**Genioplasty:**

It's a type of osteotomy carried out in the mandible where a piece of the chin is cut and moved upward, downward, anteriorly, or posteriorly.

Purposes of genioplasty:

1. To correct the chin in anterioposterior plane (protruded or retruded chin).
2. To correct the chin in vertical plane (increase or decrease the facial height).

Notes:

* Genioplasty is carried out intraorally.
* Some of the cases are preferred to be done under general anesthesia.

**Surgical procedure:**

1. Incision and reflected. The mental nerve is exposed first and the incision is done between the two mental corridors to avoid reflecting the mental nerve with the flap and paraesthesia as a consequence.
2. The bone cut is made and the piece is moved to the desired position.
3. Fixation.

Midface procedures:

1. Segmental
2. Le forte 1
3. Le forte 2
4. Le forte 3

**Le forte 1:**

* It's used to use move the maxilla anterioposteriorly (advancement or setback) or vertically.
* The maxilla can be advanced up to 7 mm. If the maxilla was advanced beyond that limit, relapse will most probably take place.

**Surgical procedure:**

1. The patient is put under general anesthesia.
2. Intra-oral incision is made extending from one molar to the other molar region (6 to 6) and a periosteal flap is reflected.
3. A cut is made through the maxillary bone. The cut is initiated anteriorly at the nasal cavity region, and then continues posteriorly.
4. The maxilla is then separated from the lateral nasal bone and the nasal septum anteriorly, and the pterygoid plates posteriorly, and then it's separated from the base of the skull and the entire midface. The maxilla now is held in place only by soft tissues.
5. The maxilla now can be moved in any direction.
6. Fixation. For maxillary fixation, four plates are usually used (2 on the right, and 2 on the left). Then guiding elastics are placed to guide the patient to the desired occlusion.

**Complications:**

1. Bleeding can happen as a result of traumatizing the descending palatine vessels, the maxillary artery, or blood vessels of the midface.
2. Nerve damage. The main affected nerve is the inferior orbital nerve.
3. Skull base fractures can happen during separation.
4. Nasolabial aesthetics. It's important to know that when the maxilla is moved, its position is changed in relation to the nose. For example if the maxilla is moved upward, the position and shape of the tip of the nose are going to be different than their original shape and position before the surgery.
5. Loss of the teeth vitality. This occurs when the root apices are cut accidentally when the bone is cut.
6. Sinusitis.
7. Loss of sulcus depth.
8. Velopharyngeal incompetence. velopharyngeal sphincter (soft palate muscle in the mouth) during speech, allowing air to escape through the nose instead of the mouth.
9. Relapse. It's more evident in downfracture cases, less evident in impaction and advancement cases.

**D*ownfracture*** is a term that describes the downward movement and the fracture of the posterior wall of the maxilla which has not been cut.

 **Note:** some of the cases require osteotomies in both the maxilla and the mandible, these are called ***bimaxillary osteotomies.***

**Indications of bimaxillary osteotomies:**

1. The maxilla and the mandible are both malpositioned.
2. Either the maxilla or the mandible is malpositioned, and the case is severe, so the opposing jaw is moved as well to get the desired outcome.

**Note:** in severe cases, where the needed movement is beyond the maximum limit, distraction osteogenesis can be used.