Imaging of the Anterior Skull Base

May 21, 2019: Laura Oleaga, Barcelona

Laura Oleaga

Graduated at the School of Medicine of the Autonomous University of Madrid, completing the training in radiology at the Hospital Donostia in San Sebastian.

Trained as a Research Fellow in Magnetic Resonance Imaging at the University of Pennsylvania in the Department of Radiology.

PhD degree in medicine from the University of the Basque Country.

Chair of the Radiology Department of the Hospital Clínic in Barcelona and clinical work as Neuroradiologist.

Professor of Radiology at the University of Barcelona involved in many research projects.

Main scientific interests lie in the fields of Neuroradiology and Head and Neck, imaging research focuses mainly on imaging clinical applications.

Authored and co-authored more than 55 peer-reviewed scientific papers and nine book chapters.

From 2002 to 2006, Vice-president of the Spanish Radiological Society (SERAM).

From 2006 to 2008 Chair of the Scientific Committee of SERAM.

From 2015 to 2018, she was appointed as Chair of the Education Committee of the European Society of Radiology (ESR).

EDiR Scientific Director of the European Board of Radiology (EBR) since March 2018.

ABSTRACT

The anterior skull base (ASB) separates the anterior cranial fossa superiorly from the paranasal sinuses and orbits below.

The boundaries of the anterior skull base are anterolaterally the frontal bones, inferiorly the ethmoid and frontal sinuses, orbit and orbital canals. Superiorly the frontal lobes and the first cranial nerve and the boundaryes with the central skull base are the lesser wing of sphenoid bone and planum sphenoidale. Cross sectional imaging, Computed Tomography (CT) and Magnetic Resonance Imaging (MRI), has an important role in the evaluation of the skull base; it provides specific features that will impact on clinical and surgical management.

CT and MRI are complementary techniques, often used in conjunction. CT is an excellent modality for

bone delineation and MRI provides superior soft tissue contrast, it is indicated for delineation of tumour from obstructed secretions within the sinonasal region and to depict suspected involvement of the intracranial compartment.

Pathology involving the ASB can be subdivided into those intrinsic to the skull base and processes extending from below or above. Sinonasal pathology is the most commonly encountered other lesions including congenital, infectious, benign and malignant tumours can also affect the ASB.

There are many processes that can have the same representation on imaging, location, extension and evaluation of involvement of relevant structures influence treatment options, and therefore this information is essential to define resectability of the lesion or the best surgical approach.

LEARNING OBJECTIVES

1. To review the anatomy of the anterior skull base
2. To review CT and MRI key anatomical landmarks
3. To evaluate anterior skull base characteristic features in benign and malignant lesions

TEST YOUR KNOWLEDGE:

Only one answer correct

1. **What is the best technique to differentiate sinus secretions from tumours?**
   a) T1Weighted Gadolinium MRI
   b) Non enhanced CT
   c) Enhanced CT
   d) T1Weighted MRI
   e) Gradiente Echo MRI

2. **What structure sits on the cribriform plate?**
   a) Vertical lamella of middle turbinate
   b) Olfatory bulbs
   c) Optic Chiasm
   d) Fovea ethmoidalis
   e) Lateral lamella

3. **What is the most common malignant tumour involving the ASB?**
   a) Squamous cell carcinoma
   b) Esthesioneuroblastoma
   c) Adenocarcinoma
   d) Melanoma
   e) Lymphoma