES**

## **CONDYLAR POSITION**

### **938 Anterior Condylar Position**

*David Hatcher, DDS, MSc and Dania Tamimi, BDS, DMSc*

### **944 Posterior Condylar Position**

*David Hatcher, DDS, MSc and Dania Tamimi, BDS, DMSc*

### **950 Superior Condylar Position**

*David Hatcher, DDS, MSc and Dania Tamimi, BDS, DMSc*

### **956 Inferior Condylar Position**

*David Hatcher, DDS, MSc and Dania Tamimi, BDS, DMSc*

## **CHANGES IN CONDYLAR AND CORONOID SIZE**

### **962 Small Condyle**

*C. Grace Petrikowski, DDS, MSc, FRCD(C) and Dania Tamimi, BDS, DMSc*

### **968 Large Condyle**

*C. Grace Petrikowski, DDS, MSc, FRCD(C) and Dania Tamimi, BDS, DMSc*

### **972 Large Coronoid Process**

*Dania Tamimi, BDS, DMSc*

## **CONDYLAR EROSION**

### **974 Well-Defined Erosion**

*David Hatcher, DDS, MSc*

### **980 Poorly Defined Erosion**

*David Hatcher, DDS, MSc*

## **CHANGES IN TMJ DENSITY**

### **984 TMJ Low-Density Entities**

*C. Grace Petrikowski, DDS, MSc, FRCD(C)*

### **986 TMJ High-Density Entities**

*C. Grace Petrikowski, DDS, MSc, FRCD(C) and Dania Tamimi, BDS, DMSc*

## **MISCELLANEOUS**

### **990 Calcifications Associated With the TMJ**

*C. Grace Petrikowski, DDS, MSc, FRCD(C) and Dania Tamimi, BDS, DMSc*

**992 Soft Tissue Calcifications, Head and Neck**

*Margot L. Van Dis, DDS, MS*

SECTION 8: TMJ CLINICAL DIFFERENTIAL DIAGNOSES

**RANGE OF MOTION**

**998 Limited Oral Opening**

*Jeffrey P. Okeson, DMD, Isabel Moreno-Hay, DDS, PhD, and Dania Tamimi, BDS, DMSc*

**1004 Hypermobility**

*Jeffrey P. Okeson, DMD, Isabel Moreno-Hay, DDS, PhD, and Dania Tamimi, BDS, DMSc*

**SOUNDS**

**1006 Joint Sounds**

*Jeffrey P. Okeson, DMD, Isabel Moreno-Hay, DDS, PhD, and Dania Tamimi, BDS, DMSc*

**1008 Tinnitus**

*C. Douglas Phillips, MD, FACR and Dania Tamimi, BDS, DMSc*

**OCCCLUSION/SYMMETRY CHANGES**

**1014 Asymmetry**

*Jeffrey P. Okeson, DMD, Isabel Moreno-Hay, DDS, PhD, and Dania Tamimi, BDS, DMSc*

**1020 Anterior Open Bite**

*Jeffrey P. Okeson, DMD, Isabel Moreno-Hay, DDS, PhD, and Dania Tamimi, BDS, DMSc*

**1026 Posterior Open Bite**

*Jeffrey P. Okeson, DMD, Isabel Moreno-Hay, DDS, PhD, and Dania Tamimi, BDS, DMSc*

SECTION 9: SDB RISK FACTORS, RADIOGRAPHIC DIFFERENTIAL DIAGNOSES

**NASAL CAVITY AND PARANASAL SINUSES**

**1034 Blocked Nasal Valves**

*Noura Alsufyani, BDS, MSc, PhD and Dania Tamimi, BDS, DMSc*

**1038 Large Nasal Turbinates**

*Noura Alsufyani, BDS, MSc, PhD and Dania Tamimi, BDS, DMSc*

**1042 Sinonasal Fibrousseous and Cartilaginous Lesions**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**1044 Paranasal Sinus Lesions Without Bony Destruction**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**1048 Paranasal Sinus Lesions With Bony Destruction**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**1052 Perforated Nasal Septum**

*Axel Ruprecht, DDS, MScD, FRCD(C) and Dania Tamimi, BDS, DMSc*

**1054 Nasal Lesion Without Bony Destruction**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**1058 Nasal Lesion With Bony Destruction**

