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Atlas of Oral and Maxillofacial Anatomy

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 Springer

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Preface

This atlas focuses on the oral and maxillofacial regions and is relevant in the disciplines of oral and maxillofacial surgery. The fine anatomy involved in oral and maxillofacial surgery has progressed greatly in recent years, and therefore knowledge of anatomical structures relevant to this field is now more important than ever. However, anatomical atlases that demonstrate the newest anatomical findings in the oral and maxillofacial regions in a comprehensive manner are scant. For oral and maxillofacial surgery, observing oral anatomy from the same view as seen in clinical practice is critical for a better understanding of various invasive procedures. However, to our knowledge, no other books have included high-resolution images of intraoral anatomical dissections, especially using fresh cadavers. For example, the lingual nerve is a structure that is always mentioned by mentors—“Be careful not to damage the lingual nerve as it runs next to the lingual cortical plate.” Yes, we know that the lingual nerve is always at risk when we make an incision in the retromolar to molar areas of the mandible; however, how should we better minimize potential injury by an improved knowledge of this anatomy from an intraoral, surgical view? The answer to this question and others is found throughout this atlas via step-by-step fresh-cadaver dissections. We believe that this book will satisfy current needs in the discipline of oral and maxillofacial surgery and is timely.

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Anatomy of the Superficial Face

1

1.1 Superficial Face

Summary

The maxillofacial region has a rich blood and nerve supply. The former derived from the external carotid artery and terminal branches of the internal carotid artery. The mimetic muscles are innervated by the extracranial facial nerve

branches, and the sensation of the skin is supplied by primarily, trigeminal nerve branches. Some of these nerve branches often communicate with adjacent nerves, e.g., marginal mandibular branch of the facial nerve and mental nerve, although the function of such connections is unclear. In this section, the superficial structures of the maxillofacial region will be demonstrated.

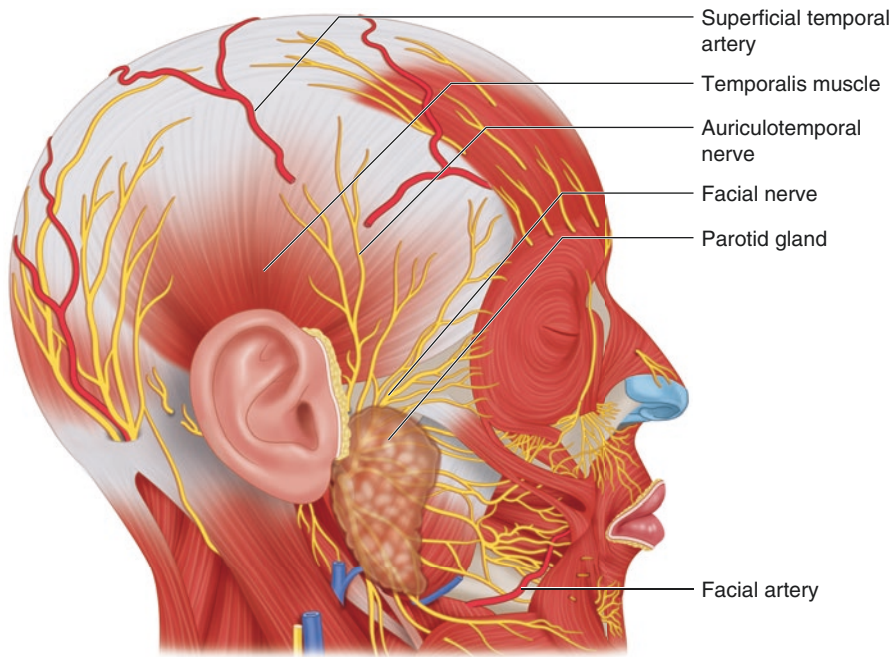


Fig. 1.1 Lateral view of the face

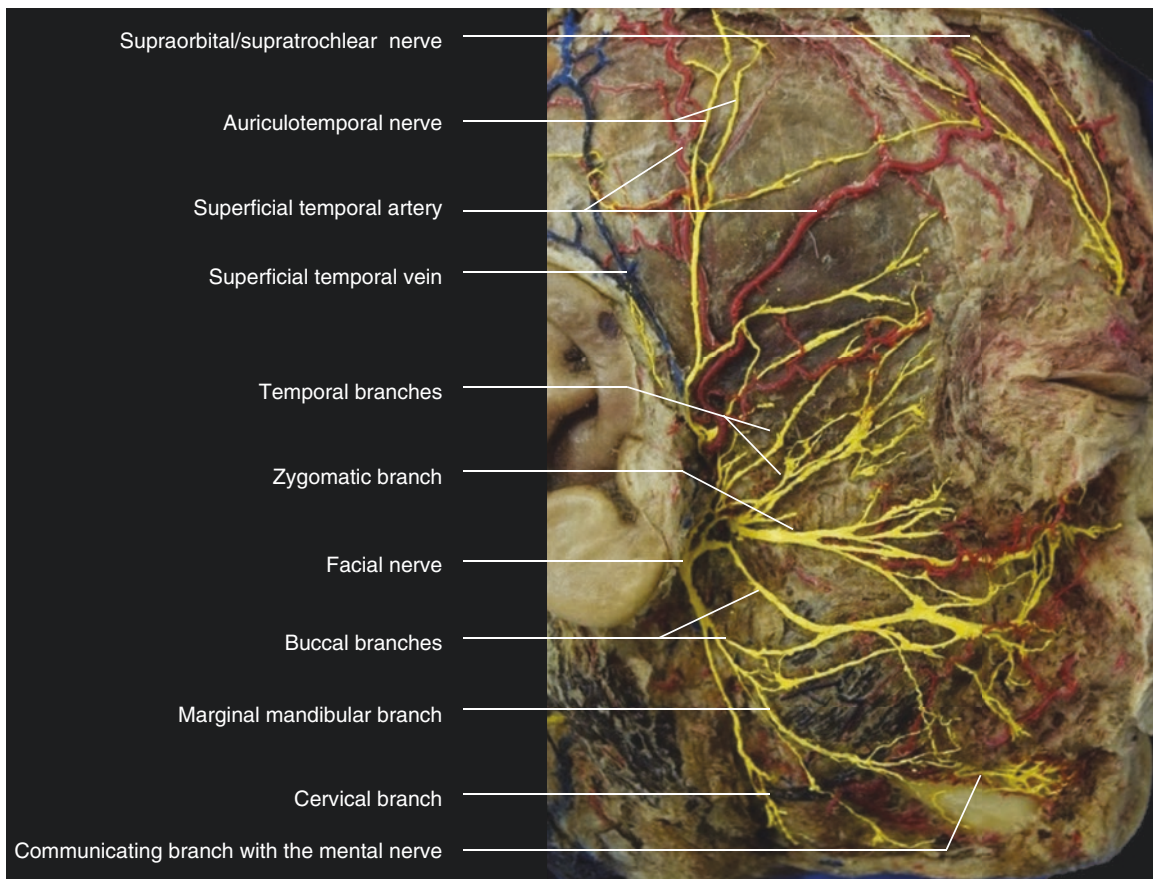


Fig. 1.2 Terminal branches of the facial nerve (lateral view)

