

Orthognathic Jaw Surgery

Pre/Post Patient Education

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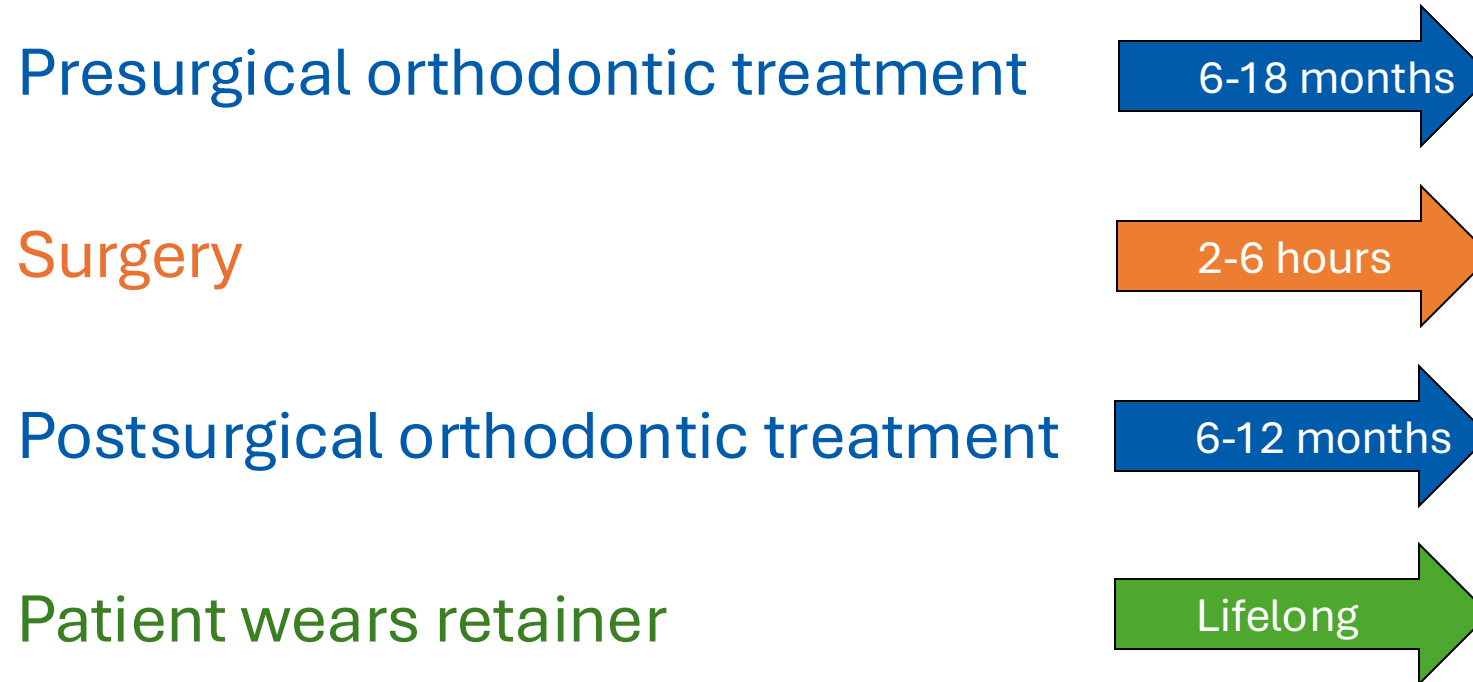
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Orthognathic Jaw Surgery: Treatment of Jaw Differences



- Malocclusion: Teeth do not meet properly and cannot be sufficiently corrected by orthodontics alone. This may occur in the context of developmental growth disturbances, congenital differences, and/or trauma.
- Obstructive Sleep Apnea: Small or retruded upper and/or lower jaw limit space for airflow and contribute to upper airway obstruction during sleep.
- Facial Profile: Patient desires to improve both their bite and their facial balance.

Timeline for Conventional Treatment Approach



Presurgical Orthodontic Treatment

- Presurgical orthodontics, 6-18 months
- The teeth are decompensated. This may temporarily worsen your bite as you prepare for surgical correction.
- The dental arches are leveled, aligned, and coordinated to prepare for surgery
- This can be accomplished with brackets and wires or with clear aligners



Surgical Preoperative Visit, 2-4 weeks before surgery

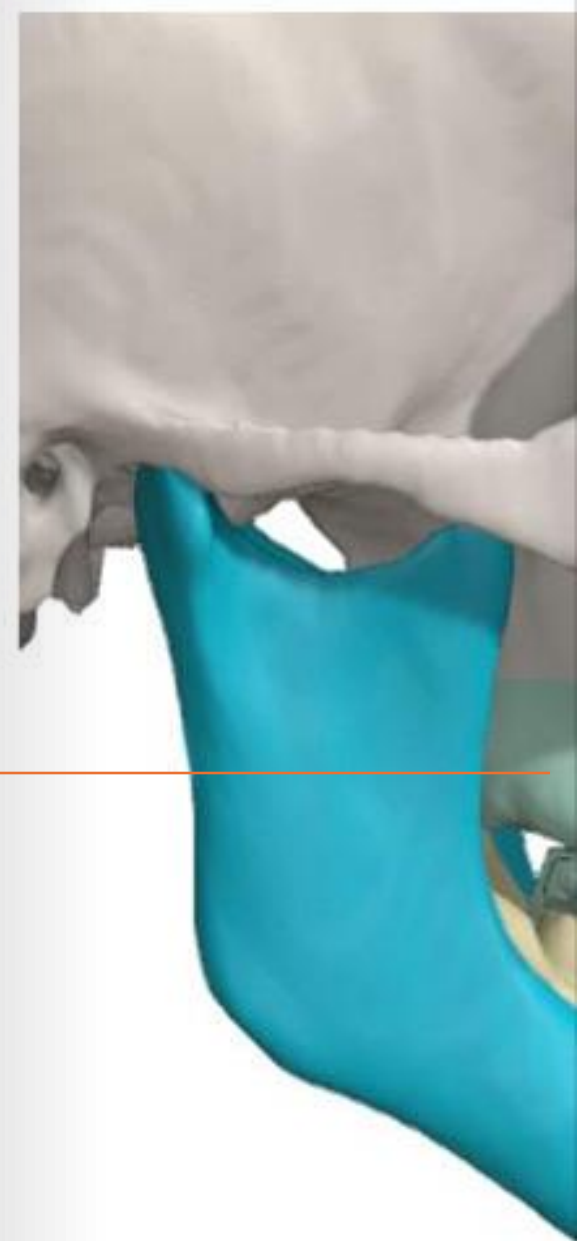
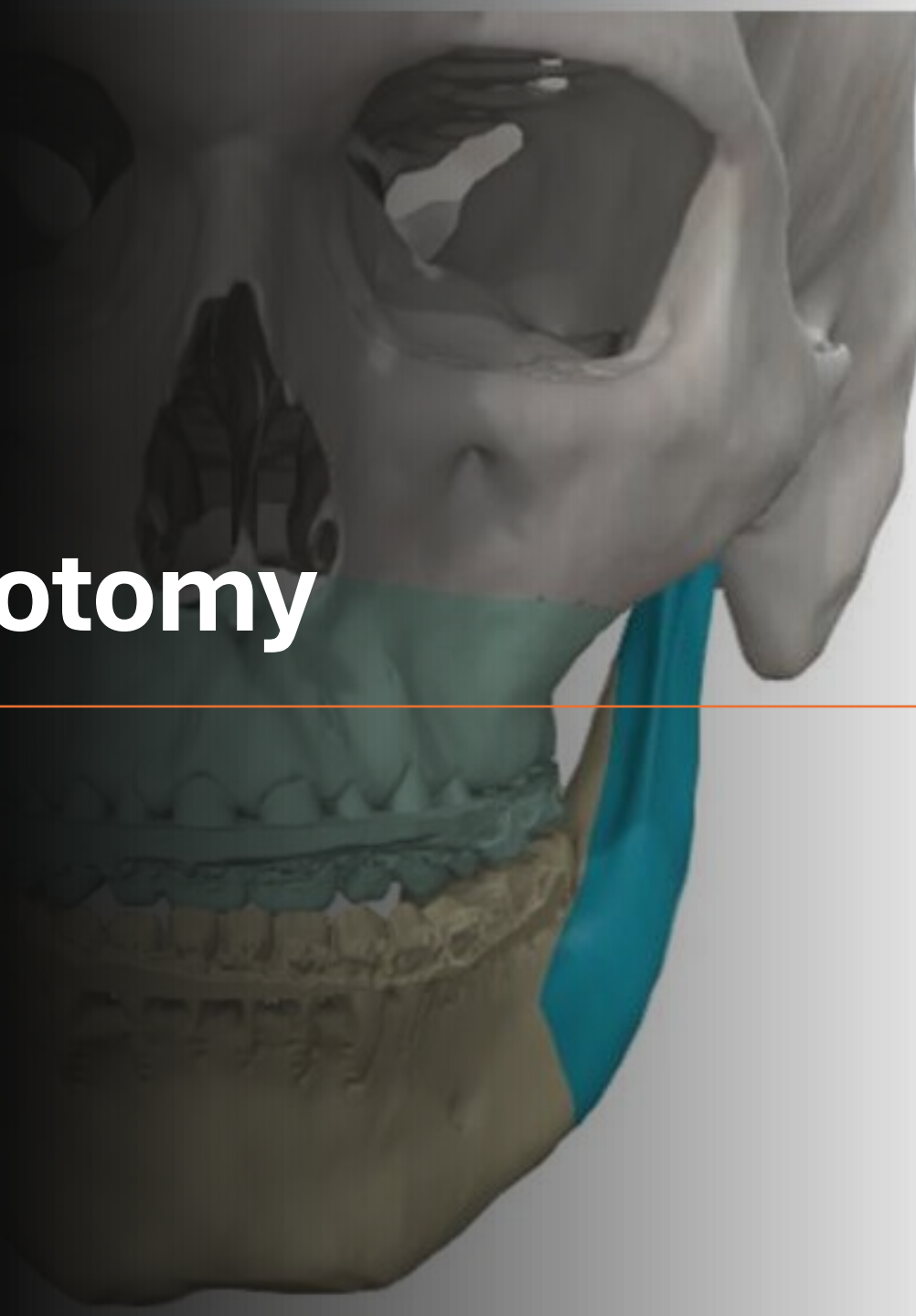
- Please bring family/friend/caregiver to this appointment or have them on the phone so they can have their questions answered and support you through surgical recovery.
- Repeat oral/facial exam
- Obtain dental models
- Obtain facial bone CT scan for virtual planning
- Discuss patient goals and surgical plan
- Sign surgical consent
- Obtain labs and any necessary medical clearance