*Axel Ruprecht, DDS, MScD, FRCD(C)*

**NASOPHARYNX**

**1062 Soft Tissue Entities in Nasopharynx**

*Dania Tamimi, BDS, DMSc*

**OROPHARYNX**

**1068 Soft Tissue Enlargement of Lateral Pharyngeal Wall**

*Dania Tamimi, BDS, DMSc*

**1072 Soft Tissue Between Tongue and Epiglottis**

*Dania Tamimi, BDS, DMSc*

**SECTION 10: SDB RISK FACTORS, CLINICAL DIFFERENTIAL DIAGNOSES**

**CHANGES IN CRANIOFACIAL MORPHOLOGY AND POSITION**

**1078 Convex Facial Profile**

*Steve Carstensen, DDS, FAGD, FACD, FICD and Dania Tamimi, BDS, DMSc*

**1080 Small Maxilla**

*Steve Carstensen, DDS, FAGD, FACD, FICD and Dania Tamimi, BDS, DMSc*

**1082 Forward Head Posture**

*Steve Carstensen, DDS, FAGD, FACD, FICD and Dania Tamimi, BDS, DMSc*

**CHANGES IN BREATHING PATTERN**

#### **1084 Nasal Obstruction**

*Dania Tamimi, BDS, DMSc and Steve Carstensen, DDS, FAGD, FACD, FICD*

#### **CHANGES IN TEETH**

#### **1088 Flared and Proclined Teeth**

*Steve Carstensen, DDS, FAGD, FACD, FICD and Dania Tamimi, BDS, DMSc*

#### **1092 Crossbite**

*Steve Carstensen, DDS, FAGD, FACD, FICD and Dania Tamimi, BDS, DMSc*

#### **OTHER FACIAL CHANGES**

#### **1096 Dark Circles Under Eyes**

*Steve Carstensen, DDS, FAGD, FACD, FICD and Dania Tamimi, BDS, DMSc*

#### **SECTION 11: IMAGING OF TMJ PROCEDURES**

#### **OROFACIAL PAIN AND TMJ INJECTIONS**

#### **1100 TMJ Injection**

*Donald V. La Barge, III, MD, MBA*

#### **1102 Trigeminal Nerve Injection**

*Donald V. La Barge, III, MD, MBA and Dania Tamimi, BDS, DMSc*

#### **1106 Scalp Block for Migraines and Facial Pain**

*Daewoong Lee, MD*

#### **1110 Trigger Points**

*Daewoong Lee, MD and Kaan Orhan, DDS, MSc, MHM, PhD, BA*

#### **TMJ SURGERY**

#### **1112 Total Joint Replacement**

*Louis G. Mercuri, DDS, MS, Gary Warburton, DDS, MD, FACS, and Colin J. Stanhope, DDS, MD*

#### **1124 TMJ Disc Replacement**

*Dania Tamimi, BDS, DMSc, Gary Warburton, DDS, MD, FACS, and Colin J. Stanhope, DDS, MD*

#### **1126 TMJ Arthroscopic Surgery Cascade**

*Reem H. Hossameldin, BDS, MSc, PhD and Joseph P. McCain, DMD*

SECTION 12: IMAGING OF SURGICAL PROCEDURES FOR SDB

**SINONASAL PROCEDURES**

**1132 Septoplasty and Turbinate Reduction**

*Soroush Zaghi, MD, Chirag Govardhan, MD, and Dania Tamimi, BDS, DMSc*

**1134 Adenoidectomy**

*Soroush Zaghi, MD, Chirag Govardhan, MD, and Dania Tamimi, BDS, DMSc*

**1136 Tonsillectomy**

*Soroush Zaghi, MD, Chirag Govardhan, MD, and Dania Tamimi, BDS, DMSc*

**MAXILLARY-MANDIBULAR ADVANCEMENT**

**1138 Introduction to Orthognathic Surgery**

*Michael Gunson, DDS, MD*

**1144 LeFort 1 Osteotomy**

*Michael Gunson, DDS, MD*

**1148 Bilateral Sagittal Split Osteotomies**

*Michael Gunson, DDS, MD*

**1154 MMA for Obstructive Sleep Apnea**

*Michael Gunson, DDS, MD*