EN

Patient information booklet
Orthognathic surgery

PATIENT-0003-V01-01

Contents

In this patient information booklet, you can find answers to the questions you may have about orthognathic surgery.

What is orthognathic surgery?

Orthognathic surgery is orthopaedic surgery of the jaws.

It corrects abnormalities in the position (misalignments) of the lower jaw (mandible) and upper jaw (maxilla) in relation to each other and to the skull.

These positional abnormalities may be due to a congenital malformation, a growth disorder of the jaws, trauma, or a functional disorder.

But orthognathic surgery is not an isolated treatment. It is always combined with orthodontics. They complement each other: orthodontics corrects tooth alignment defects on each dental arch, while the surgery puts the arches back in the correct position in relation to one other.
The whole treatment, correcting the position of the jaws and teeth, results in functional improvements in chewing, breathing, and speech. By normalising dental occlusion (i.e. the way the teeth fit together when the mouth is closed), it also prevents the onset of jaw joint disorders and tooth loosening.

It should also be noted that moving the jaws always has aesthetic benefits because the soft tissues (skin and muscles) follow the bone movements.

Practised for many years, this surgery is extremely well mastered by maxillofacial surgeons, who are skilled in all aspects of facial surgery.
In adolescents, it is most often carried out when bone growth is complete.

Why is orthognathic surgery performed?

Abnormalities in the position of the jaws lead to misalignment of the teeth of the maxilla and mandible. When the patient closes their mouth, the teeth of the two arches do not come together: this is known as a dental occlusion disorder.

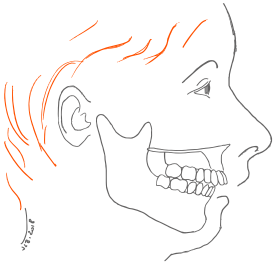
This occlusion disorder always leads, in the shorter or longer term, to varying functional disorders with, in particular:

- chronic pain, cracking and subluxation of the temporomandibular joints (incomplete dislocation of the joints);
- impaired chewing and speech;
- sleep apnoea (snoring and pauses in breathing);
- dental trauma with the loosening and loss of certain teeth.

It is often associated with aesthetic facial alterations.
The extent of these disorders may justify corrective orthodontic-surgical treatment.

Some examples of jaw misalignment:

Example 1

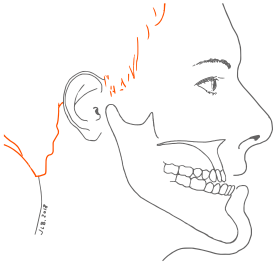


Chin and lower face set too far back.

Example 2

Mid-face set too far back.

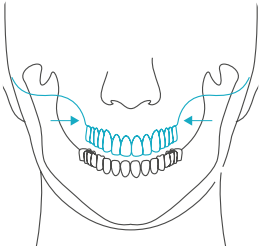
Example 3



Chin and lower face set too far forward.

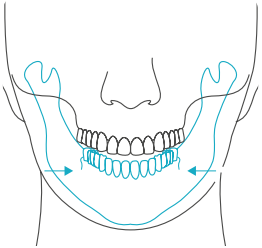
These examples may be associated with narrow jaws:

Example 4



Maxilla too narrow

Example 5



Mandible too narrow

What are the stages of orthognathic surgery?

- **Initial assessment**
- **Preoperative orthodontic treatment**
- **Surgery**
- **Post-surgical period**

The treatment, which is always orthodontic-surgical, comprises four stages:

1 - an initial assessment,
2 - preoperative orthodontic preparation,
3 - surgery,
4 - orthodontic finishing work.

1 - Initial assessment

The orthodontist and maxillofacial surgeon carry out a clinical examination to determine:

- the state of the teeth,
- occlusion abnormalities,
- morphological abnormalities of the face from the front and side.

