EN

PATIENT INFORMATION BOOKLET

EVERYTHING YOU NEED TO KNOW ABOUT ORTHOGNATHIC SURGERY

PATIENT-0003-V02-01

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 allows "the jaws to be repositioned correctly" when there is a discrepancy between them and to align the dental arches when orthodontics alone is not sufficient.

This discrepancy may be due to a difference in growth between the maxilla and the mandible, a congenital malformation or trauma. Surgery will therefore correct irregularities of varying severity at the level of the face, in order to improve the functional aspects of chewing, breathing and speech, but also sometimes issues relating to appearance. The aim is to achieve an occlusion ensuring stable interdigitation of the teeth that is non-traumatic for the teeth, the periodontium and the temporomandibular joints.

The movement of the jaws associated with orthognathic surgery inevitably results in movement of the teeth.

This is why the orthodontist and the maxillofacial surgeon work together. It is also important to note that movement of the jaws often leads to a change in appearance, as the overlying soft tissues will "follow" the underlying bony movements. Practised for many years, this surgery is extremely well mastered by maxillofacial surgeons, who are skilled in all aspects of facial plastic surgery. In adolescents, it is most often carried out when bone growth is complete.

1. Conventional orthognathic surgery.

"Conventional" surgery is based on a method that has been well established over many years. It relies on study models and, above all, on the surgeon's experience and expertise.

It offers:

- Reliable precision, based on well-known and proven techniques,
- A satisfactory final result, even if pre-operative visualisation remains limited (plaster models),
- The possibility of adapting the procedure directly during surgery, according to the patient's needs,
- A progressive and standardised recovery, as with any surgery of this type.

This is a safe and widely practised approach that continues to provide very good results.

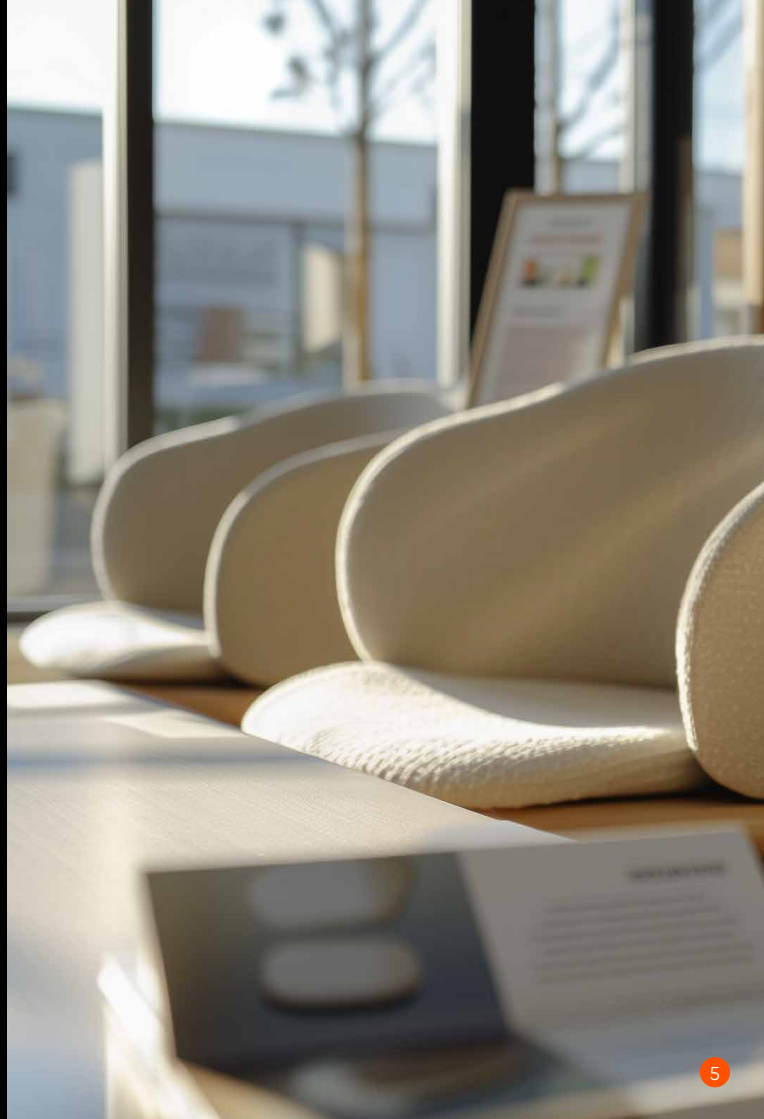
2. Digitally planned orthognathic surgery.

