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Embryonic features of development of head and neck. Planning and preparation of patients with deformations of cerebral and facial skeleton to treatment. Regeneration of bone tissues of jaws. Osteogenic and osteoinductive therapy.

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Lecture plan

1. The facial skeleton –Structure
2. Embryonic features of development of head and neck.
3. Craniometry
4. Osseointegration
5. Regeneration of bone tissues of jaws.
6. Osteogenic and osteoinductive therapy.

- The **facial skeleton**, **viscerocranium**, or **splanchnocranium** consists of a part of the skull that is derived from thepharyngeal arches. The **facial bones** are the bones of the anterior and lower skull. The rest of the skull is the neurocranium.

Structure. For the human skull, most sources always include these fourteen bones in their lists of facial bones:

- (2) Inferior nasal concha
- (2) Lacrimal bones
- Mandible
- (2) Maxilla
- (2) Nasal bones
- (2) Palatine bones
- Vomer
- (2) Zygomatic bones

Craniometry

The cephalic index is the ratio of the width of the head, multiplied by 100 and divided by its length (front to back). The index is also used to categorize animals, especially dogs and cats. The width is usually measured just below the parietal eminence, and the length from the glabella to the occipital point.

- Humans may be:
- ***Dolichocephalic*** — long-headed
- ***Mesaticephalic*** — medium-headed
- ***Brachycephalic*** — short-headed

- **Osteogenic loading** (**OL**) is a rehabilitative medicine method with a goal of improving bone density and prevent bone fracture. This can be seen as a brief, intensive resistance exercise for bone health.

- **Maxillary sinus floor augmentation** (also termed **sinus lift**, **sinus graft**, **sinus augmentation** or **sinus procedure**) is a surgical procedure which aims to increase the amount of bone in the posterior maxilla (upper jaw bone), in the area of the premolar and molar teeth, by lifting the lower Schneiderian membrane(sinus membrane) and placing a bone graft.

- **Osseointegration** derives from the Greek *osteon*,bone, and the Latin *integrare*, to make whole. The term refers to the direct structural and functional connection between living bone and the surface of a load-bearing artificial implant. Osseointegration has enhanced the science of medical bone and joint replacement techniques as well as dental implants and improving prosthetics for amputees.

Osseointegration may also be defined as :

- Osseous integration, the apparent direct attachment or connection of osseous tissue to an inert alloplastic material without intervening connective tissue.
- The process and resultant apparent direct connection of the endogenous material surface and the host bone tissues without intervening connective tissue.
- The interface between alloplastic material and bone.

Complications

- A major risk of a sinus augmentation is that the sinus membrane could be pierced or ripped. Remedies, should this occur, include stitching the tear or placing a patch over it; in some cases, the surgery is stopped altogether and the tear is given time to heal, usually three to six months. Often, the sinus membrane grows back thicker and stronger, making success more likely on the second operation.

Beside sinusitis, among other procedure related-risks include:

- Infection
- Inflammation
- Pain
- Itching
- Allergic reaction
- Tissue or nerve damage
- Scar formation
- Hematoma
- Graft failure
- Oro-antral communication / oro-antral fistula
- Tilting or loosening of implants

Questions for discussion of the lecture

1. As you understand the word Osseointegration
2. What are the bones of the facial and brain parts of the skull?
3. What do you know about embryogenesis of bones and soft tissues of the head?
4. Features of regeneration of bones of the facial skeleton?
5. What planning is needed to eliminate facial bone deformities?

Thank you for attention!