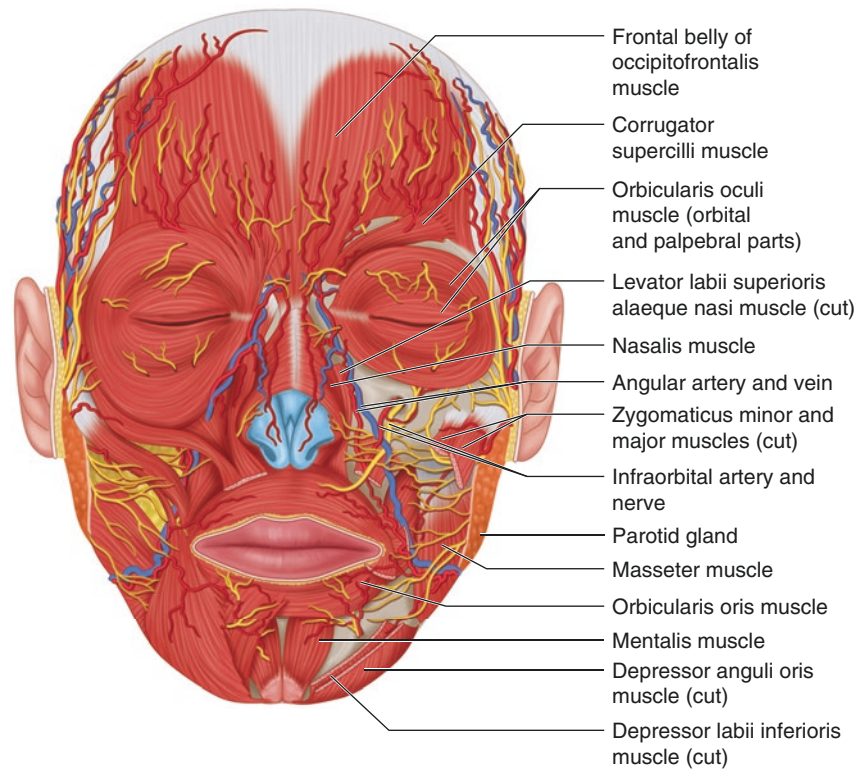


Fig. 1.3 Anterior view of the face

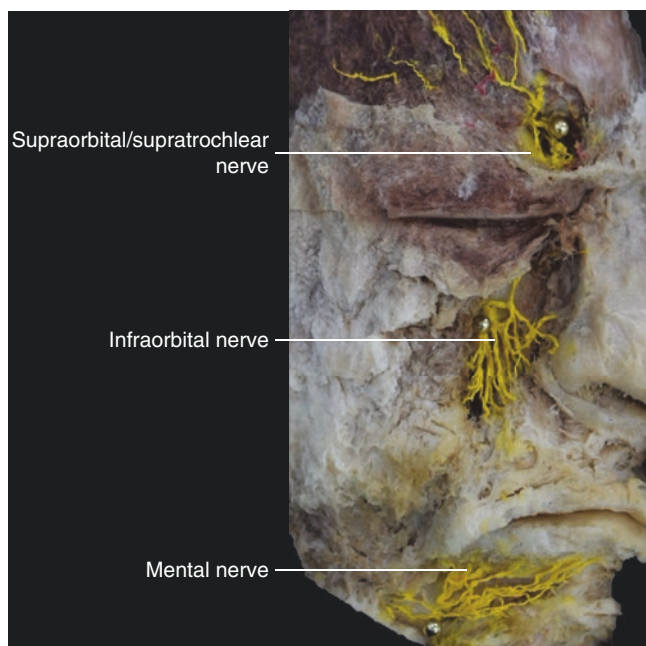


Fig. 1.4 Terminal cutaneous branches of the trigeminal nerve (anterior view)

2.1 Overview (Skull)

Summary

The skull consists of 23 bones including the hyoid bone: eight paired bones (temporal, zygomatic, parietal, maxillary, nasal, lacrimal and palatine bones, and the inferior nasal concha) and seven unpaired bones (occipital, frontal, sphenoid, ethmoid,

hyoid, mandible, and vomer). The vomer and inferior nasal concha are within the nasal cavity. Three foramina (or notches) of the face, e.g., supraorbital, infraorbital, and mental foramina, are usually observed from an anterior view. A number of structures exist at the skull base as well as the cranial fossae, which allows vessels and nerves to leave and enter the skull and also act as the attachment of many skeletal muscles.

