This patient information booklet contains all the answers to your questions regarding orthognathic surgery.

+ What is Orthognathic Surgery? ................................................................. 4
+ Why is Orthognathic Surgery performed? ................................................. 5
+ What does Orthognathic Surgery involve? ............................................... 6
+ What are the possible complications of Orthognathic Surgery? .......... 9
+ Frequently asked questions ....................................................................... 10
+ Conclusion .................................................................................................. 11
What is Orthognathic Surgery?

Orthognathic surgery can be defined as orthopedic surgery of the jaws.

It is used to "put the jaws back into the right position" when there is a discrepancy between the jaws and the dental arcades, and when orthodontics alone are insufficient.

This discrepancy may be due to a difference in growth between the maxilla and the mandible, to a birth defect, or to trauma.

The surgery therefore aims to correct the more or less pronounced irregularities in the face, to improve masticatory function, breathing and speech, and also the aesthetics of the face. It involves enabling occlusion that ensures stable dental interlocking that does not induce trauma to the teeth, periodontium, or temporomandibular joints. The displacement of the jaws during orthognathic surgery inevitably leads to displacement of the teeth.

This is why the orthodontist and maxillofacial surgeon must work together.

It is also important to note that displacement of the jaws often leads to a change in the patient’s appearance due to the fact that the skin will "follow" the contours of the displaced bones.

This type of surgery has been performed for many years and is very well mastered by maxillofacial surgeons, who are skilled in all plastic surgery of the face. In adolescents, it is usually undertaken once the bone has finished growing.
Anomalous dental occlusion has short, medium, and long term consequences that it is important to be aware of:

- Pain, rattle, cracks, chronic stiffness in the temporomandibular joint,
- Headaches,
- Masticatory disorders,
- Speech problems,
- Sleep apnea, snoring,
- Trauma to the teeth with a significant risk of loosening and premature loss,
- Esthetic consequences in the event of significant anomalies in the positioning of the jaws.

It is important to take these symptoms and discomforts into account in order to correct the problem.

A few examples of incorrect positioning of the jaws:

- **Case 1**: Chin "too far back" and excessive frontal projection of the mid-part of the face.
- **Case 2**: Chin "jutting forwards", frontal projection of the lower arcade and anterior open bite.
- **Case 3**: Chin "too far forward" and "too long".
- **Case 4**: Facial asymmetry caused by the overdevelopment of one side of the jaws.

Why is Orthognathic Surgery performed?
The treatment will involve the following phases:

1 - initial examination,
2 - preoperative orthodontic treatment,
3 - surgery process,
4 - postoperative period.

1 - Initial examination
The orthodontist and maxillofacial surgeon will perform a full clinical examination of the patient concentrating on assessing dental occlusion, the state of the teeth, phonation, swallowing, and respiration; they will also take photographs of the face and teeth from standardized angles.

Paraclinical examinations will then be used to complete the analysis, this may include frontal and lateral radiographs and a dental panoramic radiograph.

Impression casts will be taken to give a precise indication of the relationships between the teeth and to simulate the surgical procedure.

A diagnosis is thus established and the medical team will determine whether treatment is necessary and will adapt such treatment to each individual case. The amplitude of the overbite or underbite will determine the length of the treatment and the type of surgery proposed in the treatment plan.

2 - Preoperative orthodontic treatment
Before the operation, orthodontic treatment is essential to prepare the dental arcades of the patient for the surgery. In general, this will take between 6 and 18 months. The aim is to position the teeth to enable optimal surgical treatment.
The patient should therefore keep his orthodontic device for the entire duration of the preoperative preparation period and take great care of it in accordance with the recommendations of his orthodontist.

This preoperative modification will cause some temporary discomfort since the teeth will only “meet” properly once the surgery has been carried out. It is sometimes necessary, depending on the treatment, to extract certain teeth (wisdom or premolar teeth). The evolution of the modification in the position of the teeth will be assessed on a regular basis.

3 - Surgery process

- **Preparation for the surgical procedure**
  The date of the surgical procedure will be decided once the orthodontic preparation is deemed to be correct and sufficient by the orthodontist and surgeon.

  Before the surgery, the surgeon will perform a schematic analysis of the various proportions and measurements of the facial skeleton. He will also simulate the displacements using impression casts of the teeth to predict the definitive result of the surgery.

  The procedure is performed under general anaesthesia (essential for this type of surgery), in a hospital or clinic.

- **The surgical procedure**
  The aim of the surgical procedure, which is known as an osteotomy, is to displace the jaw bones. The bony architecture of the face is thus altered to enable the teeth to meet correctly. The various bone segments are then fixed to each other using plate and screw type implants, which greatly limit the extent to which the jaws must be immobilised after the surgery. Usually, they are held in place using elastic bands for less than 15 days. These plates are not visible, but can sometimes be felt. They can be left in place for life, or removed around one year after the procedure.

