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Pediatric Airway Abnormalities: Evaluation and Management 325
Scott Shadfar, Amelia F. Drake, Bradley V. Vaughn, and Carlton J. Zdanski

Sleep disordered breathing syndromes in pediatric patients can lead to adverse effects in the cardiovascular system, neurocognitive function, growth, and behavior. These syndromes occur more frequently in patients with craniofacial disorders. A high index of suspicion as well as early recognition, detection, and treatment of these syndromes are considered integral to care of children with craniofacial disorders.

Pediatric Head Injuries 337
Bruce B. Horswell and Michael S. Jaskolka

Head injuries in children are common, comprising more than half of all injuries sustained. The mortality and morbidity associated with traumatic head injury in children is staggering, and the cumulative effect of such on the pediatric and general populations is propagated through related health care measures and subsequent socio-economic burden. The majority of deaths due to trauma in children are caused by brain injury. This article reviews the evaluation and management of scalp injuries in the pediatric patient. The second portion addresses skull fractures, the specter of child abuse, management of acute fracture, and the phenomenon of growing skull fractures.

Facial Skeletal Trauma in the Growing Patient 351
Christopher Morris, George M. Kushner, and Paul S. Tiwana

The management of pediatric craniomaxillofacial trauma requires the additional dimension of understanding growth and development. The surgeon must appreciate the considerable influence of the soft tissue envelope and promote function when possible. Children heal well but with an exuberant tissue response that may contribute to greater scarring, therefore, careful and prudent attention given to meticulous soft tissue repair and support is critical. Support must also be given and sought from the family of the injured child. Follow-up management of children must continue to ensure that the growth of the craniomaxillofacial skeleton continues within the normal parameters of development.

Primary and Secondary Management of Pediatric Soft Tissue Injuries 365
Nicholas J.V. Hogg

Injury is the most common cause of death in pediatric patients, with a large proportion related to head injury. The craniofacial region in children develops rapidly and at an early age, making the area more prominent compared with the remainder of the body, increasing the likelihood of injury. This article reviews the primary management of pediatric soft tissue injuries, including assessment, cleansing, surgical technique, anesthesia, and considerations for special wounds. The secondary
management of pediatric facial injury is also discussed, including scar revision, management of scar hypertrophy/keloids, and staged surgical correction.

**Growth and Development Considerations for Craniomaxillofacial Surgery**

Bernard J. Costello, Reynaldo D. Rivera, Jocelyn Shand, and Mark Mooney

The purpose of craniomaxillofacial surgery is to improve function, occlusion, craniofacial balance, and aesthetics. Accurate diagnosis, assessment, and careful treatment planning are essential in achieving a successful outcome, and an understanding of the pattern of facial growth is integral in this process. Patients with craniofacial congenital dysmorphologies, posttraumatic asymmetries, or disturbances of facial balance from radiation may have functional and/or aesthetic issues that require treatment. Understanding the complexities of growth in the skull and face is a key component to appropriate treatment planning for these disorders. This article reviews growth and development in the craniofacial skeleton.

**Ear and Nose Reconstruction in Children**

Edward I. Lee, Amy S. Xue, Larry H. Hollier Jr, and Samuel Stal

Auricular and nasal deformities can have significant social ramifications; therefore, proper repair of these deformities is critically important to a child’s well-being. Moreover, the benefits of reconstruction in the pediatric population must be weighed against added concerns about potential growth restriction on the ear and the nose with any manipulation. This article reviews various methods of auricular and nasal reconstruction and discusses some of the technical pearls for improved outcome. A complete discourse on treatment of total ear and nasal reconstruction is beyond the scope of this article. Attention is focused primarily on partial to subtotal defects.

**Craniofacial and Orbital Dermoids in Children**

Brent A. Golden, Michael S. Jaskolka, and Ramon L. Ruiz

Dermoid cysts are congenital lesions that commonly arise from nondisjunction of surface ectoderm from deeper neuroectodermal structures. They tend to be found along planes of embryonic closure. Classification by site is helpful for diagnostic planning and surgical treatment. A distinction can be made between frontotemporal, orbital, frontoethmoidal, and calvarial lesions. The risk of extension into deeper tissues must be determined before surgical intervention. Simple lesions are amenable to direct excision. Deeper lesions often require a coordinated surgical approach between a neurosurgeon and craniofacial surgeon after thorough radiographic imaging. Follow-up through the developmental years is recommended for complex dermoid lesions.

