The Orbit

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Preface ix
Stephen A. Schendel

Orbital Anatomy for the Surgeon 525
Timothy A. Turvey and Brent A. Golden

An anatomic description of the orbit and its contents and the eyelids directed toward
surgeons is the focus of this article. The bone and soft tissue anatomic nuances for
surgery are highlighted, including a section on osteology, muscles, and the orbital
suspensory system. Innervation and vascular anatomy are also addressed.

CT & CBCT Imaging: Assessment of the Orbits 537
David C. Hatcher

The orbits can be visualized easily on routine or customized protocols for computed
tomography (CT) or cone beam CT (CBCT) scans. Detailed orbital investigations are
best performed with 3-dimensional imaging methods. CT scans are preferred for
visualizing the osseous orbital anatomy and fissures while magnetic resonance imag-
ing is preferred for evaluating tumors and inflammation. CBCT provides high-resolu-
tion anatomic data of the sinonasal spaces, airway, soft tissue surfaces, and bones
but does not provide much detail within the soft tissues. This article discusses
CBCT imaging of the orbits, osseous anatomy of the orbits, and CBCT investigation
of selected orbital pathosis.

Growth and Development of the Orbit 545
Aaron J. Berger and David Kahn

Every surgeon operating on the face, and particularly around the eye, should pos-
sess a working knowledge of the critical details related to development of the human
orbit and recognized changes that occur during the course of aging. The anatomy of
the orbit and periorbital region is complex, and the diagnosis and treatment of pa-
tients with orbital/periorbital disease requires expertise in congenital differences
and awareness of the changes that occur as individuals age.

Surgical Ophthalmologic Examination 557
Joel Powell, Justine Moe, and Martin B. Steed

Maxillofacial trauma involving injury to the eye and periorbital structures is not un-
common. Oral and maxillofacial surgeons are frequently called on to assess and op-
erate in and around the orbit; it is thus critical to be proficient around the eye
because surgical interventions and even physical examinations can cause injury
and loss of vision. This article reviews the systematic and accurate assessment of
the eye and adnexal structures in a manner appropriate for the oral and maxillofacial
surgeon, with a focus on proper examination technique and a high sensitivity for po-
tentially critical abnormalities. A practical approach to performing and recording
a detailed ophthalmologic examination is presented, including the assessment of vi-
sion, pupillary function, intraocular pressure, and ocular motility, as well as the slit
lamp and direct fundoscopic examinations.
Traditional and Contemporary Surgical Approaches to the Orbit

Michael R. Markiewicz and R. Bryan Bell

Traditional orbital approaches are nearly a century old and still comprise the foundation of techniques used today. Computer-assisted planning and intraoperative navigation have recently been reported with more prevalence in the literature. The purpose of this article was to review commonly used approaches to the orbit: old and new.

Biomaterials for Reconstruction of the Internal Orbit

Jason K. Potter, Michael Malmquist, and Edward Ellis III

Orbital floor injuries, alone or combination with other facial fractures, are one of the most commonly encountered midface fractures. Techniques for orbital reconstruction have migrated away from autogenous bone grafts to well-tolerated alloplasts, such as titanium and Medpor. Material for reconstructing the orbit can then be selected based on requirements of the defect matched to the mechanical properties of the material. Material selection is largely and ultimately dependent upon surgeon preference.

Orbital Trauma

Edward Ellis III

Orbital injuries are common and a common cause of blindness. The first priority for these injuries is the health of the globe. Imaging is imperative for diagnosing orbital fractures, as clinical examination cannot thoroughly assess their presence or severity. When treatment is indicated, an anatomic reconstruction of the internal orbit is critical to the proper position and function of the ocular globe.

Late Correction of Orbital Deformities

Celso F. Palmieri Jr and G.E. Ghali

Orbital fractures are some of the most challenging injuries the oral surgeon deals with on a daily basis. Delay of the treatment of orbital fractures impacts the final result. Late orbital reconstruction is sometimes necessary for inadequate primary reconstruction or for severe injuries with adequate primary reconstruction. Healing and wound contraction make secondary reconstruction more difficult to restore the orbital contents back to normal. There are different materials available for orbital reconstruction, and there is no consensus about which is best. Early surgical intervention may improve the ultimate outcome, but identifying patients at risk of late complications is difficult.

Aesthetic Surgery of the Orbits and Eyelids

Joseph A. Broujerdi

This article discusses the relevant anatomy, the aging process of the eyelid with periorbital structure, and how to evaluate patients for a proper surgical approach. A description is given of how to achieve an aesthetic balance between the forehead, eyelids, and midface to provide the patient with a natural youthful appearance. The paradigm in oculoplastic surgery has shifted to more conservative eyelid skin, muscle, and fat resection as well as more periorbital soft tissue lift, suspension, and volumization. Recent innovations and developments are discussed as well as the most common complications in eyelid and periorbital surgery.
Orbital tumor, trauma, and necrosis require the orbital contents to be resected and the patient is left with a cosmetic deformity that affects a patient’s self-image and those around him or her. Careful planning between the oral and maxillofacial surgeon and/or oculoplastic surgeon and the maxillofacial prosthodontist will result in a secure and accurate esthetic reconstruction using an implant-supported prosthesis. The multiple steps involved in this process require the commitment of doctors and patient. This article reviews surgical and prosthetic considerations in providing a satisfactory esthetic reconstruction of a variety of orbital defects.