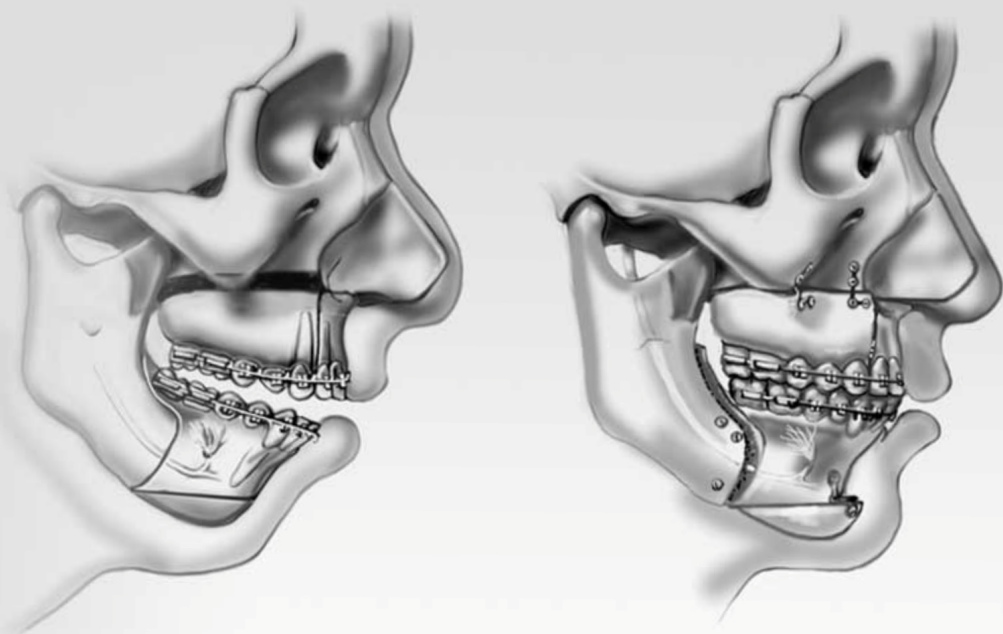


Jaw “Orthognathic” Surgery



Boston Children's Hospital
Plastic and Oral Surgery

<http://www.childrenshospital.org/centers-and-services/departments-and-divisions/department-of-plastic-and-oral-surgery>

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Introduction

Welcome to the Boston Children’s Hospital Department of Plastic and Oral Surgery!

This guide is meant to provide you with important information about orthognathic surgery, which is more commonly known as “jaw surgery”. Jaw surgery is often needed to correct facial growth and bite problems. There are 3 board certified Oral and Maxillofacial Surgeons in our Department that specialize in jaw surgery, as well as specialized nurses, physician assistants and insurance experts to help with all aspects of your care.

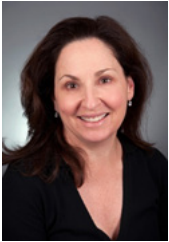
In addition to providing the highest quality medical and surgical care for our patients, our program is committed to supporting families throughout the treatment process. We are always here to address your questions and concerns. Please do not hesitate to contact us at any time at (617) 355-7252.

Thank you for entrusting us with your or your child’s care. We hope the information on the following pages reaffirms the reasons you chose Boston Children’s.

To schedule an appointment or to speak to a member of our team, please call our program coordinator at (617) 355-7252.

Meet Our Team

Our Oral and Maxillofacial Surgeons



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Oral Surgeon-in-Chief, Section of Oral and Maxillofacial Surgery
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Why do I need jaw surgery?

Jaw surgery corrects growth abnormalities of the upper and lower jaws in order to realign the bite and improve jaw function. Jaw surgery may also affect the appearance of the face.

Jaw surgery is usually planned in conjunction with orthodontic (braces) treatment. Jaw surgery may be suggested by your orthodontist if your bite problem cannot be fully corrected with braces alone.