Day of Surgery

- Arrive at hospital 2 hours before scheduled surgery
- Procedure time: average 2-6 hours depending on the surgical plan
- General anesthesia
- Recovery unit for average 1-2 hours
- Transfer to hospital room
- 1-2 nights in the hospital (average)

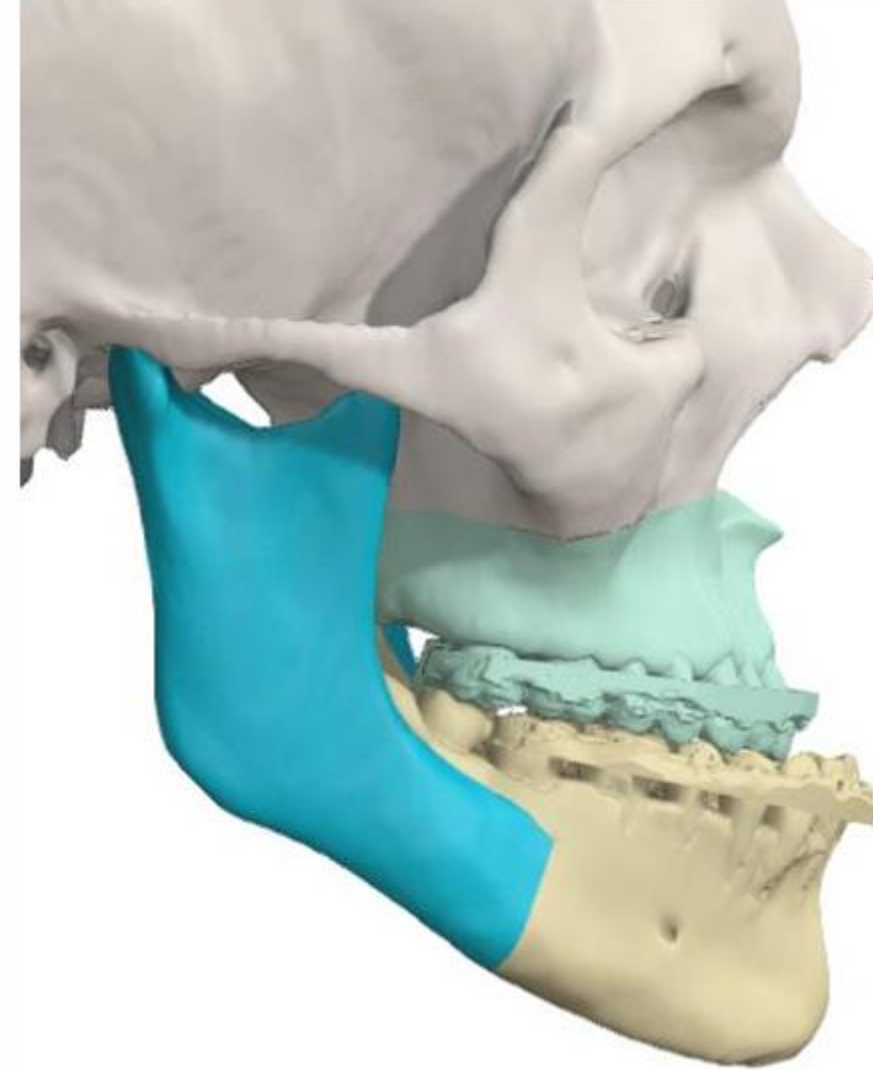
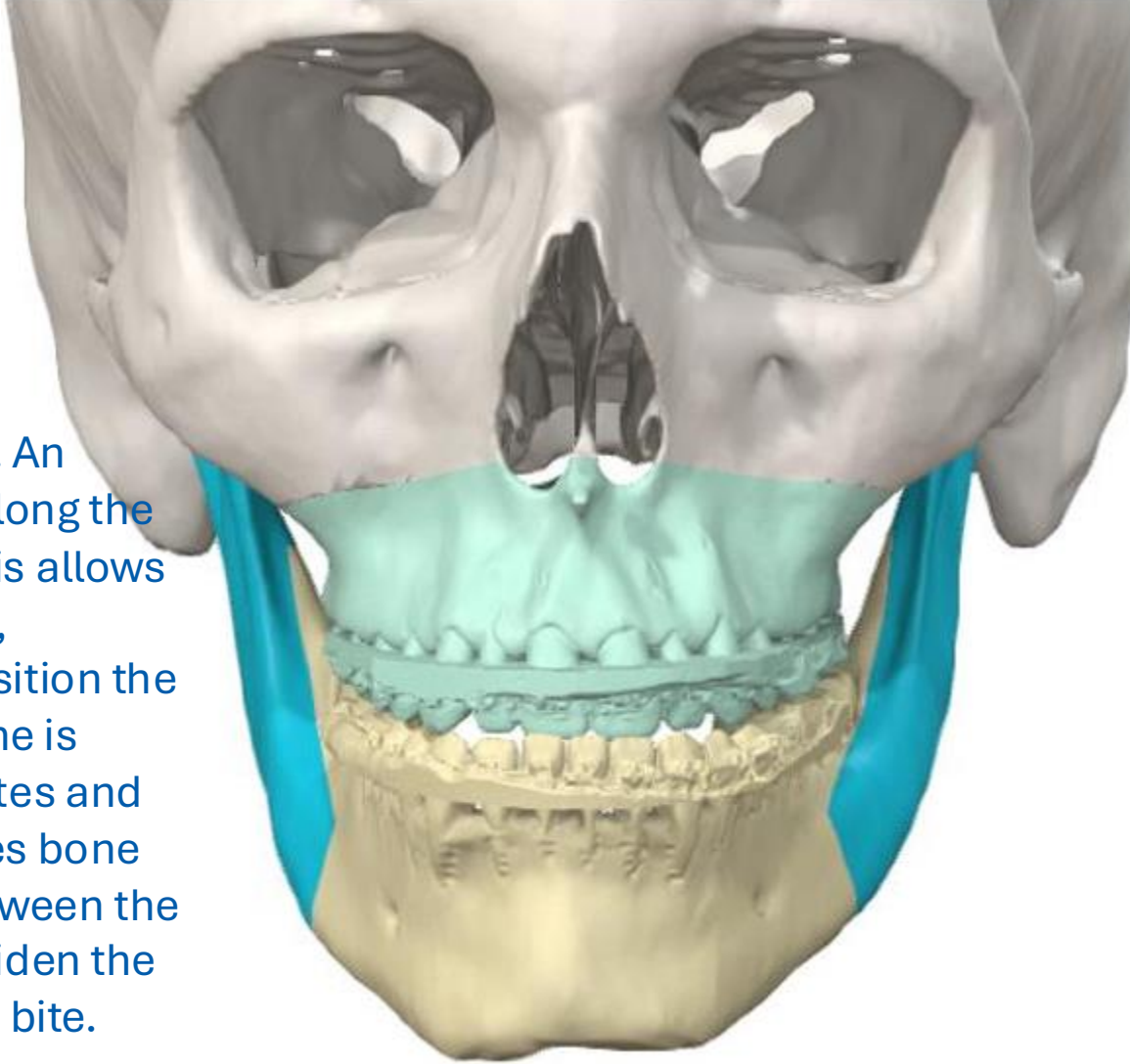