They also look for problems with breathing, swallowing and speech function.
This examination is supplemented by photographs of the face and the occlusion.
The radiographic work-up includes:

- an x-ray of all the dental arches (orthopantomogram),
- x-rays of the skull (front and side views).

Plaster or digital models are also made to analyse the relationship between the teeth and simulate surgical movements.

Following the assessment, a diagnosis is made and a treatment plan, tailored to the patient's specific situation, is proposed. Its details depend on the complexity and extent of the gap between the dental arches.

2 - Preoperative orthodontic treatment

Before the operation, orthodontic treatment is essential to **prepare the patient's dental arches for surgery.** It lasts **six to 18 months** and its aim is to correctly reposition the teeth on each arch.
These preoperative changes may cause temporary discomfort. Aligning the teeth of each arch can move the mandibular teeth further away from the maxillary teeth, giving the patient the impression

that their situation is getting worse. Only after surgery will the teeth of the two arches touch properly when the patient closes their mouth.
It is sometimes necessary, as part of treatment, to **remove certain teeth** (wisdom teeth or premolars).
During this preparatory period, the patient is regularly seen by the orthodontist and surgeon.

The patient should therefore keep their orthodontic appliance during the pre-surgical preparation period and take the utmost care of it in accordance with their orthodontist's recommendations.

3 - Surgery

Before the operation, the surgeon carries out a new clinical examination and a radiographic work-up and produces new dental models. They study all the above to decide on the exact terms of the surgery.

● The operation

The operation must be performed under general anaesthesia.

The incisions are made inside the oral cavity, so they are invisible. With some techniques, a small 4- to 5-mm long incision is made at the back of each cheek, but this is invisible once it has healed.

The operation consists of performing osteotomies (i.e. cutting bone) on the mandible and/or maxilla, as required for the surgical indication. The resulting bone fragments are moved to correct their misalignment; they then undergo osteosynthesis, where they are fixed in the correct position using plates and screws. The resulting assemblies are stable right away. The patient can therefore open and close their mouth immediately. The plates usually cannot be seen, but they can sometimes be felt. They can be left in place for life or removed a year after the operation (depending on the patient's wishes and the surgeon's habits).

The operation can last one to four hours, depending on the number of osteotomy lines to be made and their complexity. Bleeding does not require a blood transfusion (unless the patient has a particular illness).

4 - Post-surgical period

● Postoperative care

The length of hospitalisation depends on the procedures performed and varies from a few days to one week.
Treatment is tailored to each individual case and usually includes antibiotics, anti-swelling agents and painkillers.
It is continued for eight to 15 days, depending on the extent of the osteotomies, and may be combined with chilled-water cryotherapy.
Some hospitals have cryotherapy machines in their recovery rooms and patient rooms. Chilled-water cryotherapy prevents and reduces postoperative swelling and pain.

To allow the incisions to heal and the bone to consolidate, the patient should:

- adhere to a diet of liquid to puréed foods for the first 15 days,
- then eat soft foods over the following fortnight,
- and lastly, resume their normal diet six weeks after the operation.

● Postoperative orthodontic treatment

This is essential for perfectly aligning the teeth of the maxillary and mandibular arches.

It can be resumed very quickly (often two to four weeks after the operation). Its duration varies considerably (from three to nine months) depending on the type and extent of the finishing work.

In its absence, occlusion instability can lead to recurrence.

Perfect oral hygiene is essential throughout this period.

● Monitoring

The date of resumption of professional activities varies depending on the type:

- 15 days to three weeks for a school activity,
- One month for sedentary intellectual work,
- Two months for heavy-duty work.

The same applies to the resumption of sporting activities, which are generally possible:

- after one month for individual sports with no risk of falling (walking, swimming, golfing, etc.),
- after two months for non-violent team sports (tennis, rowing, running, etc.),
- after three months for other sports involving a risk of trauma (football, handball, etc.).