Reasons to have jaw surgery include:

- Correct problems with the way the teeth bite together, such as underbite, large overbite, crossbite or open bite
- Correct facial asymmetry
- Minimize excessive wear on the teeth due to bite abnormalities
- Improve the ability of the lips to close properly
- Improve stability of the jaw joints
- Correct growth abnormalities associated with birth problems such as cleft lip and palate
- Address obstructive sleep apnea

Benefits of jaw surgery may include:

- Improved bite alignment
- More efficient, safer and more comfortable chewing function
- Improved speech and swallow
- Improved breathing and sleep
- Improved smile
- Improved facial appearance
- Improved self-esteem

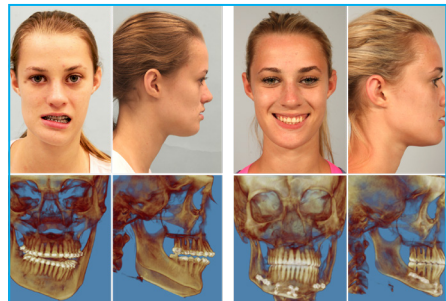
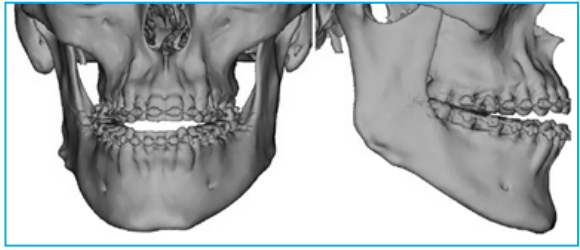


Figure: A patient with a lower facial asymmetry who had a Le Fort I osteotomy, bilateral sagittal split osteotomies and malar implants.

Before:



After:

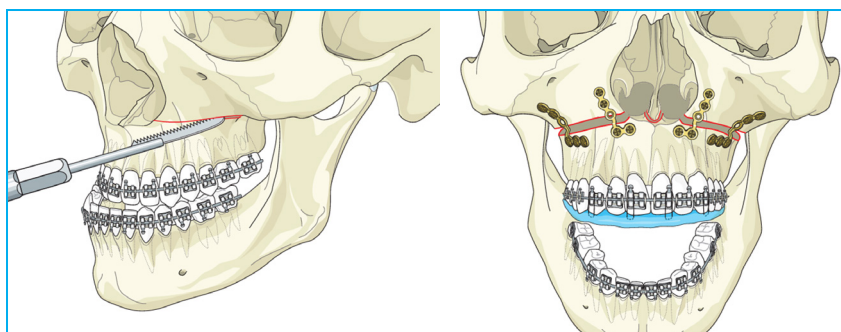


Jaw surgery overview

At Boston Children's Hospital, jaw surgery procedures are customized to your needs. For some patients, a complete correction can be achieved by moving one jaw. For others, movement of both jaws and additional adjunctive procedures are necessary to provide the best result. The operations are planned in advance and are combined when possible.

Upper jaw (maxillary) surgery:

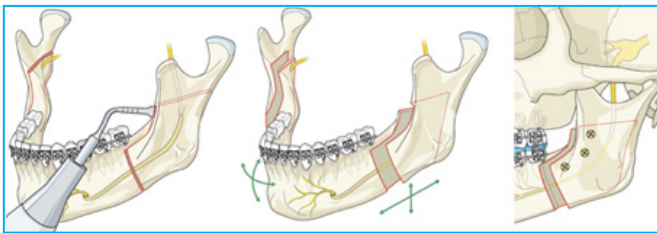
The most common operation to correct an upper jaw alignment problem is a Le Fort I osteotomy. This procedure is done entirely from within the mouth. A precise bone saw is used to separate the upper jaw from the surrounding structures. The upper jaw is mobilized, repositioned, and held in the new position with small bone plates and screws. The wounds are closed with dissolving stitches underneath the upper lip.