LeFort 1 Osteotomy

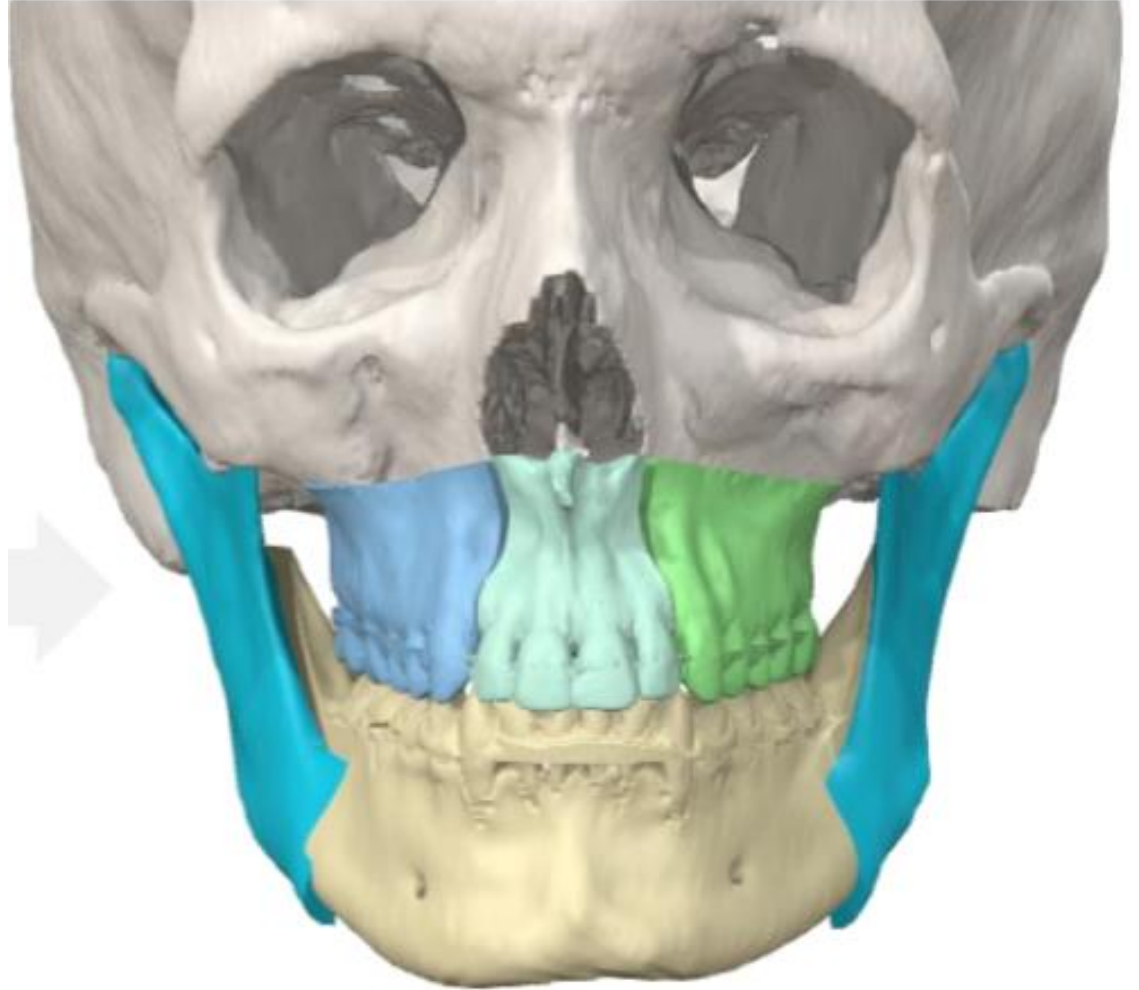


LeFort 1 Osteotomy

Upper jaw surgery. An incision is made along the upper gumline. This allows the surgeon to cut, mobilize and reposition the upper jaw. The bone is stabilized with plates and screws. Sometimes bone cuts are made between the teeth in order to widen the jaw or improve the bite.