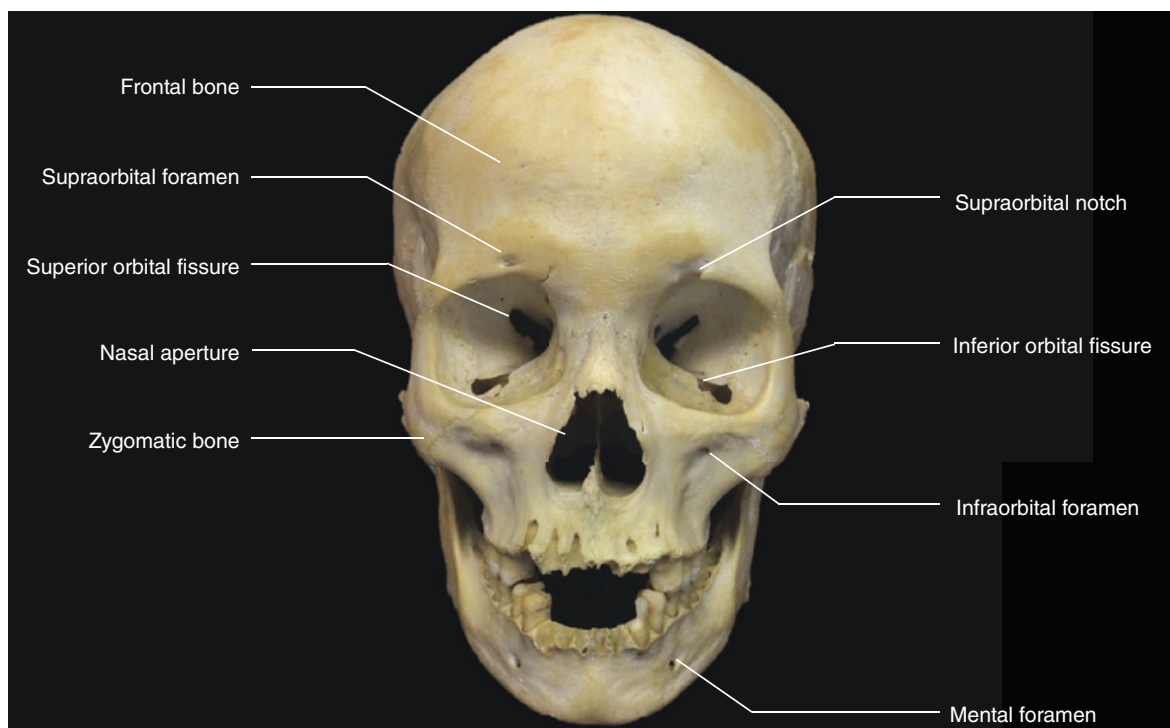


Fig. 2.1 Anterior view of the skull

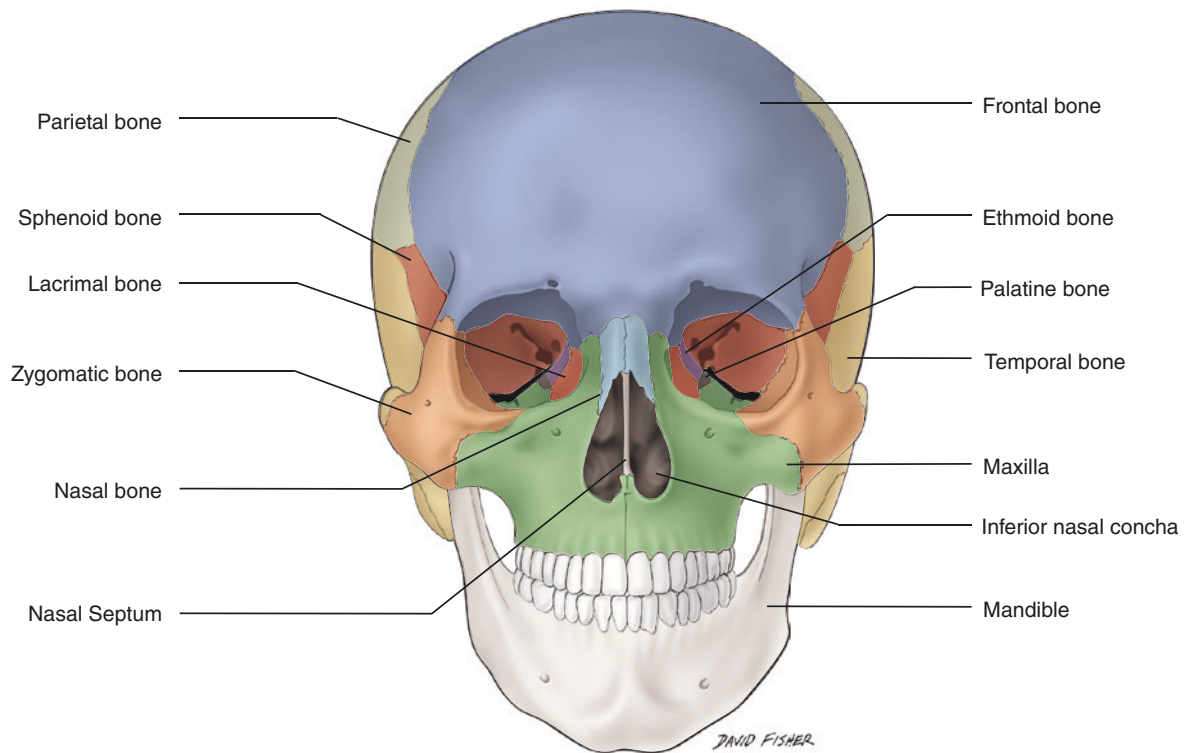


Fig. 2.2 Anterior view of the schematic skull. © Fisher/Tubbs 2020. All Rights Reserved

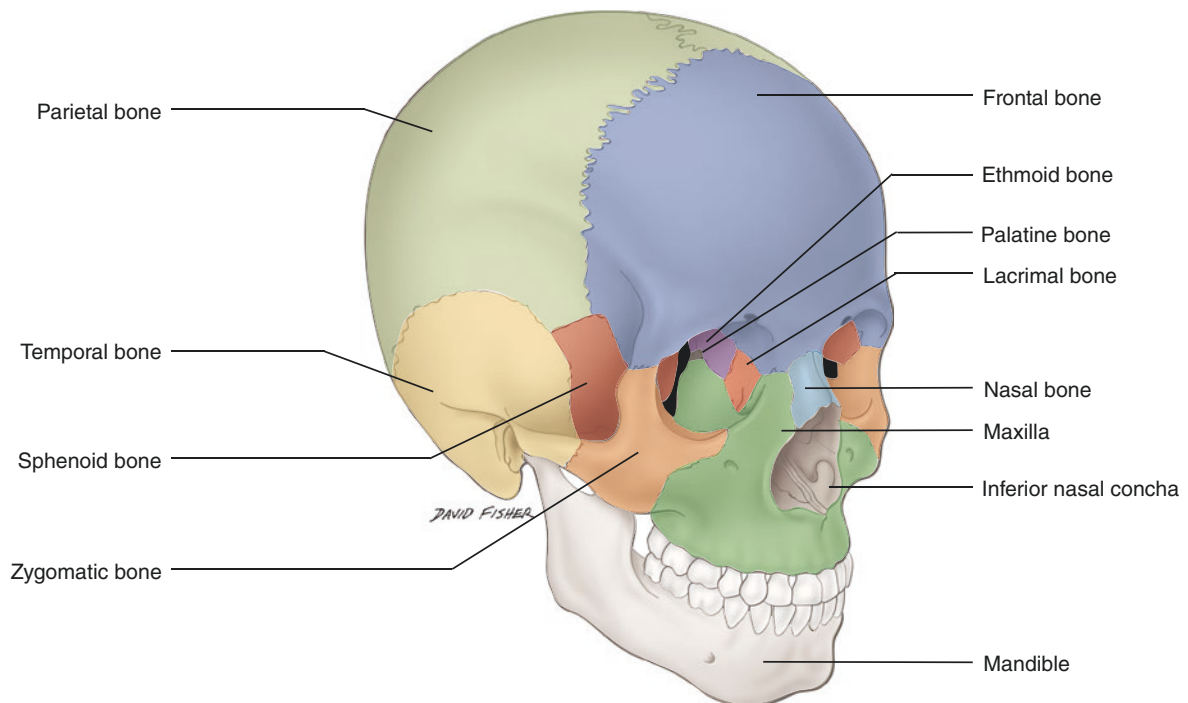


Fig. 2.3 Oblique view of the schematic skull. © Fisher/Tubbs 2020. All Rights Reserved