So-called "customised" surgery follows the principles of conventional surgery, but also makes use of modern digital tools. 3D scans, impressions and photographs make it possible to create a precise simulation of the procedure.

It provides:

- Very high precision thanks to three-dimensional digital planning,
- The possibility of visualising the surgical plan in advance, which helps patients to envisage the outcome,
- A procedure that is often quicker, as plates and guides are prepared before the operation,
- A recovery that may be smoother, as the surgery is sometimes less invasive,
- Optimal personalisation, with a plan that is 100% tailored to the patient's morphology.

This is an innovative approach that allows precise control of the surgical procedure to be carried out with confidence and provides the patient with a clear visualisation of the treatment plan.



Why is orthognathic surgery performed?

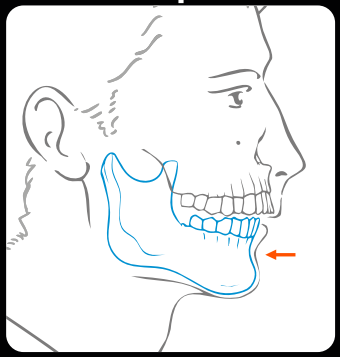
Abnormalities of dental occlusion lead to short-, medium- and long-term consequences that it is important to be aware of:

- Pain, clicking, cracking and chronic locking of the temporomandibular joint,
- Headaches,
- Chewing difficulties,
- Speech difficulties,
- Sleep apnoea, snoring,
- Dental trauma with a significant risk of loosening and early tooth loss,
- Aesthetic impact in cases of significant abnormalities in jaw position.

These symptoms and issues must be taken into account in order to correct the problem.

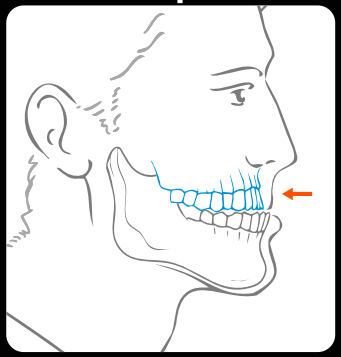
Some examples of jaw misalignment:

Example 1



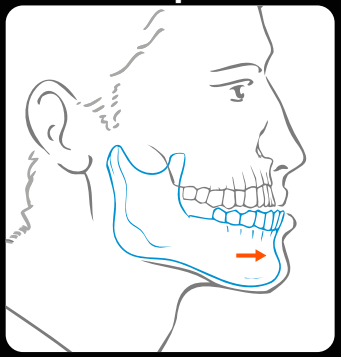
Chin and lower face set too far back.

Example 2



Mid-face set too far back.

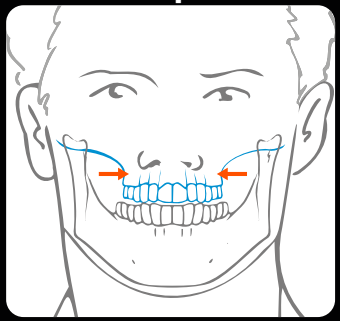
Example 3



Chin and lower face set too far forward.

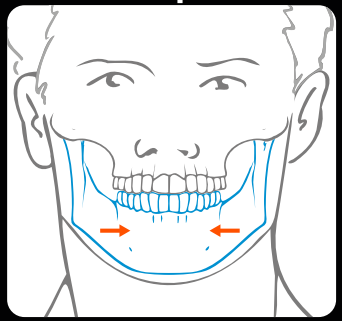
These examples may be associated with narrow jaws:

Example 4



Maxilla too narrow

Example 5



Mandible too narrow

What are the stages of orthognathic surgery?

The stages of management are structured around:

1. an initial assessment,
2. pre-operative orthodontic treatment,
3. surgery,
4. the post-operative period.

1. Initial assessment

The orthodontist and the maxillofacial surgeon first carry out a full clinical examination, based on the assessment of dental occlusion, the condition of the dentition, phonation, swallowing and breathing. Standardised photographs of the face and teeth are also taken in order to document the initial situation precisely.

In the conventional approach, this analysis is supplemented by additional investigations: frontal and lateral x-rays, a dental panoramic x-ray and plaster models. These models make it possible to better understand the relationships between the teeth and to simulate the surgical movements.

In the digital approach, traditional models may be replaced by digital impressions and a 3D scan. This data makes it possible to reconstruct a virtual image of the jaws, on which the surgeon can test different scenarios and accurately anticipate the necessary bone movements.

In both cases, a diagnosis is established. The medical team then determines whether treatment is required and adapts it to the patient's specific situation. The extent and complexity of the discrepancy to be corrected will determine the duration of orthodontic preparation and the type of surgery to be considered.