LeFort 1 with Interdental Osteotomies



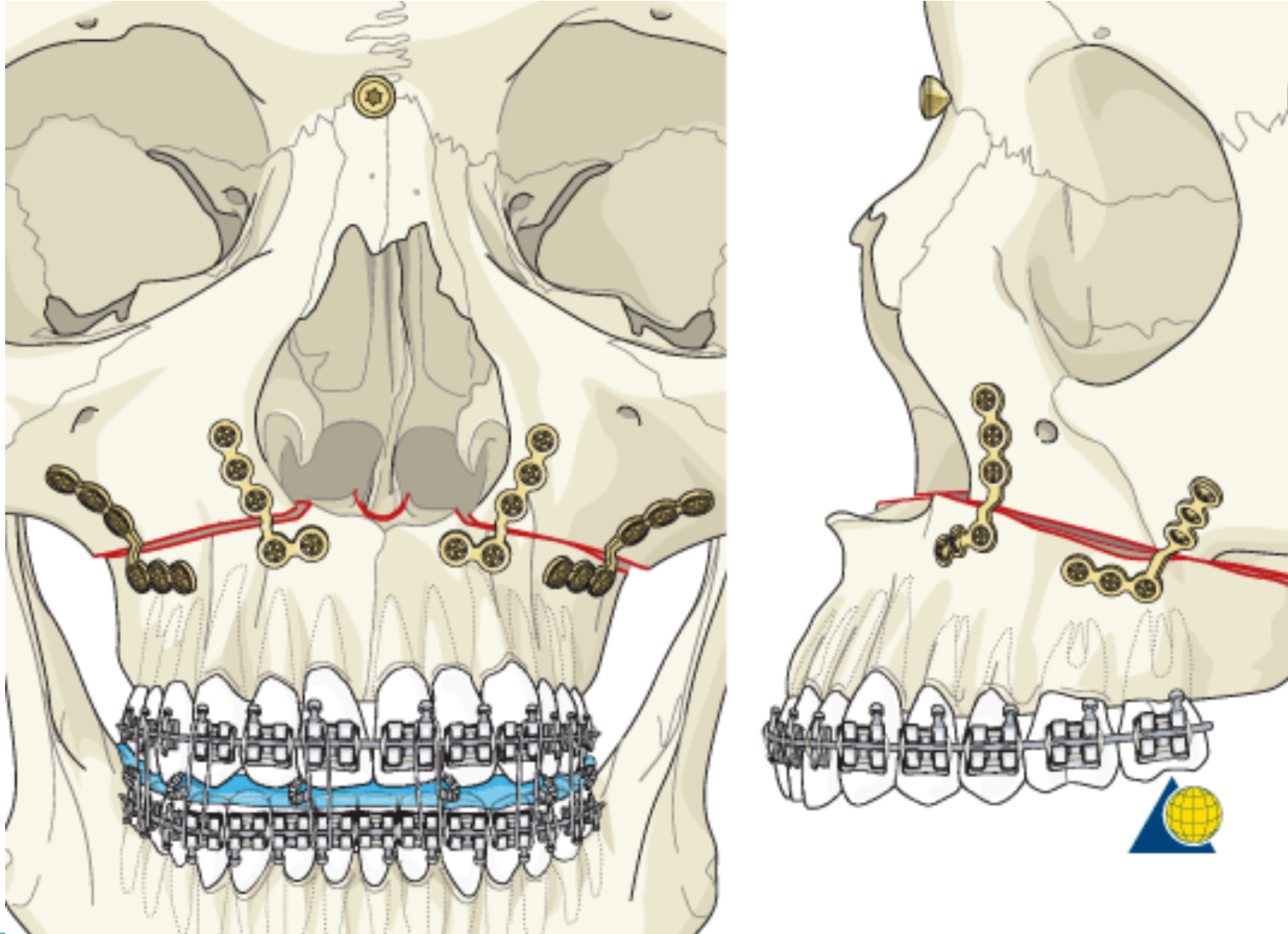
Occlusal Splint



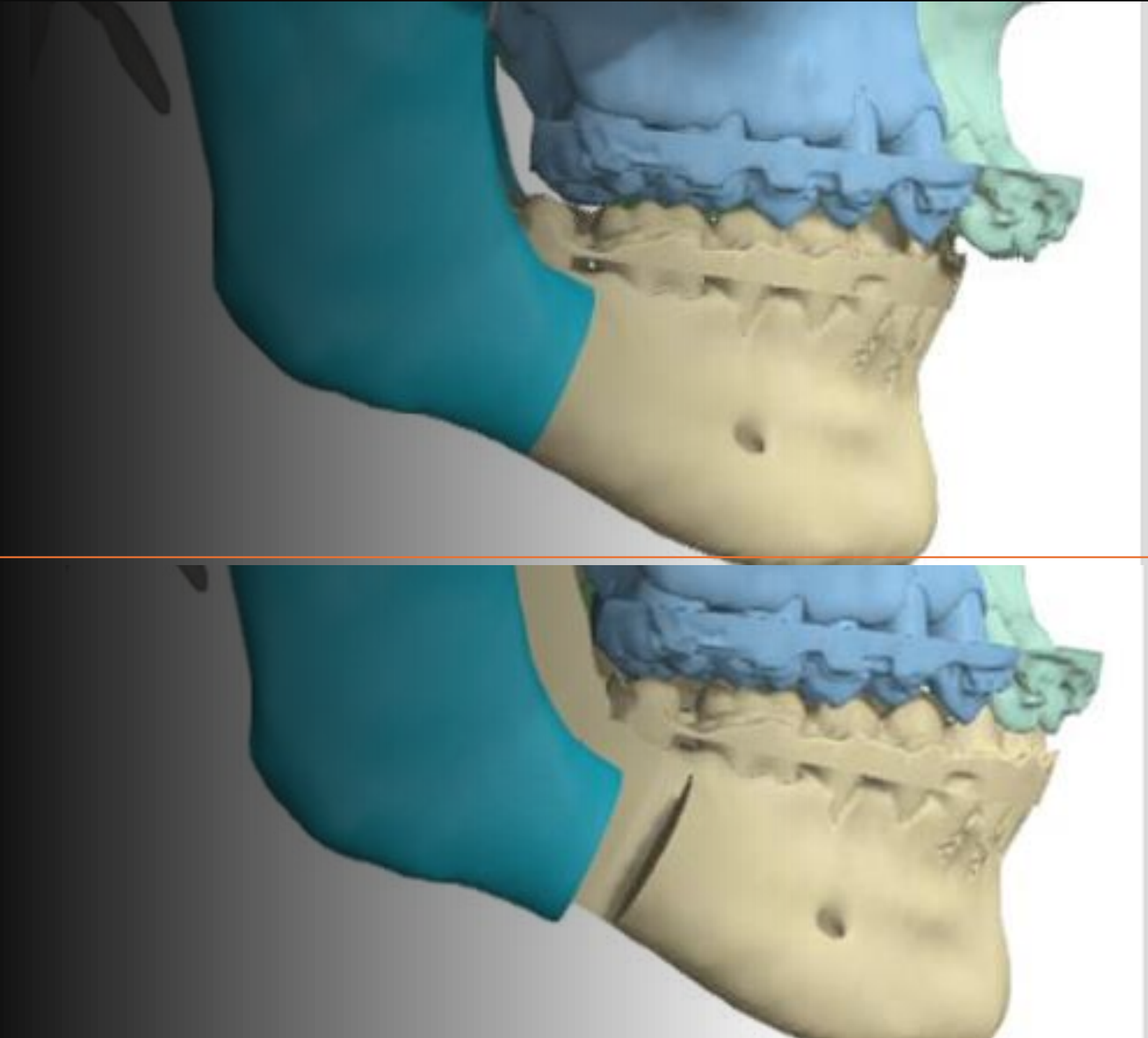
TADs for Clear Aligner Cases or MMA Skeletal Anchorage