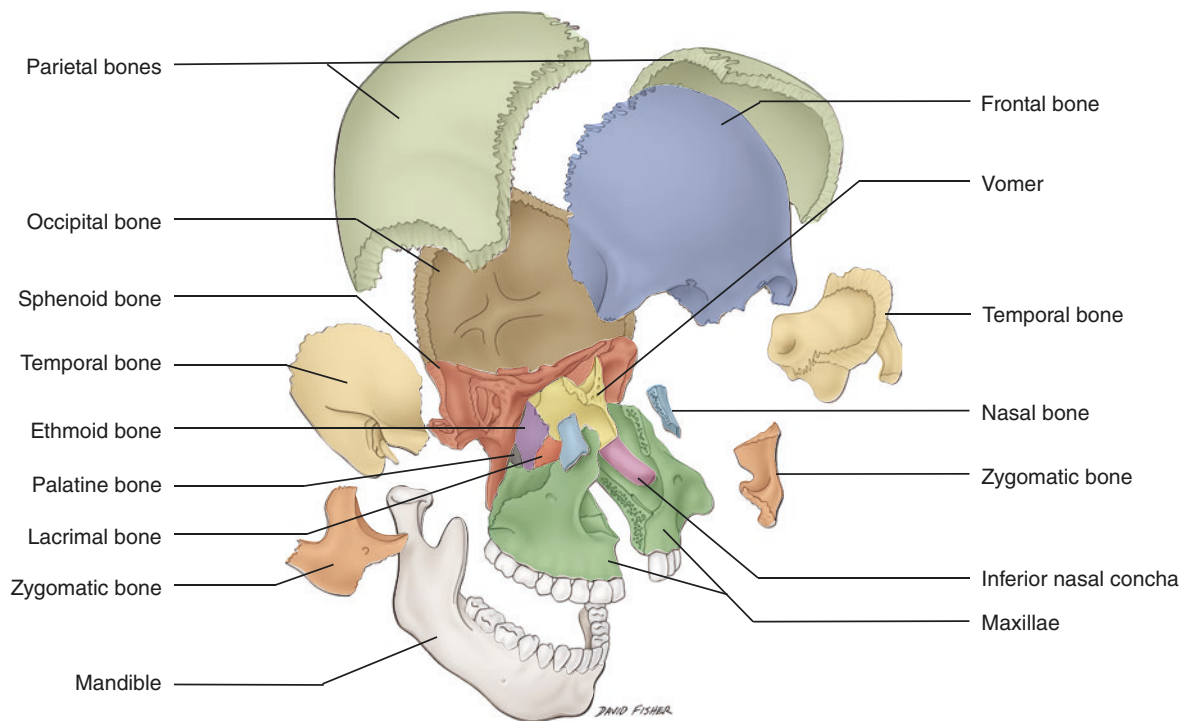


Fig. 2.4 Oblique view of the schematic exploded skull. © Fisher/Tubbs 2020. All Rights Reserved