2. Pre-operative orthodontic treatment

Before the operation, orthodontic treatment is essential to prepare the dental arches for surgery. In general, it lasts on average 18 months and aims to correctly reposition the teeth in order to allow an optimal surgical procedure. Throughout this period, the patient keeps their orthodontic appliance and must take care of it in accordance with the orthodontist's recommendations.

This preparation may cause temporary discomfort, as the teeth only fit together properly after surgery. The positioning of the teeth is assessed regularly by the orthodontist and the surgeon.

Conventional approach:

Orthodontic treatment is based on well-established techniques, with progressive repositioning of the teeth until an occlusion suitable for surgery is achieved. Adjustments are made step by step, depending on clinical progress.

Digital approach:

Orthodontic treatment is the same, but its objectives are directly integrated into the 3D planning. This makes it possible to anticipate dental movements more precisely in relation to the planned surgical procedure. The patient can even visualise at this stage the expected impact on the final positioning of the teeth and jaws, which provides greater clarity and confidence.

3. The surgical procedure

- **Preparation for the surgical procedure**

The date of the operation is set when the orthodontic preparation is considered satisfactory by the orthodontist and the surgeon.

In the conventional approach, on the day before the operation, the surgeon and the patient carry out an analysis based on models and manual measurements. This makes it possible to plan the necessary bone movements.

In the digital approach, this step is carried out in advance using 3D software. Surgical guides are already manufactured and the plates are prepared in advance, which facilitates preparation and saves time in the operating theatre.

- **The operation**

The operation is performed under general anaesthesia, in a hospital or clinic. It consists of repositioning the jaw bones (osteotomy) in order to restore proper occlusion and facial harmony.

The bone segments are fixed together using titanium plates and screws, which are invisible and not palpable in the vast majority of cases. They remain in place permanently or may be removed approximately one year after the operation, depending on the situation.

In the conventional approach, the surgeon adapts their technique during the procedure, based on the models and their expertise.

In the digital approach, the procedure is guided by a customised positioning splint, allowing faithful reproduction of the pre-established plan.

Incisions are made inside the mouth, which avoids any visible external scarring. The duration of the operation generally varies from one to two hours, depending on the complexity of the movements. Bleeding remains limited and does not require a blood transfusion.

4. The post-operative period

- **Post-operative care**

Hospitalisation may last from 2 to 4 days.

To facilitate healing and consolidation, the diet will initially be liquid during the first few days following the operation, then blended for one week and finally soft for one month. After a minimum period of around two weeks, it is possible to resume normal school or professional activities. Non-contact sports may be resumed after one month.

- **Post-operative orthodontic treatment**

Post-operative orthodontic treatment may begin one week after the operation, for a duration ranging from 3 to 12 months.

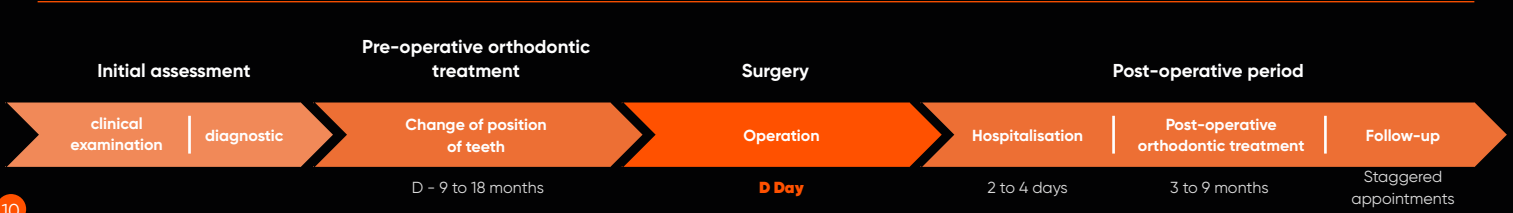
This stage is essential in order to allow final adjustment of the dental arches after surgery.

- **Follow-up**

Follow-up appointments will be scheduled with the surgeon in order to ensure regular medical monitoring. Throughout this period, strict dental hygiene is strongly recommended.

All sports or activities that may compromise this healing phase will be prohibited for 6 weeks to 3 months.