In patients with very narrow upper jaws and/or large open bites, the upper jaw may need to be widened or separated into multiple pieces to achieve ideal alignment. This is sometimes done at the time of the Le Fort I osteotomy, but often requires a separate procedure called Surgically Assisted Rapid Palatal Expansion (SARPE) that occurs at the start of orthodontic treatment. When segmentation is done during a Le Fort I osteotomy, a small plastic splint, similar to an orthodontic retainer, is usually applied to the upper teeth with wires during the operation and is left in place for 6 weeks after surgery to improve stability.

Lower jaw (mandibular) surgery:

The most common operation for the lower jaw is called bilateral sagittal split osteotomies (BSSO). This procedure is done almost entirely from inside the mouth, although a very small skin incision is sometimes needed on each side in the cheek area to allow insertion of the bone screws. The lower jaw is accessed by incisions behind the molar teeth on each side. A precise bone saw is used to separate the front portion of the jaw from the parts that contain the jaw joints. The lower jaw is then repositioned and held in the improved position with bone plates and/or screws. The wounds are closed with dissolving stitches in the back of the mouth on each side.

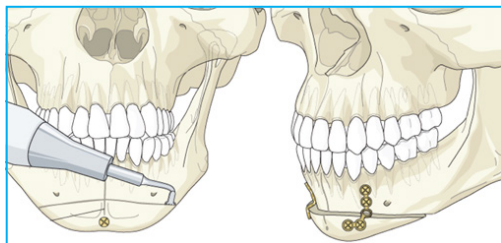


Adjunctive procedures

Chin surgery (genioplasty):

A genioplasty is used to improve alignment of the chin. This is often done to make a small chin look more prominent or to correct a chin asymmetry. A genioplasty can be done without another operation but is most commonly combined with upper and/or lower jaw surgery. This procedure is done entirely from inside the mouth. The chin is accessed through an incision behind the lower lip and a precise cutting bone saw is used to separate the bottom portion of the chin from the rest of the lower jaw.

The chin is moved to an improved position and held in place with small bone plates and screws. Depending on the desired correction, the chin can be rotated, shortened, lengthened or contoured during this procedure.



Cheek bone augmentation (malar implants):

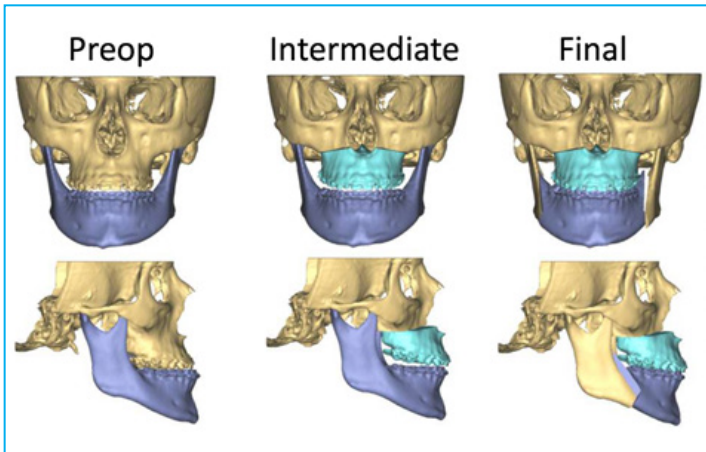
Growth deficiencies of the upper jaw often extend to the cheek bones and the rims under the eyes. Correcting the upper jaw position at the level of the teeth may cause the recessed areas of the cheeks and eyes to be more noticeable. Malar implants can improve the contour of these areas and provide a natural appearance. These implants are typically made from porous polyethylene – a plastic material designed to integrate well with the body – and are contoured to provide the right amount of augmentation in the desired areas. The implants are inserted through the same incision used for the upper jaw surgery, so there is little added time in the operating room or discomfort after the procedure.

Extraction of wisdom teeth:

Many patients do not have enough space in their mouth for normal eruption of the wisdom teeth, which are the last teeth to form. When these teeth become stuck (impacted), they are at risk for infection and other problems, and extraction is usually recommended. Impacted wisdom teeth may be in the way for jaw surgery, so your surgeon may recommend removing the wisdom teeth well in advance of the operation on your jaw. In some cases, wisdom teeth can be removed at the time of jaw surgery.