Titanium Plate and Screw Fixation

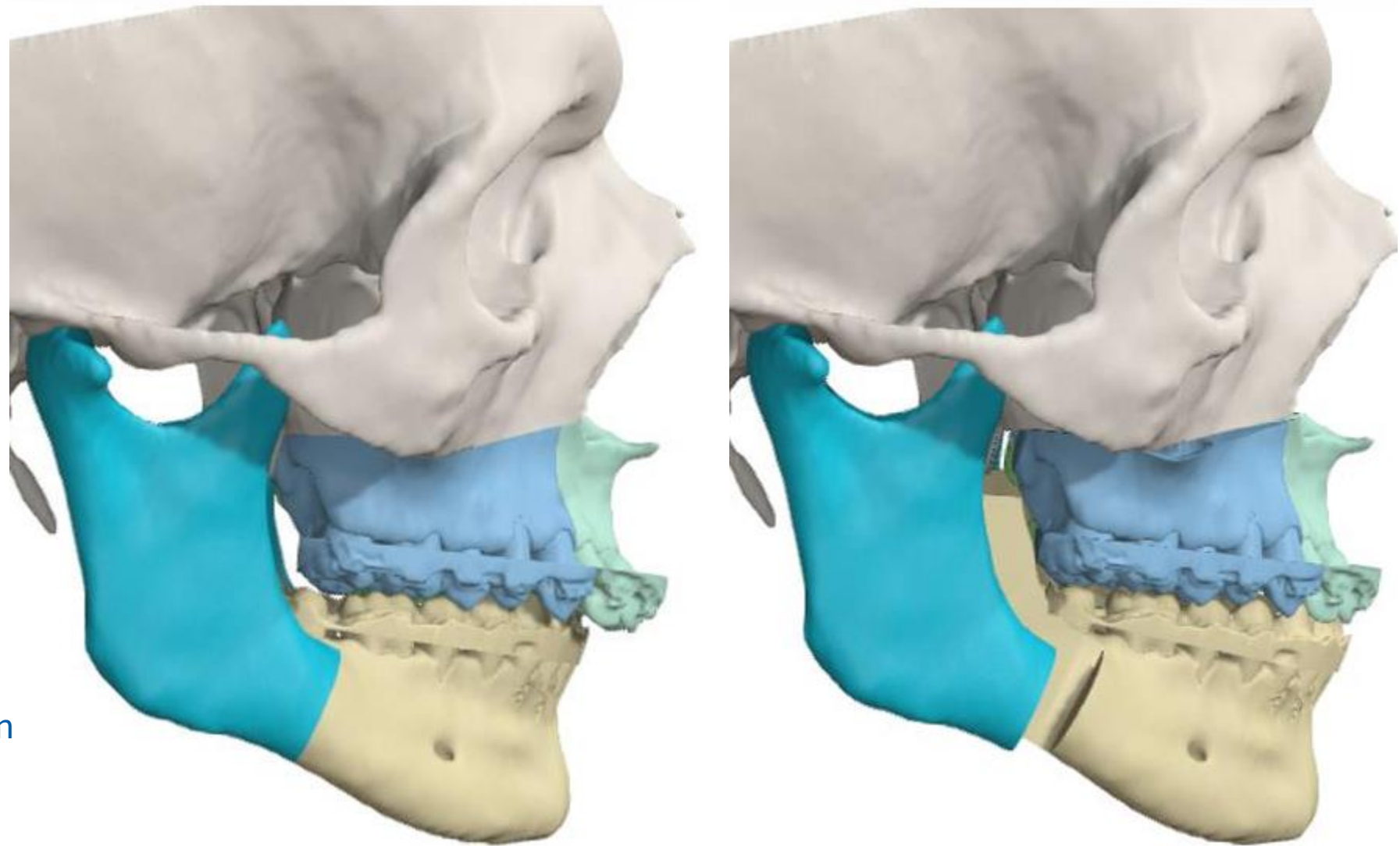


Sagittal Split Mandibular Osteotomies

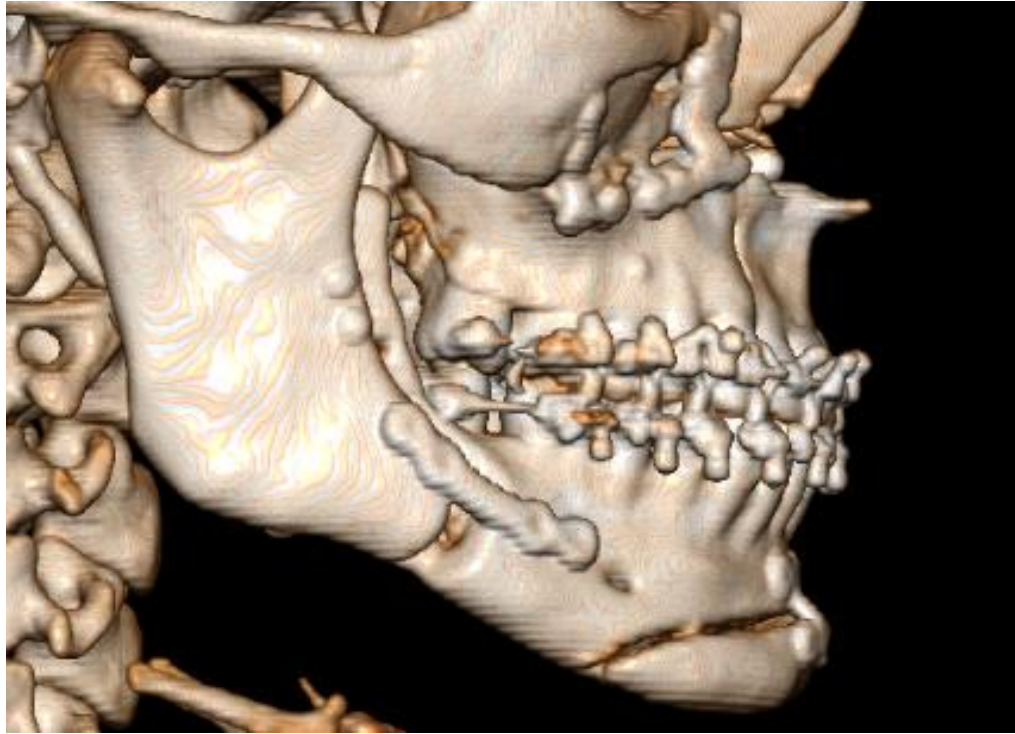


Sagittal Split Mandibular Osteotomies

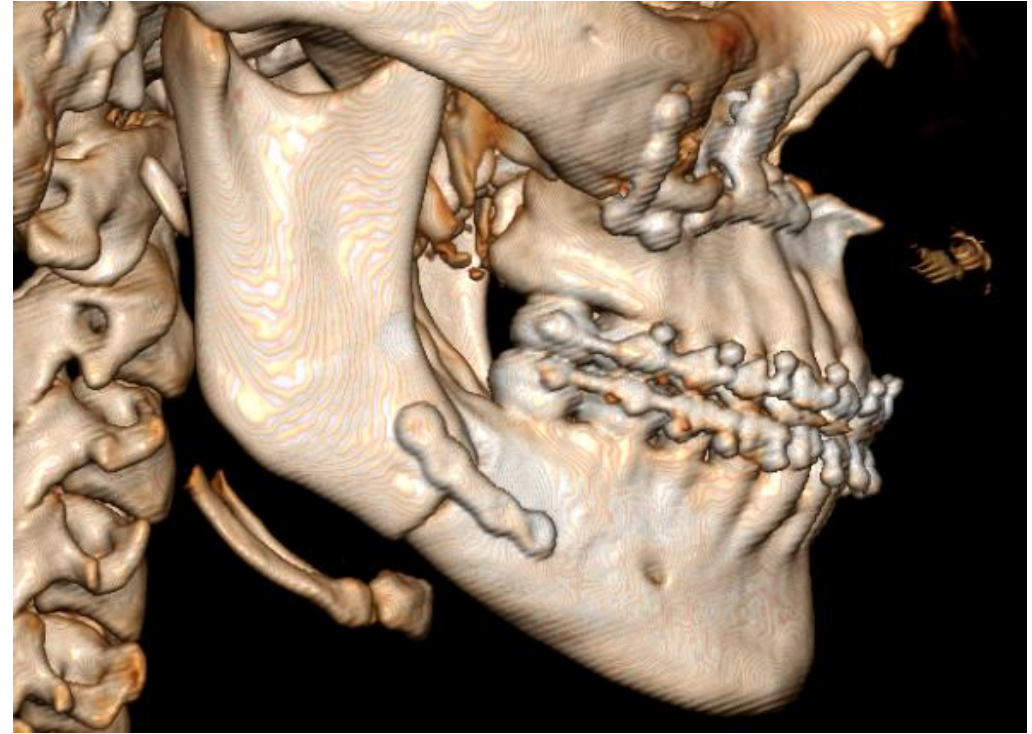
Lower jaw surgery. Incisions are made in the back of the mouth, and the lower jaw is cut, allowing the dental segment of the jaw to be repositioned to optimize the bite, airway and/or facial profile. Plates and/or screws are used to stabilize the bone. Occasionally screws are placed through a small, ~4 mm incision in the cheek.



Sagittal Split Osteotomy Plate and Screw Fixation

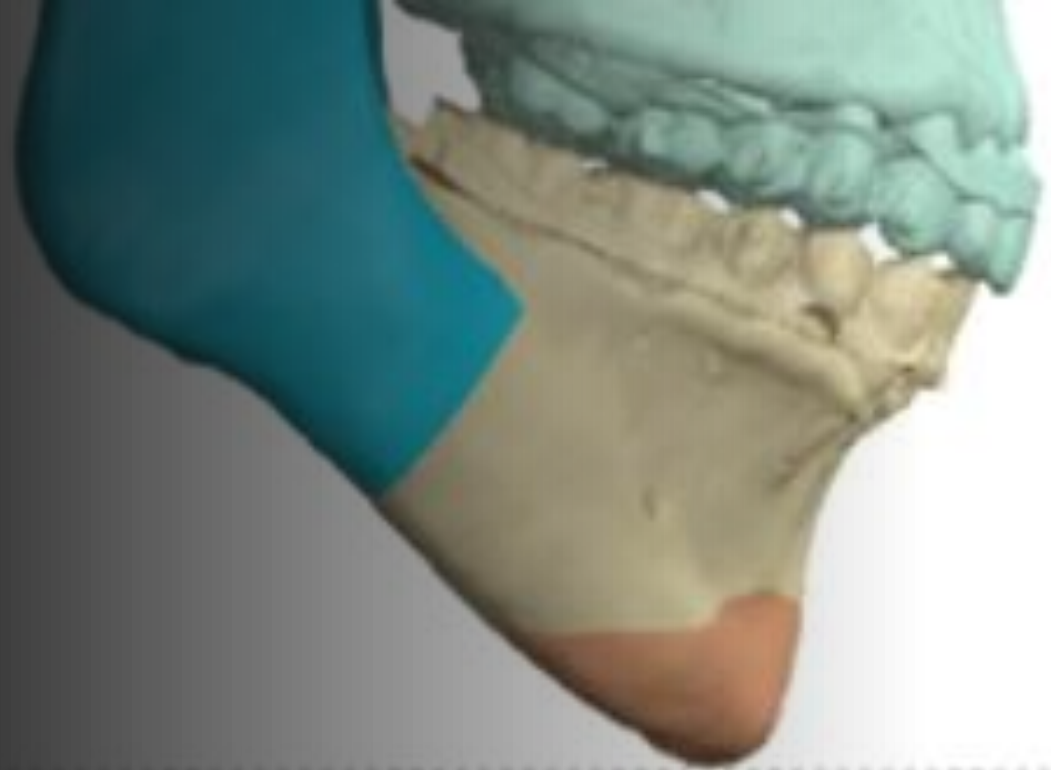


Mandibular Advancement



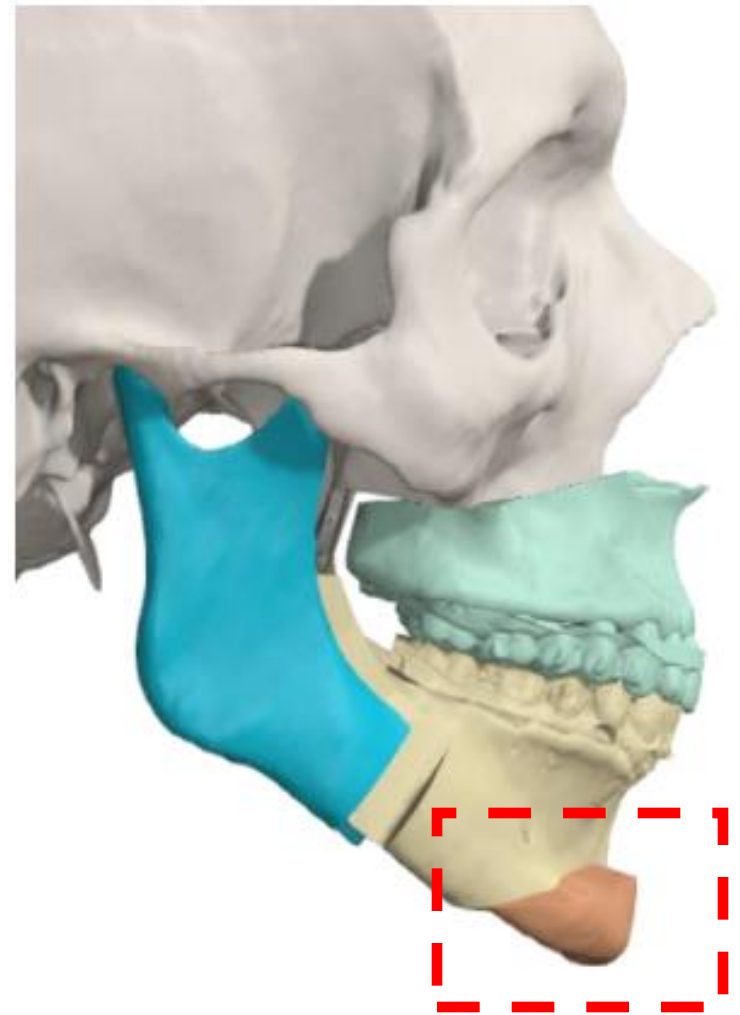
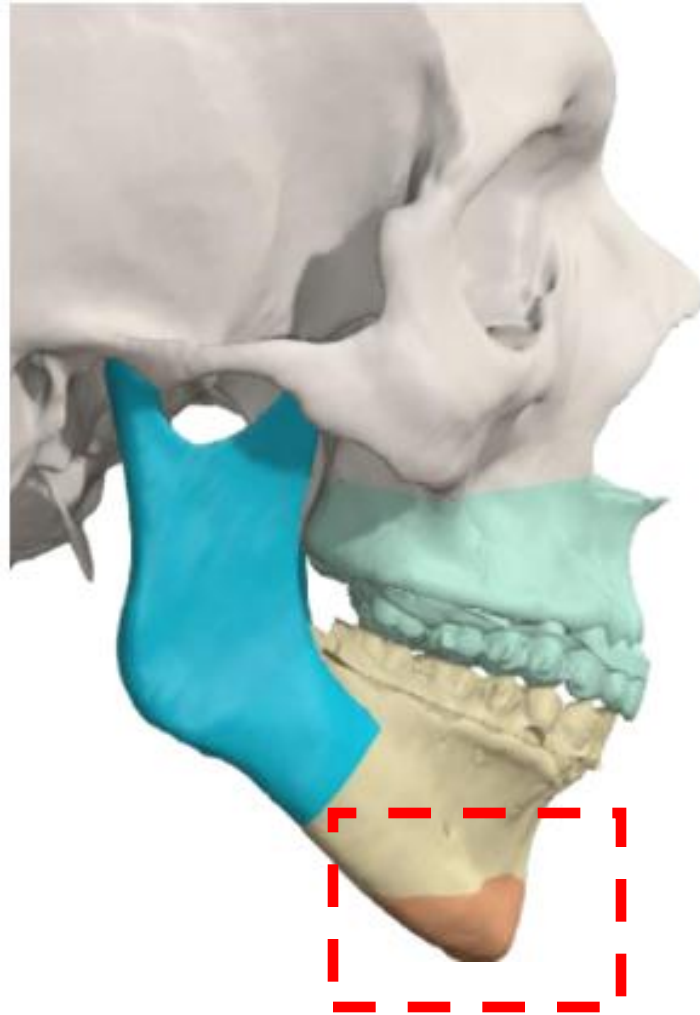
Mandibular Setback