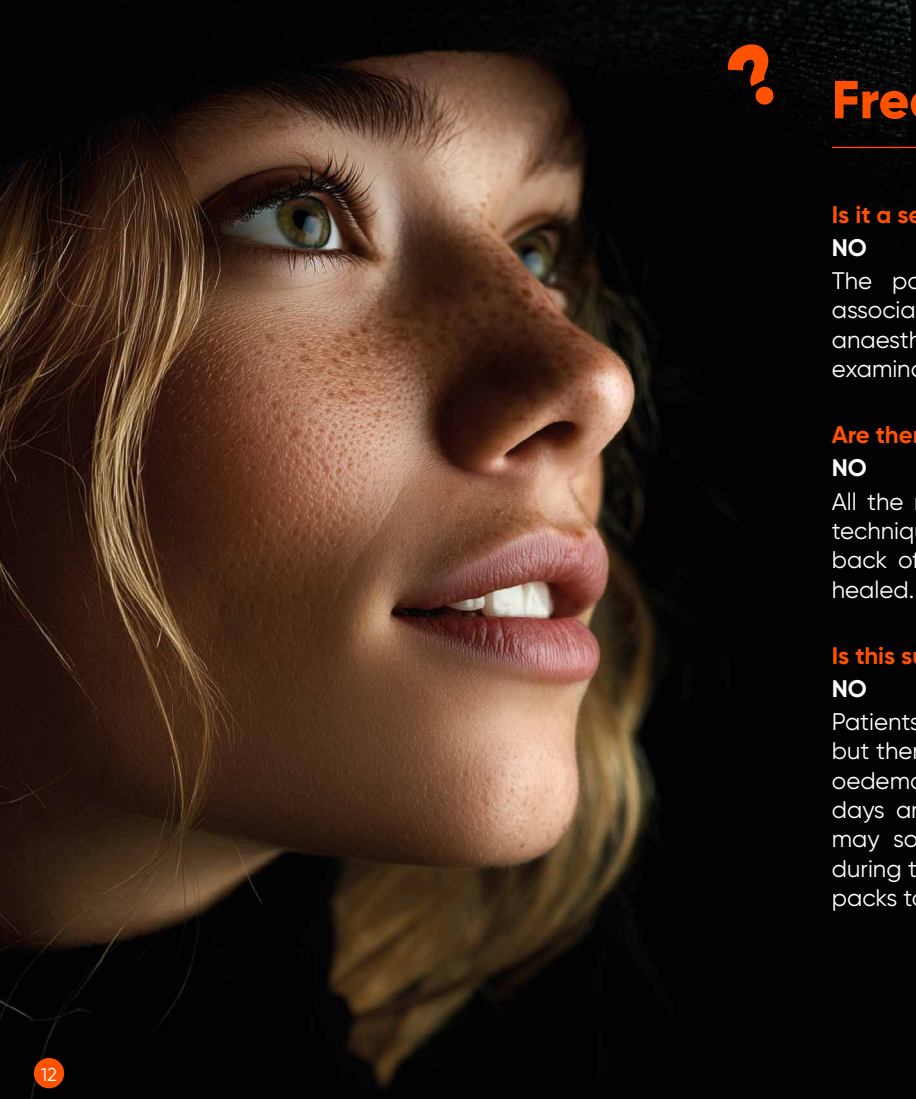
It is important to note that the result of dental repositioning is visible immediately after the operation, whereas the aesthetic and morphological result can only be assessed after 2 to 3 months.



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 major consequences:

- **Pain:** generally mild or even absent, it is relieved by standard painkillers.
- **Nausea and vomiting:** common complications following general anaesthesia; medication is provided to limit this discomfort.
- **Swelling:** normal and may persist for a few days to several weeks.
- **Sensitivity disturbances:** more frequent in the lower lip (in mandibular procedures) than in the upper lip (in maxillary procedures); they may last for several months, gradually decreasing. This sensitivity is usually recovered.
- **Infection:** inherent to any surgical procedure, it is possible and will be treated with antibiotics. Exceptionally, it may require management in the operating theatre.
- **Bleeding:** usually slight, it may last for a few days.
- **Sinusitis:** possible following surgery on the maxilla.
- Displacement of the new jaw position, which may require prolonged immobilisation or further surgery.
- Limitation of mouth opening, most often temporary and resolving with physiotherapy sessions.



Frequently asked questions

Is it a serious operation?

NO

The patients treated are healthy and the risks associated with general anaesthesia are very low. The anaesthetist will be consulted pre-operatively and all examinations will be carried out before the procedure.

Are there any externally visible scars?

NO

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

Is this surgery painful?

NO

Patients usually report no pain after the operation, but there is generally a sensation of discomfort due to oedema (facial swelling), which subsides within a few days and disappears within a few weeks. Its extent may sometimes be surprising, and it may increase during the first 48 hours. It is managed by applying ice packs to the face and by appropriate medication.

Can you eat and speak after the operation?