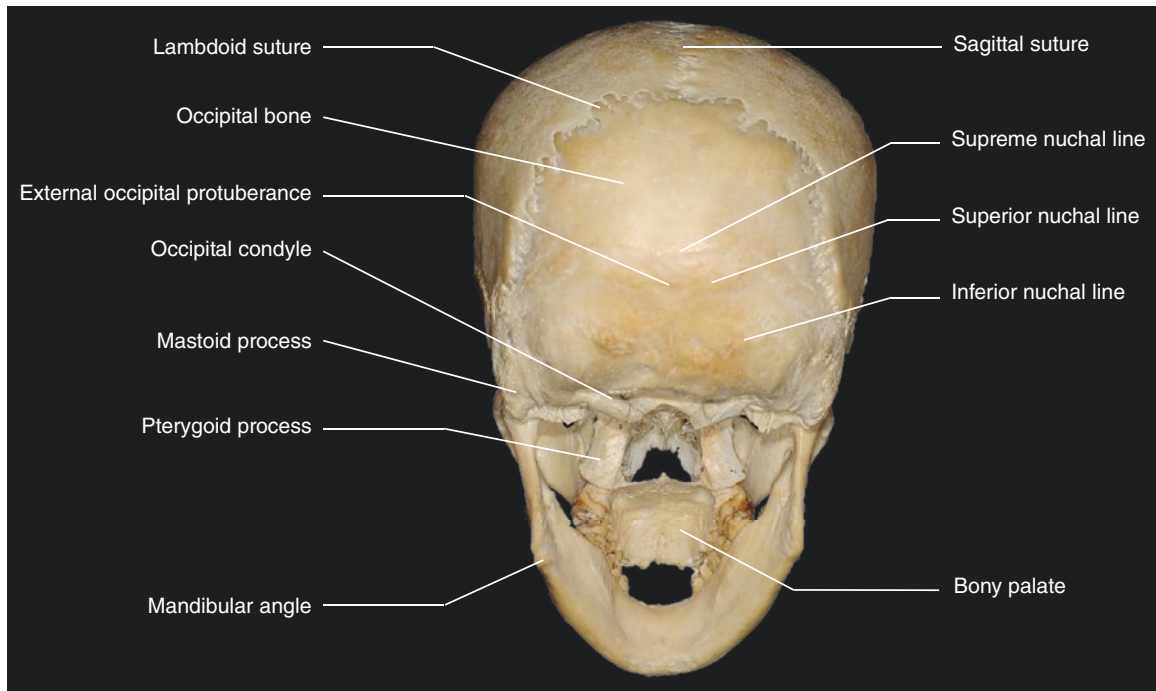


Fig. 2.5 Posterior view of the skull

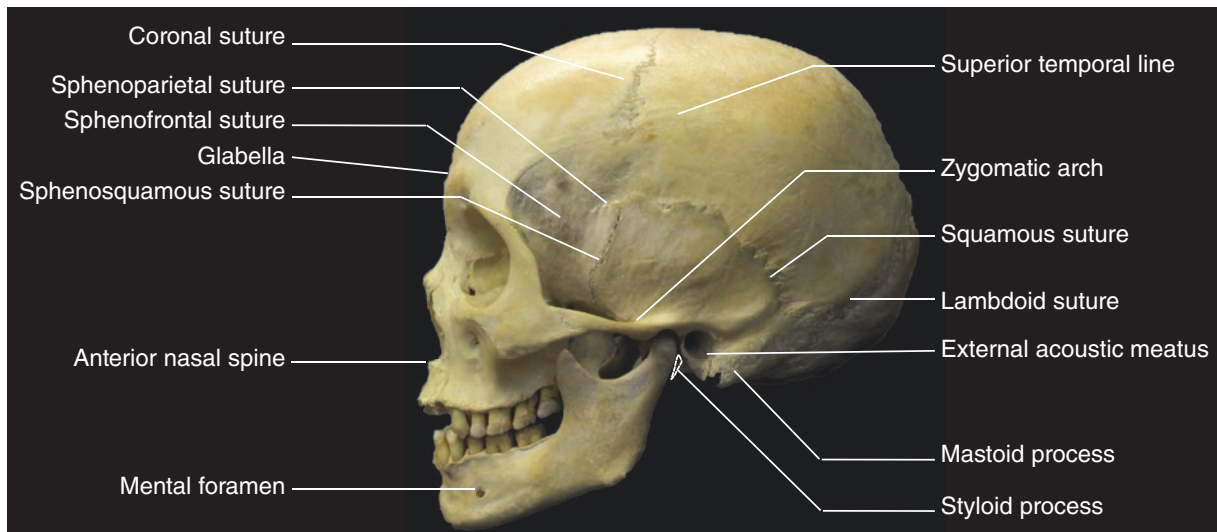


Fig. 2.6 Lateral view of the skull

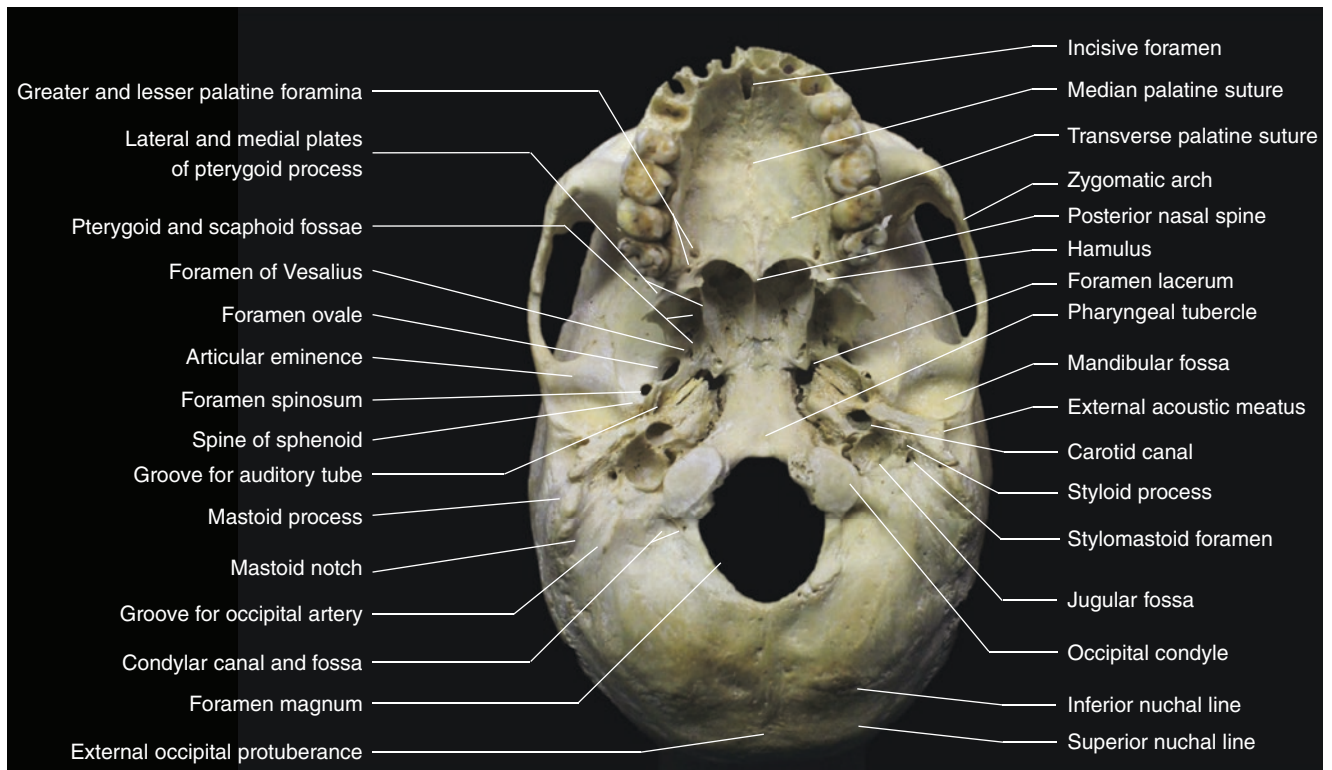


Fig. 2.7 Inferior view of the skull

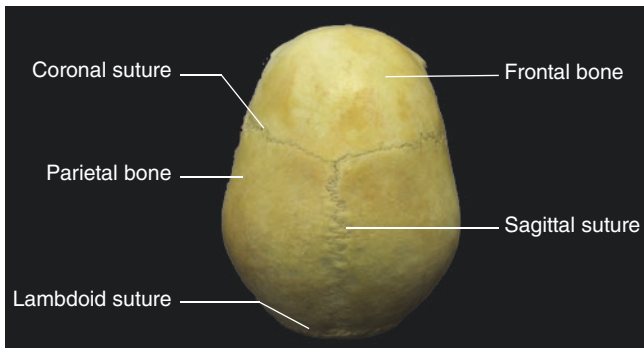


Fig. 2.8 Superior view of the skull

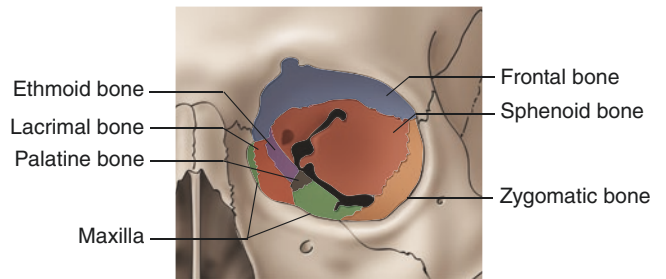


Fig. 2.10 Anterior view of the schematic orbit. The orbital wall consists of seven bones: frontal, sphenoid, zygomatic, ethmoid, lacrimal, palatine, and maxillary bones