Genioplasty

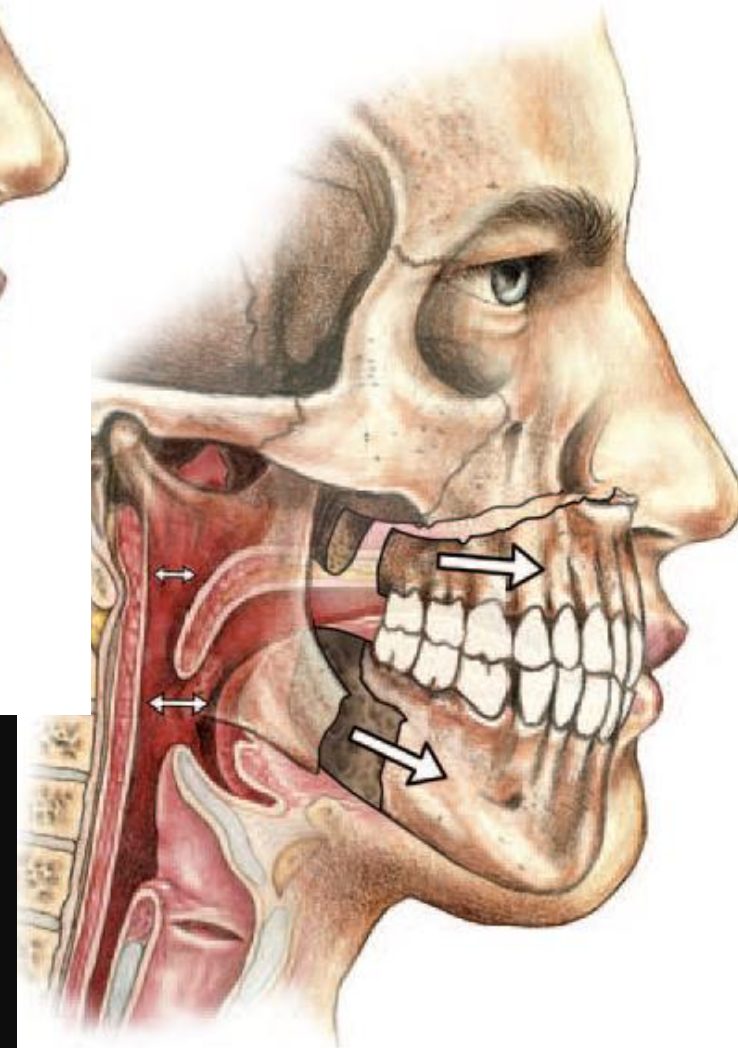
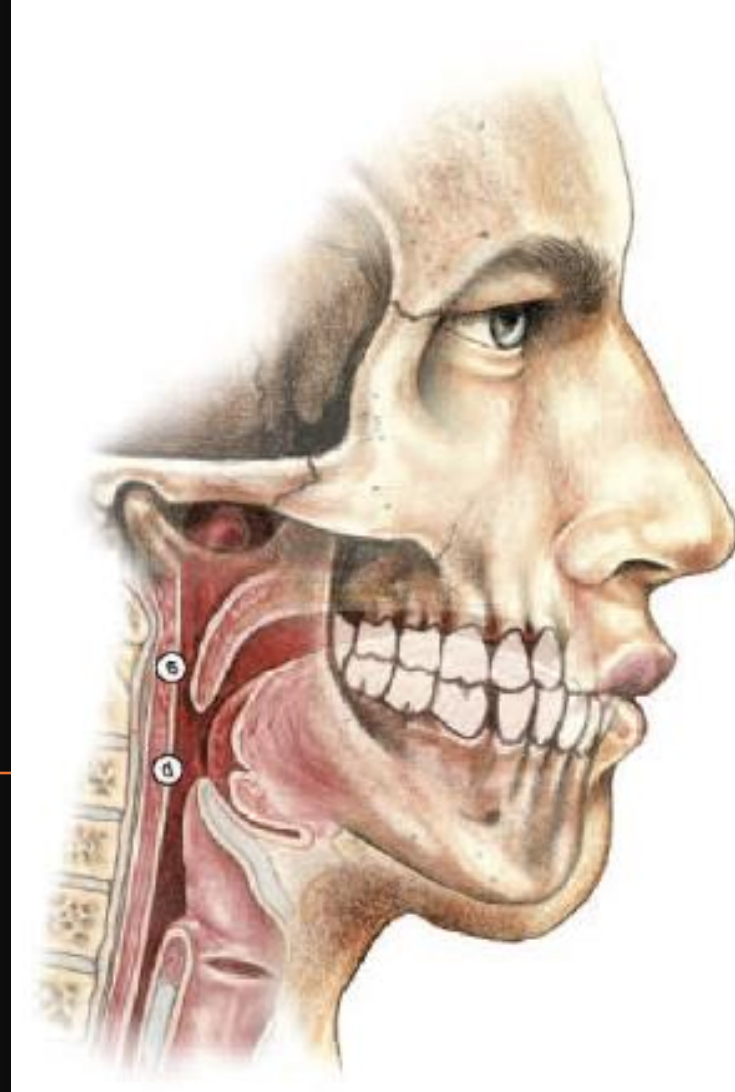


Genioplasty

Chin surgery. The chin is accessed through an incision on the inside of the lower lip. The bone is cut and repositioned to optimize the patient's profile and/or airway.