The process for jaw surgery

Jaw surgery is typically coordinated with orthodontic (braces) treatment to align the teeth within each jaw so that the teeth will fit together well when the jaws are repositioned. After deciding on a treatment plan, the placement of braces is the first step in the process for jaw surgery. In some cases, braces alternatives such as Invisalign can be used. Once the teeth are appropriately aligned, jaw surgery can occur. The braces remain on the teeth during the operation and special hooks are applied to the braces that are used to ensure good bite alignment in the operating room. These hooks are removed by your orthodontist 4-6 weeks after the operation. There is typically a period of orthodontic refinement in tooth position after surgery before the braces are removed.



Jaw surgery is a well-planned procedure and precise preparation requires a special visit to our office for an "orthognathic workup". At this visit, our trained staff will take 2-dimensional and 3-dimensional facial photographs, digital impressions of the teeth and a 3-dimensional facial x-ray (CBCT). We will then use this information to perform virtual surgery in a computer simulation program. The virtual surgery creates a prediction of your postoperative result, which we will share with you at a preoperative office visit. Once we have decided on a treatment plan, we will use the virtual surgery to create bite splints that are printed on a 3D printer and sterilized. These splints are then used during the operation to ensure that the desired result is achieved.

What to expect after surgery

- Jaw surgery is performed in an operating room under general anesthesia. Most patients stay in the hospital for 1-2 nights after surgery though same day surgery may be an option. During the hospitalization our team of specialized nurses and physician assistants will teach you how care for yourself at home.
- After jaw surgery, the face is typically swollen for several weeks. The swelling peaks at 72 hours and then slowly improves. The worst swelling is seen in the first 2 weeks after the operation, but some swelling can remain for up to 6 months or more. There may be some bruising of the skin of the cheeks, neck or around the eyes.
- Most patients will experience numbness of the lips, cheeks, chin and/or teeth after jaw surgery. This improves over the first few weeks and months, though can be prolonged or even permanent in rare cases. It is important to remember that the nerves that provide sensation are different than the ones that move the facial muscles, so facial function (i.e. smiling) is not affected by numbness.
- Sinus congestion is common after upper jaw surgery. This typically lasts for 7-14 days. You may be prescribed nasal sprays and decongestants to improve this congestion shortly after the operation.
- Ear congestion/popping may also occur for the first few weeks after upper jaw surgery, and typically resolves over the first 7-14 days.
- Bleeding may occur in the areas of the incisions for the first several days after surgery. This is typically not dangerous but may be a nuisance. Bleeding may occur later if one of the wounds becomes irritated, for instance during tooth brushing. After upper jaw surgery, it is common for some dried scab-like

blood to come out of the nose 1-2 weeks after the procedure as the blood that collects in the sinus cavities from the operation is naturally removed by the body.

- There is typically some pain after surgery. Most patients do not find jaw surgery to be a particularly painful procedure but need for some pain medication for the first week is common. Your surgeon and specialized nurses will help determine the best pain medication for you to go home with during your time in the hospital.
- You may have elastic bands on your braces after surgery that limits mouth opening. Because of these bands and normal postoperative pain and swelling, it may be uncomfortable to open your mouth widely in the first week. Our team will help you learn to drink fluids using a syringe and other helpful techniques during this period of limited mouth movement.