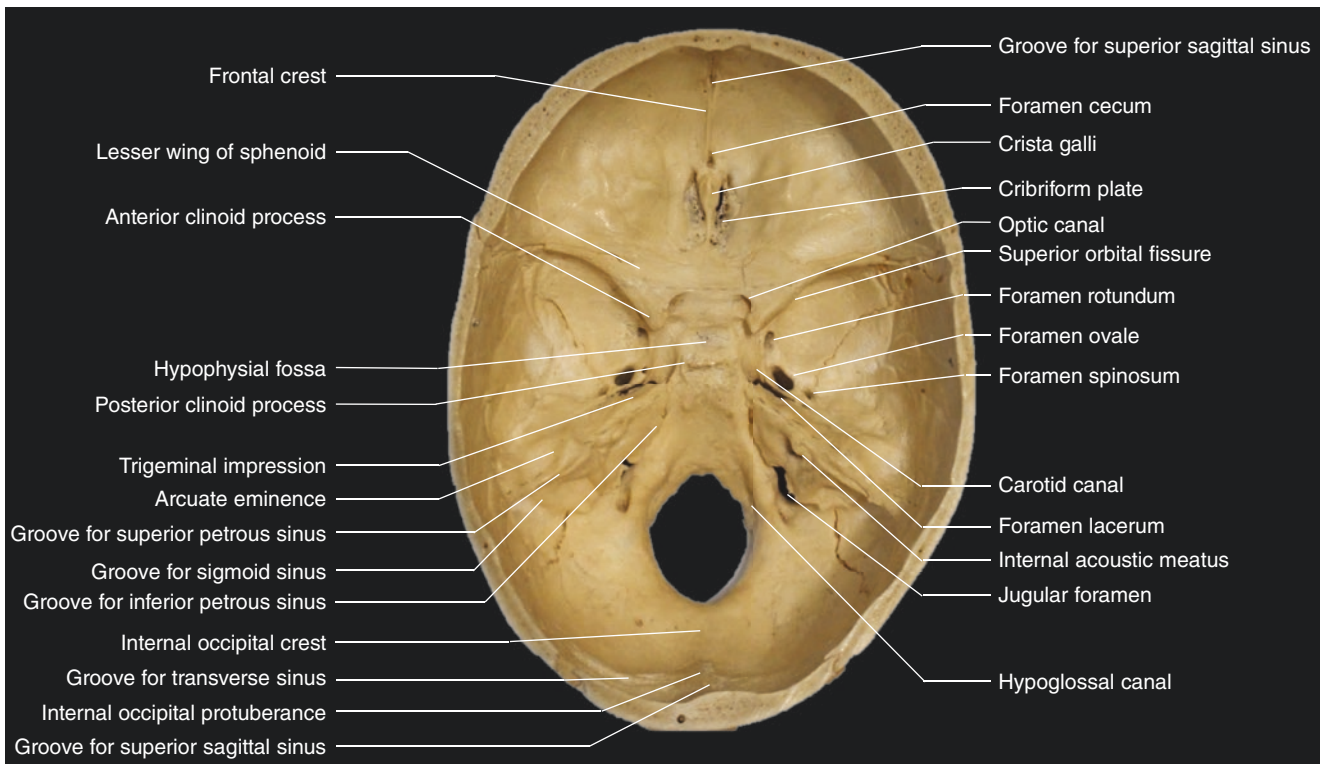


Fig. 2.9 Superior view of the cranial fossae

2.2 Sutures of the Skull

Summary

The sutures of the skull are mostly paired except for the sagittal, median palatine, intermaxillary, and internasal sutures. Many of these are still unfused at birth. For example, the metopic (frontal) suture usually closes at the age of 3 months to 2-years-old. Therefore, the metopic suture is usually not observed in adults. Also, the incisive suture is usually still open under the age of 12 years and is thus rarely visible in the adult. Usually, the anterior and posterior fontanelles close at the age of one and a half years old and three months old, respectively. The coronal, sagittal, and lambdoid sutures are still visible in the adult; however, some smaller sutures are often completely fused in adults. Knowledge of these sutures is vital to understanding clinical pathologies such as craniosynostosis, hydrocephalus, fractures, and rapid maxillary expansion.

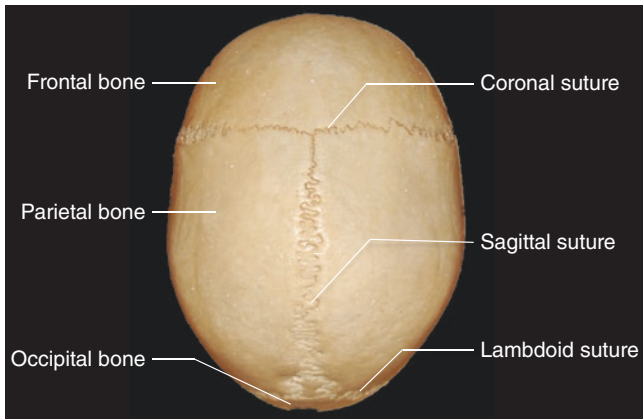


Fig. 2.11 Superior view showing the sutures of the calvaria

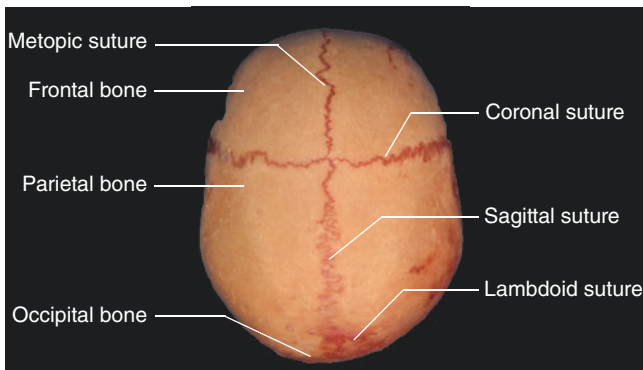


Fig. 2.12 Superior view of the calvaria with a metopic suture (also known as the frontal suture)