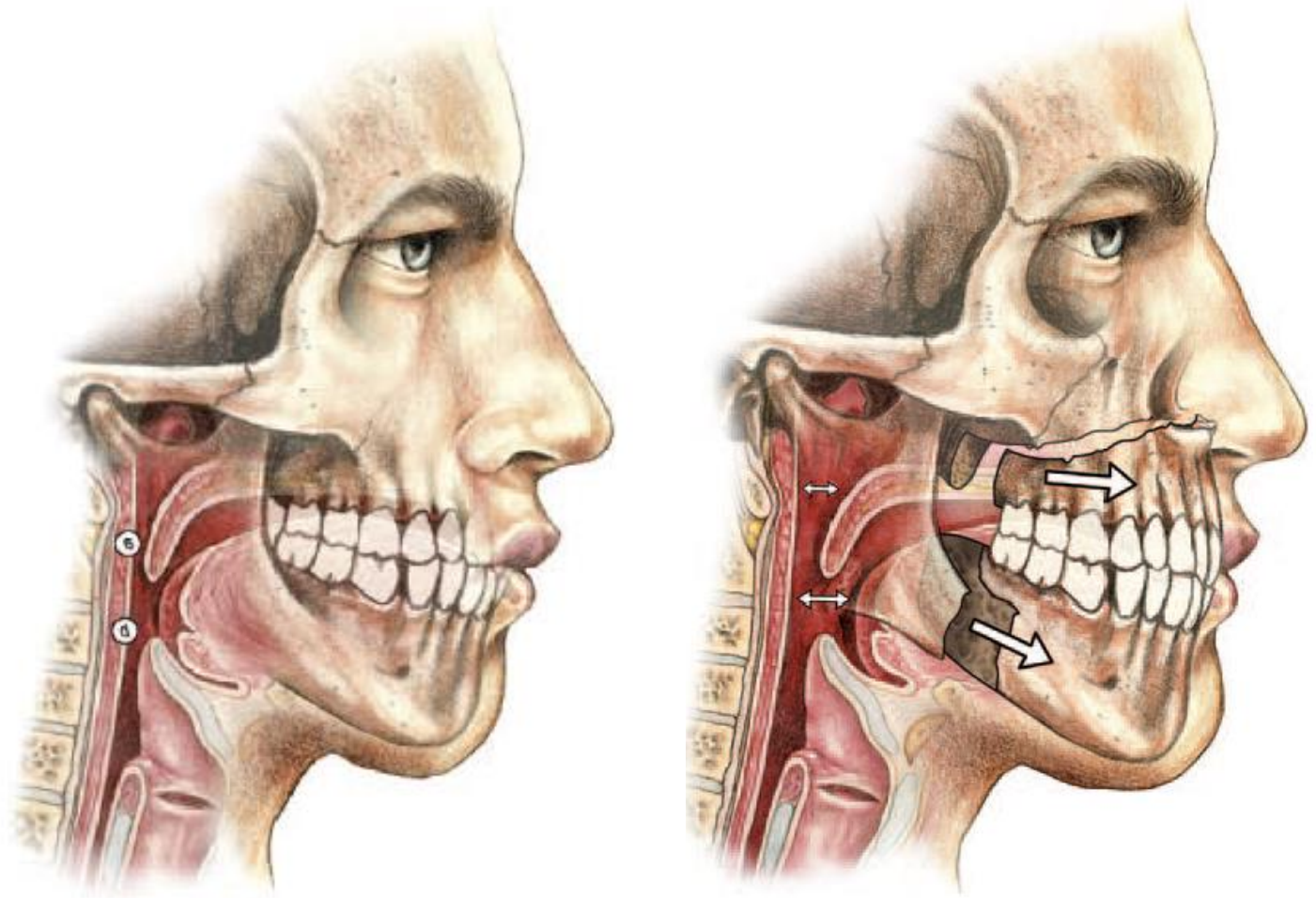


Jaw Surgery and the Airway



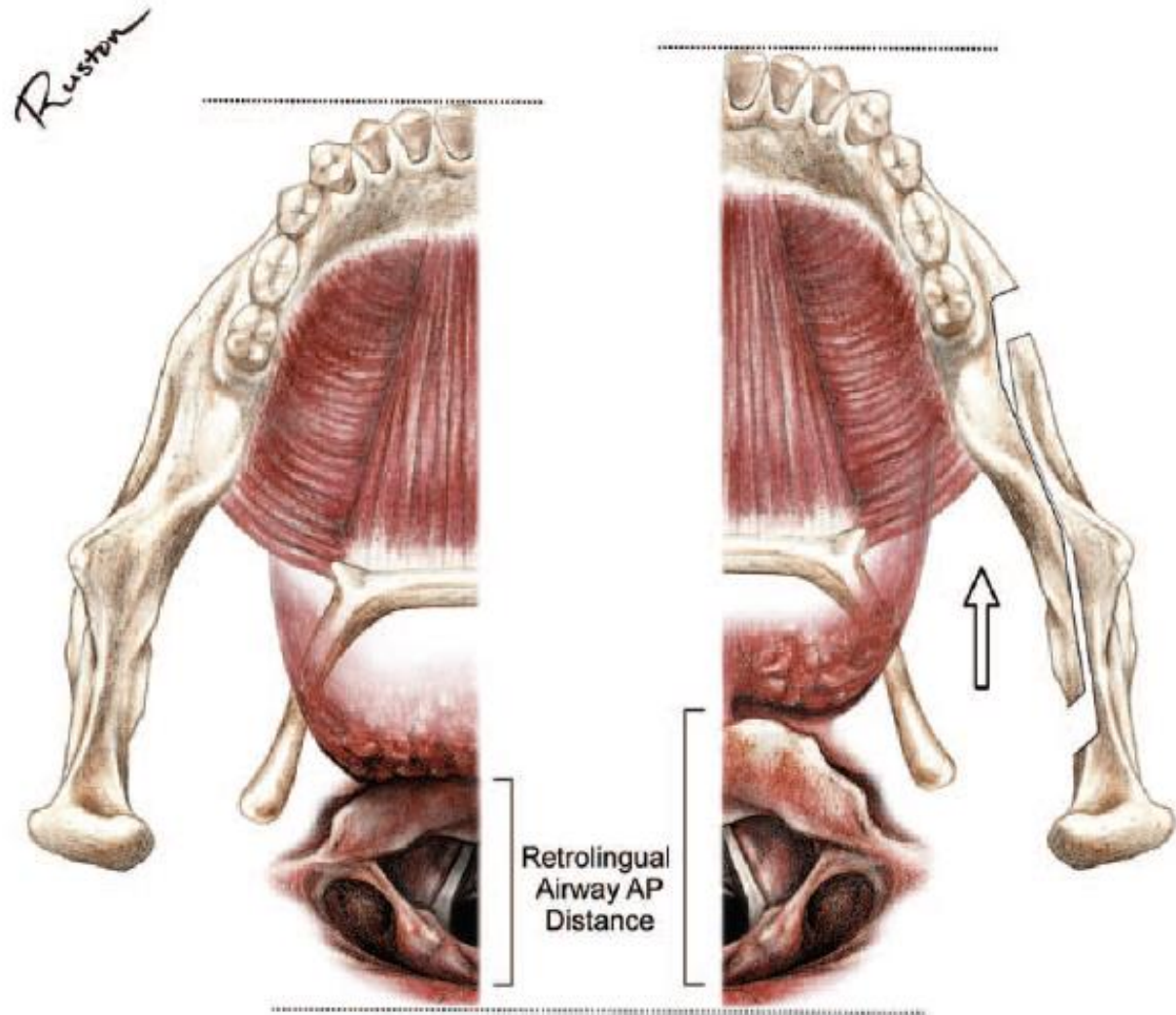
Impact of Jaw Surgery on the Airway

- Maxillary advancement surgery advances the soft palate.
- Mandibular advancement surgery advances the tongue and floor of mouth musculature.
- Combined maxillary and mandibular advancement results in multilevel airway expansion.



Mandibular Advancement and the Airway

- A cross-sectional view of the mandible demonstrates how mandibular advancement carries forward the genioglossus muscle (tongue) and floor of mouth musculature.
- This increases the airway space behind the tongue.



Surgical Risks



RELAPSE



LIP/FACIAL/ORAL/GUM
NUMBNESS



RESIDUAL ASYMMETRY

Additional, Less Common Surgical Risks:

Major bleeding

Infection

Tooth injury or loss

Bone loss

Palatal fistula

Hardware failure

Tongue numbness

Nasal obstruction,
sinus obstruction,
septal perforation

Facial weakness

Jaw stiffness

Chronic facial pain

Eye injury

TMJ
derangement/condylar
resorption

Wound Healing
problems: bone, soft
tissue

Prolonged jaw wiring

Medical
complications (ex.
DVT, MI, stroke)

Postoperative Phase of Treatment

- Postoperative follow-up every 1-2 weeks for the first 6 weeks
 - Initial healing takes 6 weeks
 - Complete healing takes 9 to 12 months
- Postsurgical orthodontics, 6-12 months

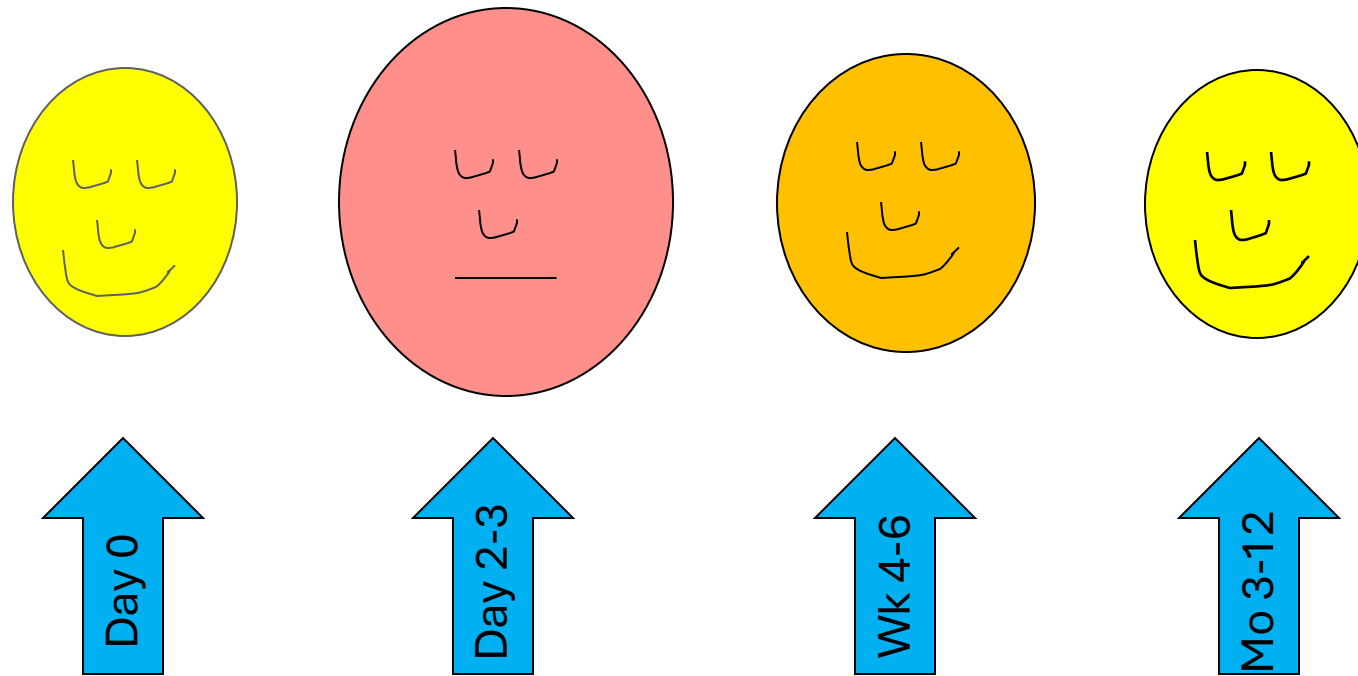
Elements of Surgical Recovery

In our experience, the first week after surgery is the hardest for most patients, and symptoms tend to improve significantly after this first week. Usually most patients are doing quite a bit better by the end of the second week after surgery.

- Facial swelling
- Nasal congestion
- Multimodal pain control
- Dietary restrictions
- Facial and oral numbness
- Antibiotics
- Oral hygiene
- Facial exercises
- Jaw therapy
- Elastic therapy/wires

Swelling

- Ice 20 minutes on, 20 minutes off for the first 48-72 hours after surgery.
- Sleep with head of bed elevated to 30 degrees or sleep on two pillows.
- Swelling peaks 2-3 days after surgery and then slowly improves over time:



Nasal Congestion

Avoid blowing your nose for the first two weeks after jaw surgery.

