

# Orbit

The orbit, or orbital cavity, is a bony space filled with the *eye bulb* (bulbus oculi), the surrounding fatty tissue (corpus adiposum orbitae), tear gland (*glandula lacrimalis*) and tear duct (*ductus lacrimalis*), **orbital muscles** (**musculi bulbi**), *vessels and nerves*.

## Walls, relationships to surroundings, passages

### Walls

The space of the orbit has the shape of a four-sided pyramid, the base of which is the entrance to the orbit, the *aditus orbitae*, and the walls of which meet at the top of the orbit, the *apex orbitae*. So we can distinguish four walls in the orbit - medial, superior, lateral and inferior.

### Aditus orbitae

The entrance to the orbit is bordered by the *margo supraorbitalis* and the *margo infraorbitalis*. They are formed by the following bones: cranially, the *os frontale*, laterally, the *os zygomaticum*, caudally, the *maxilla*, which extends medially to the frontal bone with its processus frontalis.

### Media Wall

It is created in the sagittal plane, with the right and left walls being parallel. From front to back, it is made up of: *processus frontalis maxillae*, *os lacrimale*, *lamina orbitalis ossis ethmoidalis* and *ala minor ossis sphenoidalis*. It contains the *fossa sacchi lacrimalis* and *canalis nasolacrimalis*, in which the lacrimal duct - *ductus lacrimalis* is located. Then there is the *foramen ethmoidale anterius* and the *foramen ethmoidale posterius*, the openings between the *lamina orbitalis* of the olfactory bone and the *os frontale*. Nerves and vessels of the same name run through them.

### Upper Wall

From front to back, it is formed by: *pars orbitalis ossis frontalis* and *ala minor ossis sphenoidalis*. *glandulae lacrimales*.

### Lateral wall

It is formed from front to back: *os zygomaticum*, *ala major ossis sphenoidalis*. In this wall is the *foramen zygomaticorbitale* for the *n. zygomaticus*.

### Lower wall

This wall is made up from front to back: *os zygomaticum*, *corpus maxillae* and *processus orbitalis ossis palatini*. The lower wall contains structures and openings: *sulcus et canalis infraorbitalis*, *fissura orbitalis superior*, *fissura orbitalis inferior*.



Orbital bones – *os sphenoidale* (red), *os palatinum* (light blue), *os maxillae* (pink-purple), *os zygomaticum* (blue), *os frontale* (yellow), *os lacrimale* (green), *os nasale* - not part of the orbit (gray-green), *os ethmoidale* (brown)

## Relations to surroundings, passages

### The topographic relations of the orbit are as follows

Medially there is the **nasal cavity** and the *sinus ethmoidales* of the olfactory bone. Above the orbit is the **anterior cranial fossa** and the *sinus frontalis* as part of the frontal bone. The *fossa temporalis* is located laterally. Below the orbit is the maxillary sinus.

## Communications and their passing structures

### Apex orbitae

In the *canalis opticus* the *n. opticus* and *a. ophthalmica*.

## Media wall

In the "canalis nasolacrimalis" there is the already mentioned "ductus nasolacrimalis". In the *foramen ethmoidale anterius* and *foramen ethmoidale posterius* we find vessels and nerves of the same name. So *n. ethmoidalis anterius* and *n. ethmoidalis posterius* (somatosensitive innervation of part of the nasal mucosa) and then the *vasa ethmoidalia anteriora* and the *vasa ethmoidalia posteriora*.

## Lateral wall

In the *foramen zygomaticoorbitale* we find *n. zygomaticus* - it originates from the orbit and branches in the *os zygomaticum* to the *n. zygomaticofacialis* for sensitive innervation of the skin above the cheekbone and *n. zygomaticotemporalis* for sensitive innervation of the skin of the anterior temporal region and part of the frontal region.

## Lower wall

To the "canalis infraorbitalis" leads the "n. infraorbitalis, which branches in the course. *Fissura orbitalis superior* communicates with the middle cranial cavity, mediolaterally pass through it: *n. oculomotorius*, *n. nasociliaris*, *n. frontalis* and *n. lacrimalis* as branches of *n. ophthalmicus*, *n. abducens*, *n. trochlearis* and *v. ophthalmica superior*. The *Fissura orbitalis inferior* communicates with the *pterygopalatine fossa* and the *infratemporalis fossa*. It passes through *n. zygomaticus* (here it enters the orbit, which it leaves through the *foramen zygomaticoorbitale*), *n. infraorbitalis*, *a. infraorbitalis* and *v. ophthalmica inferior*.

# Links

## External links

- [Wikipedia:Orbital bone \(English\)](#)

## References

- PETROVICKÝ, Pavel. *Anatomy with topography and clinical applications 3rd volume*. 1. edition. Enlightenment, 2002. 542 pp. ISBN 80-8063-048-8.
- ČIHÁK, Radomír. *Anatomy 1*. 2. edition. Grada, 2001. 497 pp. ISBN 80-7169-970-5.