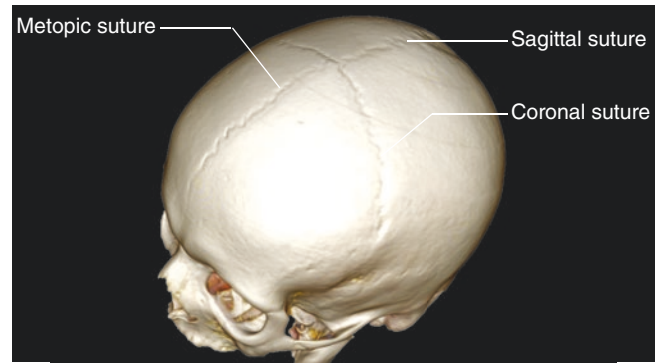


Fig. 2.13 Metopic suture on 3D reconstructed CT

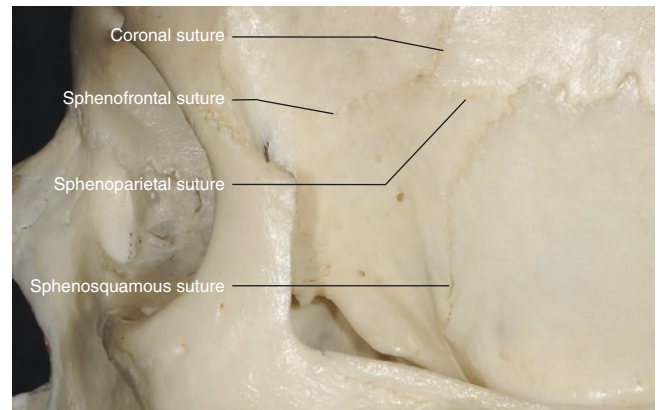


Fig. 2.14 Sutures in the temporal fossa

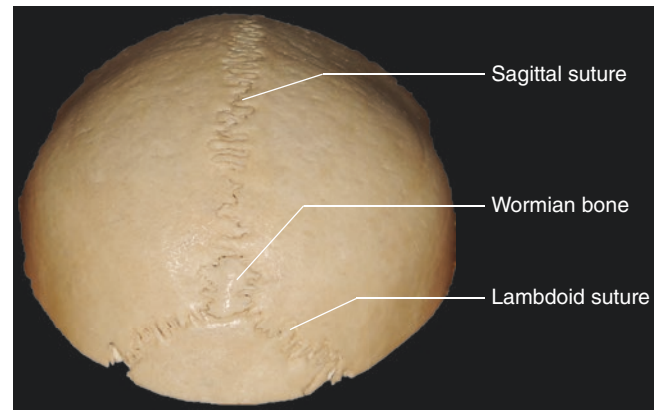


Fig. 2.15 Sutures of the posterior calvaria with a Wormian bone also known as an intrasutural or sutural bone