  All of the incisions are made inside the mouth to avoid any visible external scarring. The procedure may take between one and four hours, depending on the number and complexity of movements to perform on the jaws.

  The amount of blood lost does not usually necessitate a blood transfusion.
4 - The postoperative period.

- **Immediately after the surgery**
  The patient will be hospitalized for between 2 and 6 days.
  To facilitate healing and consolidation, patient must adhere to an all-liquid diet for the first few days, then pureed, and finally softened. After at least a fortnight, the patient may return to school or work as usual.

- **Postoperative orthodontic treatment**
  The postoperative orthodontic treatment can be started 4 to 6 weeks after the procedure and may take between 3 and 9 months.
  This phase is essential to enable the definitive adjustment of the dental arcades after the surgery.

- **Follow-up**
  A series of appointments at set intervals will be made with the surgeon to ensure regular medical monitoring. Throughout this period, strict dental hygiene is highly recommended.

  All sporting activities or those that might compromise the healing phase are prohibited for 6 weeks to 3 months.

  It is important to note that the result of the dental repositioning is visible immediately after the procedure, but the aesthetic and morphological result will not be definitive until 2 to 3 months after the procedure.

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<table>
<thead>
<tr>
<th>Initial examination</th>
<th>Preoperative orthodontic treatment</th>
<th>Description of the surgical procedure</th>
<th>Postoperative period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical examination</td>
<td>Modification of the position of the teeth</td>
<td>Surgical procedure</td>
<td>Hospitalization</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>D - 9 to 18 months</td>
<td>D-day</td>
<td>D + 2 to 6 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Postoperative orthodontic treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D + 4 to 6 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Follow-up</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Staggered appointments</td>
</tr>
</tbody>
</table>
What are the possible complications of Orthognathic Surgery?

Certain complications may occur during or after the operation. These are however rare or even exceptional, and above all without any major consequences in the majority of cases:

- **Pain**: this is usually minimal or even absent, and is easily controlled with standard antalgics.
- **Nausea and vomiting**: these are common complications after general anaesthesia, various medications are given to limit this discomfort.
- **Swelling**: this is normal and may persist for several days to weeks.
- **Sensory disturbances**: more common on the lower lip (in procedures involving the mandible) than on the upper lip (following procedures on the maxilla), they may persist for several months, with regular improvements. Patients usually recover full sensitivity.
- **Infection**: this is a risk that is associated with all forms of surgical intervention, it is therefore a possibility and will be treated with antibiotics. In exceptional cases, a further surgical procedure may prove necessary.
- **Bleeding**: usually only minor, it may last for several days.
- **Sinusitis**: this is possible following a procedure on the upper maxilla.
- **Displacement of the new position of the jaws** that may require longer immobilisation or to repeat surgery.
- **Limited mouth opening** usually temporary and resolved with physiotherapy.
Frequently Asked Questions

Is it a serious operation? 
NO
The patients are healthy and the risks related to the general anaesthesia are minimal. The anaesthetist is consulted before surgery and all the examinations are performed after the procedure.

Will there be any visible external scarring? 
NO
All the scars are inside the mouth.

Is this surgery painful? 
NO
Patients usually do not report any pain after the operation, but there is generally always a feeling of discomfort due to the oedema (swelling of the face), which recedes within a few days and disappears completely within a couple of weeks. Swelling may be surprisingly big, and may get worse over the first 48 hours. It is treated by applying ice cold compresses to the face and with appropriate medication.

Can you eat and talk after the operation? 
YES
The jaws, once they have been moved, are held in their new position with titanium plates and screws. It is therefore possible to talk and eat immediately. However, a number of precautions should be taken during the postoperative period:
- The jaw bone will be held in place using elastic bands, which will need to stay in place for two weeks.
- The diet should be entirely liquid throughout the immobilisation period (15 days), then pureed for the next 15 days, then softened for the following 15 days, with a return to a normal diet 6 weeks after the operation.
- Strict oral hygiene is essential to prevent the risk of infection and should be begun immediately after the procedure. All of the products needed for this purpose will be prescribed.

How long after the surgery can I start doing sports and performing other physical activities? 
AFTER 6 WEEKS TO 3 MONTHS
Only individual sports without the risk of falls can be undertaken 6 weeks after surgery, and after 3 months for all other sports.

When can I return to school / work? 
BETWEEN 2 AND 4 WEEKS LATER
Depending on the type of procedure, patients can usually return to school or work between the 2nd and 6th week after the operation.
It is important to consider that even though you will be undergoing surgery for functional reasons, the aesthetic consequences of the surgery (due to the movements of the soft tissues following the displacements of the various bone segments) are undeniable and should be discussed with the surgeon, so that you can prepare yourself for your new appearance.

**Conclusion**

Case 1: Chin "too far back"

Case 2: Chin "jutting forwards"

Case 3: Chin "jutting forwards" and "too long"