The patient is usually seen again by the surgeon after one month and then at six and 12 months, but this varies according to the type of surgery, the immediate after-effects, the patient's age, and the surgeon's habits in terms of collaborating with the orthodontist, who performs parallel monitoring during the orthodontic finishing work.

● Results

Changes in the position of the dental arches are immediately visible after the operation. The morphological result is also immediately visible, but it can only be fully appreciated after two to three months (once the swelling has disappeared and all muscular functions have been restored).

What complications can arise from orthognathic surgery?

Some complications may arise during or after the operation. However, they are rare, or even exceptional, and in most cases have no serious consequences:

- **Bleeding:** It is minor and remains enclosed in the surgical site. Many surgeons feel that this justifies leaving a small drain on each side of the neck for 48 hours to prevent haematomas from forming. Haemorrhage is very rare, especially as coagulation tests were carried out before the operation.
- **Bruises:** These can be seen on the cheeks and neck. They are more spectacular than they are serious, and they spontaneously regress within a few weeks.
- **Infections:** These may occur after any surgical procedure, but they are uncommon in the facial area and are generally not serious. They are usually related to common mouth germs and heal with antibiotics and local care such as mouth rinses. In some exceptional cases, they may require a surgical procedure, such as drainage, in the operating theatre.
- **Displacement of bone fragments:** These are quite exceptional with plate and screw osteosynthesis. They may require either fixation of the mandible and maxilla for a few weeks or a new operation to correct the position of the bone fragments and reinforce the osteosynthesis.

On the other hand, some discomforts are almost constant but quickly recede:

- **Nausea and vomiting:** These symptoms are always possible in the 24 hours following general anaesthesia, but they can be prevented and treated with appropriate medication. Any vomiting is not dangerous, as the rubber bands do not prevent the mouth from opening.
- **Pain:** It is generally very mild and responds to standard painkillers.
- **Sensory disorders:** These are more common on the lower lip (with mandibular surgery) than on the upper lip (with maxillary surgery). They may last for several months, gradually diminishing. Some sensory disorders may persist, especially in the event of large changes in mandibular position.
- **Oedema (swelling) of the cheeks and sometimes neck is virtually constant.** It appears mainly from the second day, diminishing rapidly in the first week and then very slowly over a period of one month. It causes more discomfort than pain. It can be prevented and treated by using ice packs or chilled-water cryotherapy machines and specific medicines.
- **Limited mouth opening:** This is a very common temporary consequence of this surgery. It can be treated with physiotherapy exercises several times a day, from the first days after the operation.

Frequently asked questions

Is it a serious operation?

NO (see page 4)

As the patients operated on are in good health, the risks associated with general anaesthesia are very low. In addition, a preoperative anaesthetic consultation is always carried out a few weeks before the operation, and additional tests are prescribed if necessary.

Are there any externally visible scars?

NO (see page 7)

All the major scars are inside the mouth. With some techniques, a small 5-mm long incision is made at the back of each cheek, but this is invisible once it has healed.

Is this surgery painful?

NO (see page 9)

Patients do not usually report any pain after the operation, but rather numbness in the lower face, which slowly diminishes. There is also a feeling of discomfort associated with postoperative swelling, which can sometimes be significant and can be treated with ice packs and appropriate medication and will subside within one week or so.

Can you eat and speak after the operation?

YES (see page 8)

Once the jaws have been moved, they are held in their new position by titanium plates and screws. You can therefore immediately open and close your mouth, to speak and eat.

However, some precautions must be taken after the operation.

- Outside mealtimes, your lower jaw should be supported by orthodontic rubber bands for 15 days.
- You should adhere to a diet of liquid to puréed foods for the first 15 days, then eat soft foods for the following fortnight, not returning to your normal diet until six weeks after the operation.
- Rigorous hygiene of the oral cavity is essential to avoid any risk of infection, and should begin immediately after the operation (washing the oral cavity with a water flosser and rinsing the mouth).

When can you return to school or work?