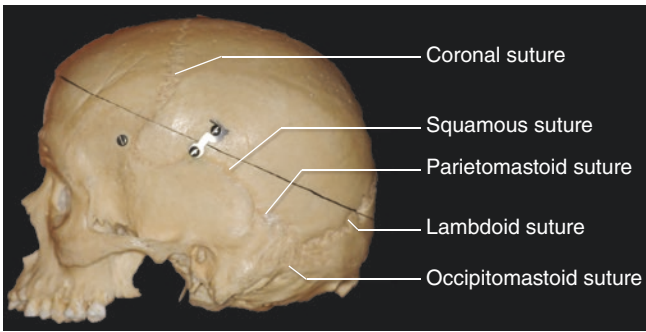


Fig. 2.16 Sutures of the lateral and posterior skull

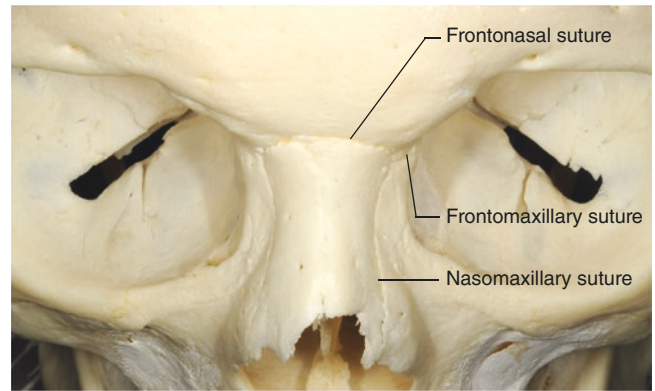


Fig. 2.19 Anterior view of the sutures around the nasal bones

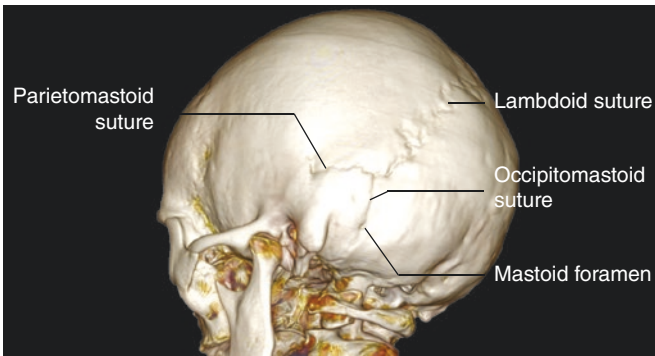


Fig. 2.17 Sutures and foramina around the mastoid process

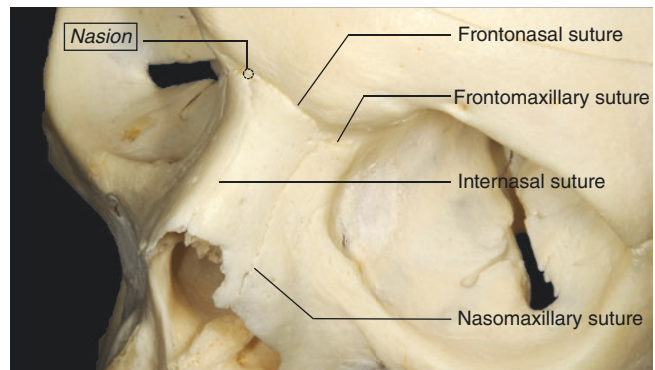


Fig. 2.20 Oblique view of the sutures related to the nasal bones

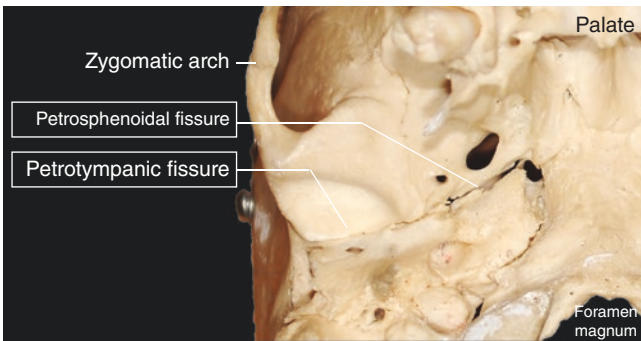


Fig. 2.18 Fissures of the inferior skull

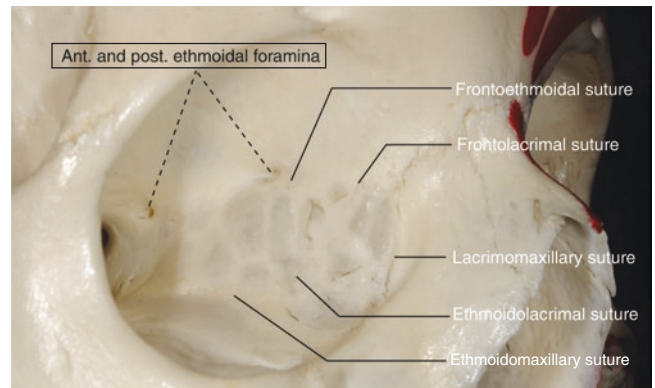


Fig. 2.21 Sutures of the medial wall of the orbit

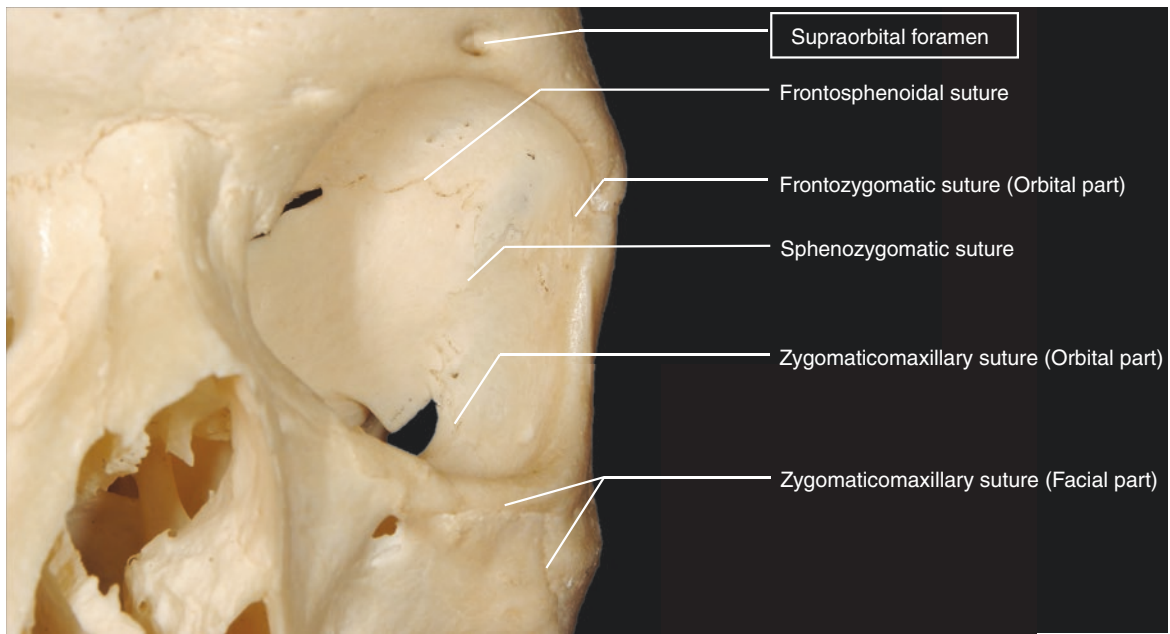


Fig. 2.22 Sutures of the lateral wall of the orbit

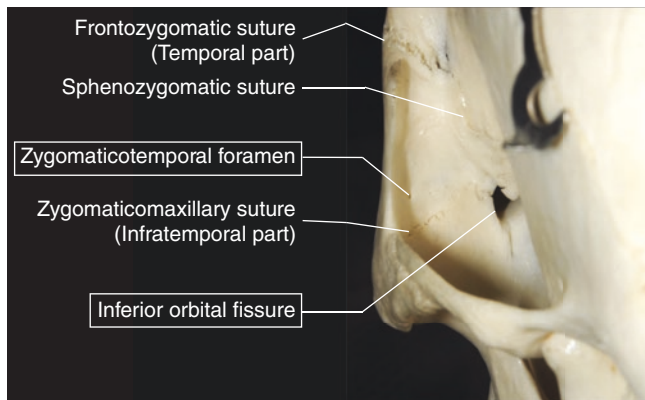


Fig. 2.23 Posterior view of the zygoma

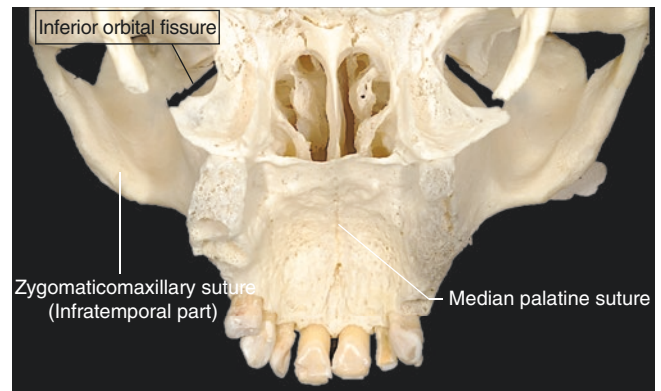


Fig. 2.25 Posteroinferior view

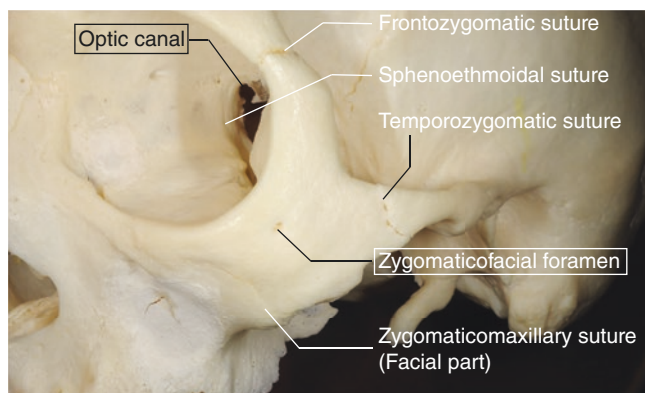


Fig. 2.24 Lateral view of the zygoma

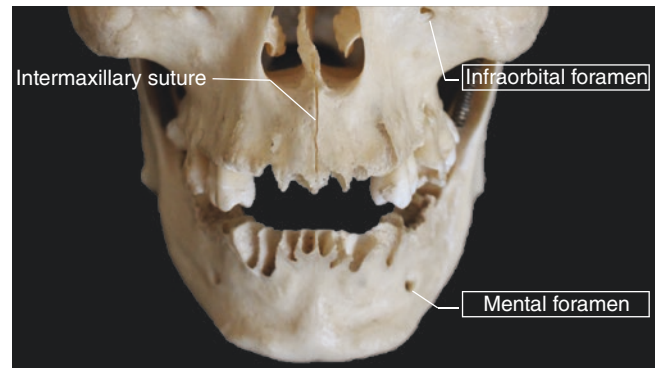


Fig. 2.26 Anterior view