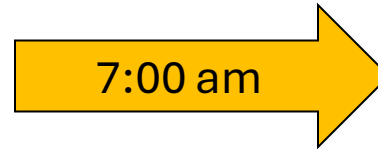
Nasal saline spray. Administer every 2-3 hours and as needed.

Mucinex® (guaifenesin). May be used to clear throat mucus.

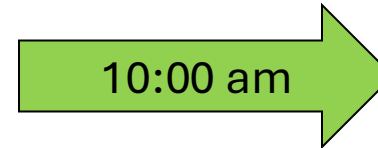
Afrin® (oxymetazoline). Use if there is bright red nasal bleeding, or if recommended by your surgeon. Administer 2 sprays in each nostril every 12 hours for 2-3 days. Do not administer beyond 3 days as this may cause rebound congestion.

Pain Management

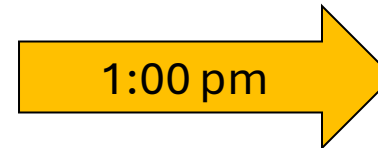
- Tylenol and ibuprofen are taken every 6 hours and alternated every 3 hours as shown in the example to the right.
- Take ibuprofen with food. Follow dosing instructions.
- Oxycodone/narcotic pain medication for severe pain.
- After the first 72 hours, warm compresses and gentle massage over the angle of the jaw may be helpful for muscle spasm.



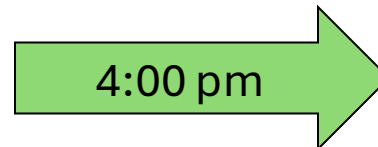
Ibuprofen 400-600mg



Tylenol 650mg



Ibuprofen 400-600mg

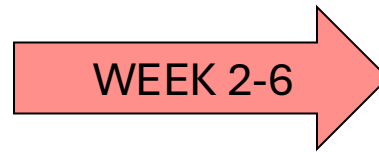


Tylenol 650mg

Dietary Progression



Clear/Full liquids (ex. juice, milk, soups, shakes), Pureed



Pureed, soft/nonchew



Soft food consistency chewing

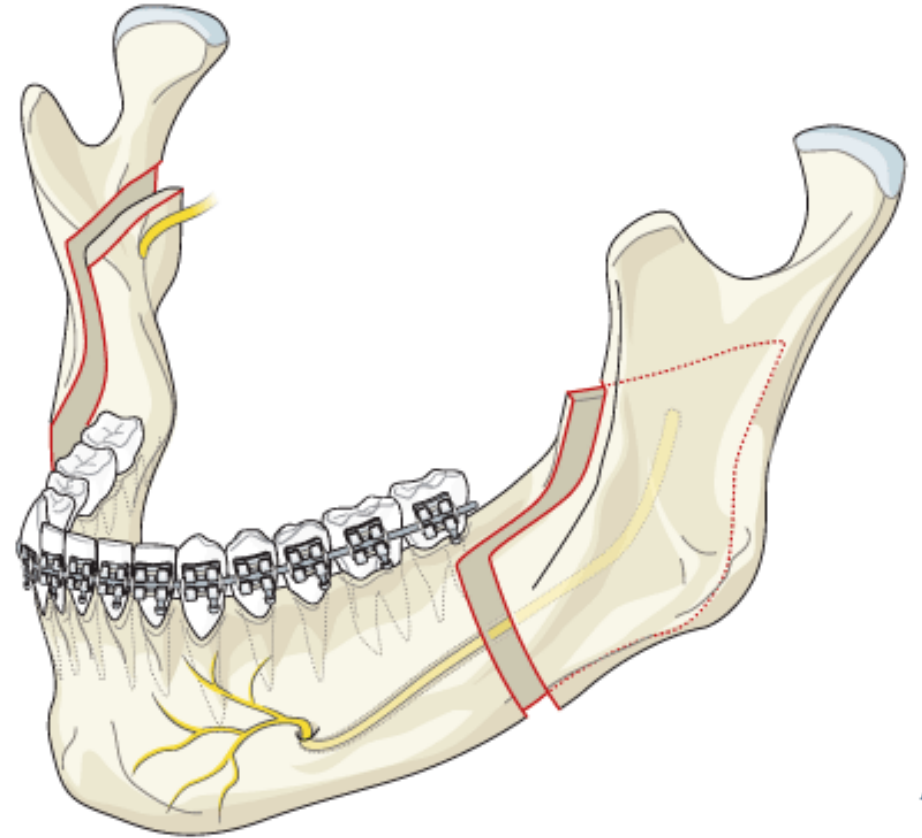


Regular diet

- Keep up with nutrition shakes through your recovery. Your progression may vary from this.

Numbness

- It is very common to have numbness in the cheeks, lower lip, gums, palate, teeth, and chin after surgery.
- This may take many months to recover. In some instances, there may be areas of numbness that do not recover.
 - The lower lip/chin is the most common area for residual numbness.
- There is a small risk of numbness in the tongue as well.



Orofacial Sensory Retraining

- Starting 1-2 weeks after surgery, gently brush your skin using a mirror to stimulate cognitive feedback.
- Use a cotton swab, soft brush or cloth.
- Alternative between light touch and light stroke using your mirror.
- Close your eyes and try to visualize where the contact occurred.
- Then open your eyes and use a mirror to confirm the point of contact.
- Try vertical, horizontal and oblique strokes.
- Spend 1-2 minutes per day a few times per day after surgery.

Antibiotics

- Please take your antibiotics as prescribed after surgery.
- Common antibiotic choices include:

Amoxicillin/clavulanate

or

Clindamycin

Oral Hygiene

1

Rinse your mouth after every meal

2

Use peridex/prescribed oral rinse for the first week after surgery

3

After the first week, switch to salt water rinses or over the counter mouthwash

4

Brush your teeth gently with a soft toothbrush.

- A pediatric toothbrush usually works well.
- Keep the brush on the teeth.
- Avoiding brushing the gums and surgical incisions.

Facial Exercises

Starting 2-4 weeks after surgery, self directed facial exercises and jaw therapy may be performed.

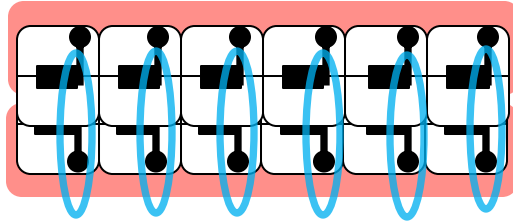
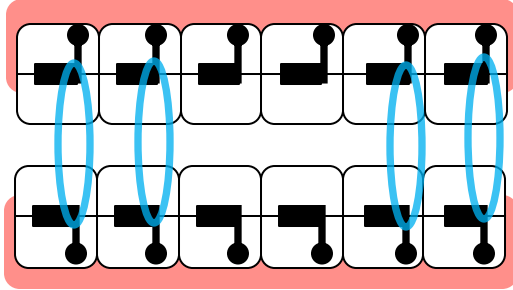
Pucker your lips, smile widely, puff out your cheeks, and stretch your lips and nose using your facial muscles.

You may choose to work with a myofunctional therapist before and after surgery to help with both tongue posture and strengthening/range of motion for perioral and facial musculature.

Jaw Exercises

- Jaw range of motion improves with time after surgery.
- Starting 2-4 weeks after surgery, self-directed jaw therapy may be performed.
- Open your mouth open as wide as possible. Hold for 30 seconds. Perform 5 repetitions. Repeat 3-5 times per day.
- If indicated at week 4, your surgeon may ask you to use the "Hold and Relax" technique. Open your mouth halfway and place a fist under the jaw. Maintain stable mouth opening against the resistance from your fist for 5 seconds. After each rep, open your mouth widely for 30 seconds. Perform 5 reps per session, and 3 sessions per day.
- The thumb and index finger can be used to gently stretch the bite open to improve range of motion starting at 4 weeks. Only do this if recommended by your surgeon.
- If there is a plastic splint in your mouth, ensure that you are biting stably and completely into the splint when you close your mouth.
- A referral for jaw physical therapy can be made if necessary.

How long will I be wired or banded shut?



- In most cases, your surgeon will lighten your elastics after 0-4 days so that you can begin gentle jaw range of motion
- About 1% of the time, rubber bands or wires may be used to hold your jaws shut for 6-8 weeks, particularly if the mandible experiences a “bad split.”
- **Patients are seen every 1-2 weeks for the first 6 weeks after surgery**
- **The specific protocol for managing rubber bands and/or jaw wires will be customized to you and guided by your surgeon and/or orthodontist**

Postoperative Orthodontic Treatment

- The goal of surgery is to make the big movements to your jaws to get them into a corrected position.
- After surgery, your orthodontist will make the fine movements to your teeth to detail and optimize your bite.
- Wearing a retainer will be important in the long term to help minimize relapse.

Next Steps:

- Obtain insurance preauthorization
 - This may expire before surgery. There is no guarantee that surgery will be reauthorized after authorization has expired.
 - If and once the surgery is authorized, please call your insurance plan if you have questions about your financial responsibility.

Thank you!
Questions?

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