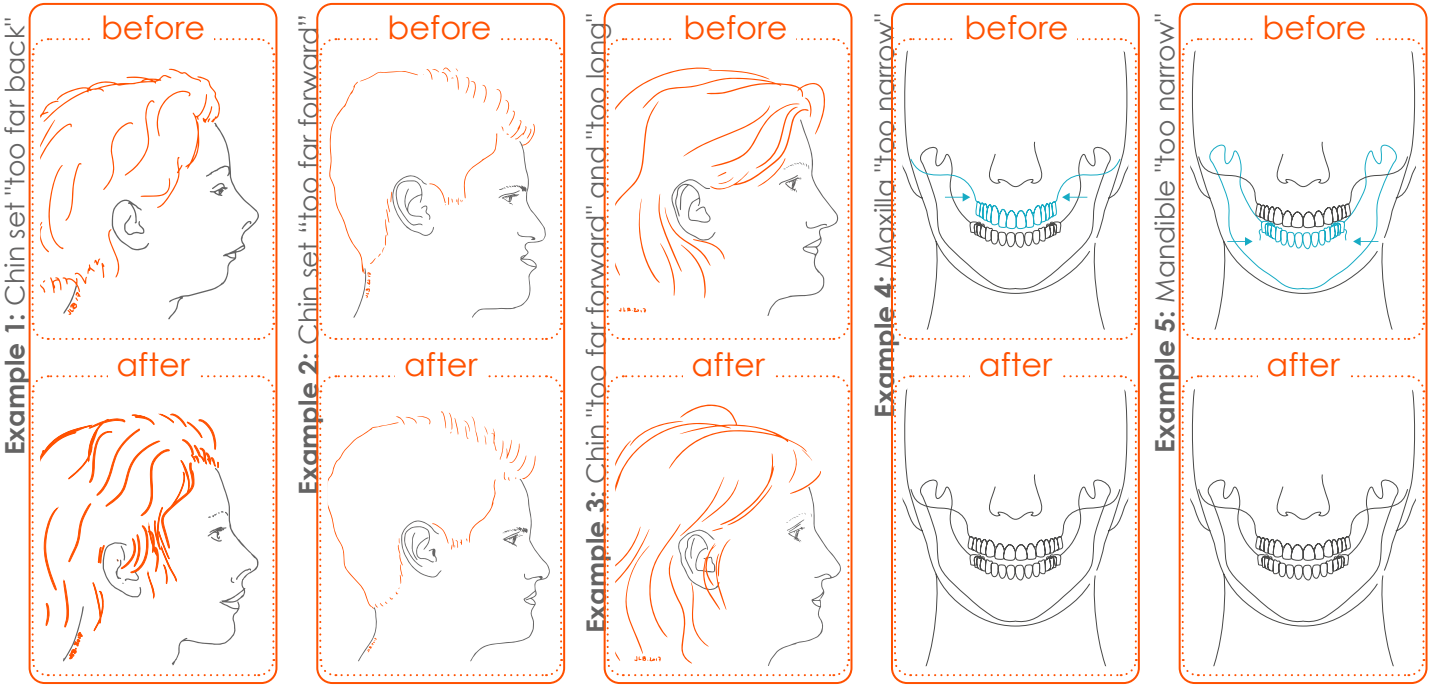
AFTER 15 DAYS TO TWO MONTHS (SEE PAGE 8)

When can you resume physical activities?

AFTER ONE TO THREE MONTHS (SEE PAGE 8)

Conclusion

Orthognathic surgery is used in conjunction with orthodontics to correct abnormalities in the position of the jaws and teeth. It treats or prevents the resulting functional disorders and reduces or eliminates unsightly morphological abnormalities, depending on their nature. This surgery is currently well established and gives rise to very few incidents or complications. It does, however, require that the full treatment be completed, particularly postoperative orthodontic treatment, without which the dysmorphism may recur.



Important note: This booklet describes the treatment provided by the majority of surgeons, although there may be variations from one school to another.

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