**Craniofacial Fibrous Dysplasia**

Pat Ricalde, Kelly R. Magliocca, and Janice S. Lee

Despite recent advances in the understanding of the natural history and molecular abnormalities, many questions remain surrounding the progression and management of fibrous dysplasia (FD). In the absence of comorbidities, the expected behavior of craniofacial FD (CFD) is to be slow growing and without functional consequence. Understanding of the pathophysiologic mechanisms contributing to the various phenotypes of this condition, as well as the predictors of the different
behaviors of FD lesions, must be improved. Long-term follow-up of patients with CFD is vital because spontaneous recovery is unlikely, and the course of disease can be unpredictable.

Vascular Anomalies in Children

Shelly Abramowicz and Bonnie L. Padwa

The process of understanding and treating children with vascular anomalies has been hampered by confusing and occasionally incorrect terminology. The most important step when evaluating a maxillofacial vascular anomaly is to determine whether it is a tumor or a malformation. In most cases, this diagnosis can be made by history and physical examination. Selective radiographic imaging is helpful in differentiating vascular malformations or the extent of bony involvement and/or destruction. Children with vascular anomalies should be managed by an interdisciplinary team of trained providers who are committed to following, treating, and studying patients with these complex problems.

Pediatric Neck Masses

Michael R. Goins and Michael S. Beasley

The majority of neck masses in the pediatric population are congenital or inflammatory in origin requiring a thorough understanding of embryology and anatomy of the cervical region. However, malignancy must always be ruled out as they represent 11%–15% of all neck masses in the pediatric population. The initial history and physical are of utmost important to correctly work-up and eventually diagnose the lesion. This article addresses many aspects of the workup, diagnosis and eventual proper surgical or medical management of pediatric neck masses.

Pediatric Infectious Disease: Unusual Head and Neck Infections

Kathryn S. Moffett

Infections in children in the head and neck regions are common, leading to frequent use and overuse of antibiotics. This review includes common as well as diverse and unusual infectious diseases, such as PFAPA (Periodic Fever Aphthous stomatitis, Pharyngitis, Adenitis) syndrome, Lemierre Syndrome, Arcanobacterium infection, and tuberculous and nontuberculous adenitis, which occur in infants, children, and adolescents. In addition, the first pediatric vaccines available with the potential to prevent oropharyngeal cancers are reviewed.

Sinonasal Disease and Orbital Cellulitis in Children

Daniel J. Meara

Sinonasal disease is common in the pediatric population because of anatomic, environmental, and physiologic factors. Once paranasal sinusitis develops, orbital cellulitis is a concerning sequela that can result in loss of visual acuity and even intracranial disease. Thus, a clear history and physical examination in conjunction with radiographic studies are critical to a correct diagnosis and timely institution of treatment that may include hospitalization, serial ophthalmologic examinations, intravenous antibiotics, and surgery. The serious nature of orbital cellulitis in children cannot be overestimated; but, if prompt and appropriate treatment is initiated, the prognosis is excellent and long-term sequelae should be limited.
Facial Dermatologic Lesions in Children

Joli C. Chou and Bruce B. Horswell

This article briefly reviews some of the most common skin lesions in the head and neck of a child. Benign “lumps and bumps” are very common in children and it is prudent for the pediatric maxillofacial surgeon to be familiar with their presentation, workup (including radiographic studies), and definitive surgical management. Inflammatory and infectious lesions require prompt treatment to avoid more serious sequelae of progressive infection and scarring.

Child Maltreatment

Bruce B. Horswell and Sharon Istfan

Oral and maxillofacial surgeons are in a unique position to identify and report child abuse. In the career of any practitioner, maltreated children (both physically abused and neglected) will present for management of injuries and infections. There must be a high level of vigilance for, and understanding of, mechanisms of injury and skill in sorting out inflicted injuries or evidence of neglect. Because of this, the medical community, society, state law, and the legal system place oral and maxillofacial surgeons in a position of expertise and accountability in the care of children.

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