Postoperative care

Our specialized nurses and physician assistants will help explain the postoperative care you will need at home during your hospitalization. Some highlights include:

- Hygiene: It will be very important to keep your mouth clean before and after your operation to reduce the risk for infection. This will include tooth brushing and mouth rinsing, which will begin on the first day after the operation.
- Diet: Although the hardware holding your jaws in place can withstand normal mouth opening and speaking, they are not strong enough to sustain forces of chewing before some bone healing has occurred. Therefore, you will be on a non-chewing diet for 6 weeks. For the first 2 weeks, you will mostly have liquids only. You can then move up to milk shake-consistency foods and anything that can be blenderized. After 6 weeks, your surgeon will tell you when it is safe to return to a normal diet. Diet instructions and recipe suggestions can be found on our website at: <https://on.bchil.org/2muYI4S>

- Physical activity: Sports and heavy physical activity after surgery may increase your swelling and pain and my risk causing breakage of the hardware. We will ask you to avoid the kind of physical activities that jars the face (i.e. running), those that have a risk for falls and facial trauma (i.e. biking, basketball), and those that raise the blood pressure significantly (i.e. weight lifting) for 8 weeks after surgery.
- Time out of school/work/activities: Most patients will need 2-3 weeks to rest and recover at home before they are ready to return to school, work and other activities. Some patients, especially if concerned about being seen by friends and colleagues while swollen, will need longer.
- Postoperative braces: There will be a period of continued orthodontic treatment after jaw surgery. The amount of time in braces is different for every patient and should be discussed with your orthodontist. You will typically return to your orthodontist to restart braces adjustments 4-6 weeks after jaw surgery.

Frequently asked questions

Will my jaws be wired together after surgery?

Your jaws are typically NOT wired together at the end of the operation, though this is sometimes necessary in unusually complicated cases. Stretchy elastic bands are usually applied in 2 places on the braces to guide your jaw comfortably in to your new bite. These elastics do not limit mouth opening significantly - you will be able to open your mouth and speak immediately after the operation.

Will I ever need the hardware removed?

The bone plates and screws used during jaw surgery are extremely small and are designed to become integrated in the bone over time. You will not be able to see or feel them, and they are typically not removed.

Will I set off metal detectors at airports?

No. The hardware used for jaw surgery is made from titanium, a non-ferrous metal, which has a long track record of successful use in many surgical applications. This type of metal will not trigger metal detectors and it will be safe for you to have magnetic resonance images (MRI), if ever necessary, after jaw surgery.

What can I eat after surgery?

Your diet will be limited to foods that can be safely swallowed without chewing for 6 weeks after jaw surgery. You will receive additional instruction about this diet during your time in the hospital. Recipe recommendations can be found on our website at: <https://on.bchil.org/2muY14S>

Will I be able to speak after surgery?

Yes, you will be able to speak immediately after the operation. Your speech may be less clear in the first week after surgery due to lip swelling and soreness associated with mouth movement, but this will resolve quickly, and speech will ultimately be normal.

Will my jaws ever be as strong after surgery as they were before?

Initially after the operation, the jaws are weakened and cannot safely withstand the forces of chewing. Strength is regained quickly, however, and you will have no restrictions in chewing or activity after the first few months. Jaw strength will be nearly normal by around 1 year after the operation.

What if I choose not to have jaw surgery?

The conditions treated by jaw surgery are typically not life threatening, so you can decide if jaw surgery is right for you. Your surgeon, orthodontist and dentist will help you understand the benefits of surgery and the long-term risks of avoiding surgery.

Further resources and support

Resources at Boston Children’s

Contact a Nurse

617-355-4513

Center for Families

617-355-6279

center.families@childrens.harvard.edu

Helps families locate the information and resources they need to better understand their child’s particular condition and take part in their care. All Boston Children’s patients, families and health professionals are welcome to use the Center’s services at no extra cost.

Behavioral Medicine Clinic

617-355-6688

Helps children who are being treated on an outpatient basis at Boston Children’s —as well as their families—understand and cope with their feelings about:

- having a chronic condition
- facing uncomfortable procedures
- handling pain
- taking medication
- preparing for surgery
- changes in friendships and family relationships
- managing school while dealing with a medical condition

Insurance information

Figuring out insurance coverage can be a confusing and sometimes difficult process to navigate. You should be sure to ask your individual insurance provider which procedures are and are not covered. It will also be beneficial for you to ask what referrals you might need. Most providers list a customer service phone number on the back of the insurance card.

Our administrative staff will be available to guide you through the insurance process once a plan of care is decided.

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