YES

Once the jaws have been moved, they are held in the new position by titanium plates and screws. It is therefore possible to speak immediately and resume eating after 48 hours.

However, some precautions must be taken after the operation:

- The jaw will be held in place with the help of elastics.
- You should adhere to an exclusively liquid diet (7 days) then puréed foods for the following 7 days, then eat soft foods for a month, not returning to your normal diet until 6 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. The necessary products will be prescribed for this purpose.

When can you resume physical activities?

4 WEEKS TO 3 MONTHS LATER

Physical activities may only be resumed after 4 weeks for individual sports without risk of falling, and after 3 months for any sport involving a risk of impact.

When can you return to school or work?

BETWEEN 2 TO 4 WEEKS LATER

Depending on the type of procedure, the post-operative course usually allows a return to school or work between the 2nd and the 6th week after the operation.

Is digital planning mandatory?

NO

However, it helps to improve the precision and predictability of the result.

Does it change the operation?

NO

The surgical technique remains the same, but it is prepared in a more precise and thorough manner.

Is the duration of the operation different?

NO

In both approaches, the duration of the operation mainly depends on the complexity of the procedure to be performed. With digital planning, certain steps are prepared in advance (customised guides and plates), which may sometimes make the procedure slightly smoother.

Are the results more stable over time?

YES

One of the main advantages of customised surgery is the precision of jaw repositioning. As each step is planned and carried out accurately, the occlusion and facial harmony achieved are more reliable. This precision helps to reduce the risk of relapse and to improve the stability of the results, both functionally (chewing, breathing, speech) and aesthetically.

Conclusion

It is important to bear in mind that, although you are undergoing surgery primarily for functional reasons, the aesthetic impact of the operation (due to the movement of the soft tissues during repositioning of the different bone segments) is undeniable and must be discussed with the surgeon, in order to prepare you as well as possible for the new way you will see yourself and how others will perceive you.

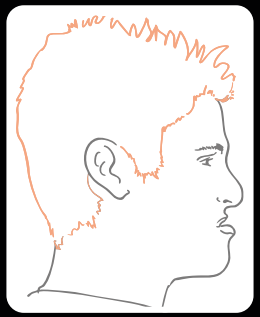
Example 1: Chin set "too far back"

before

after

Example 2: Chin set "too far forward"

before



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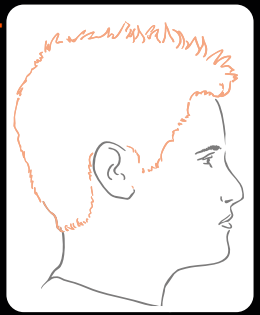
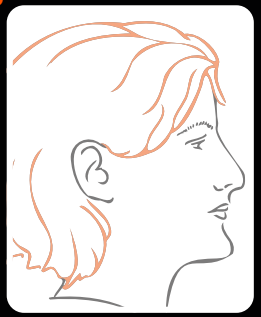


Example 3: Chin "too far forward" and "too long"

before



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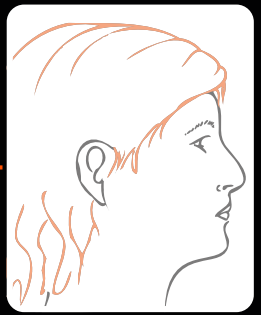
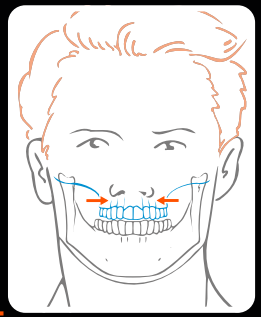


Example 4: Maxilla "too narrow"

before



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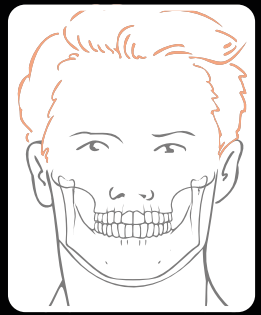
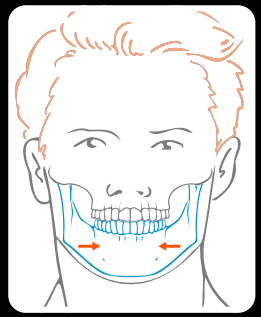


Example 5: Mandible "too narrow"

before



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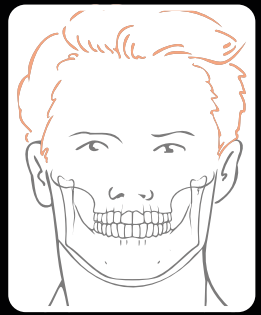
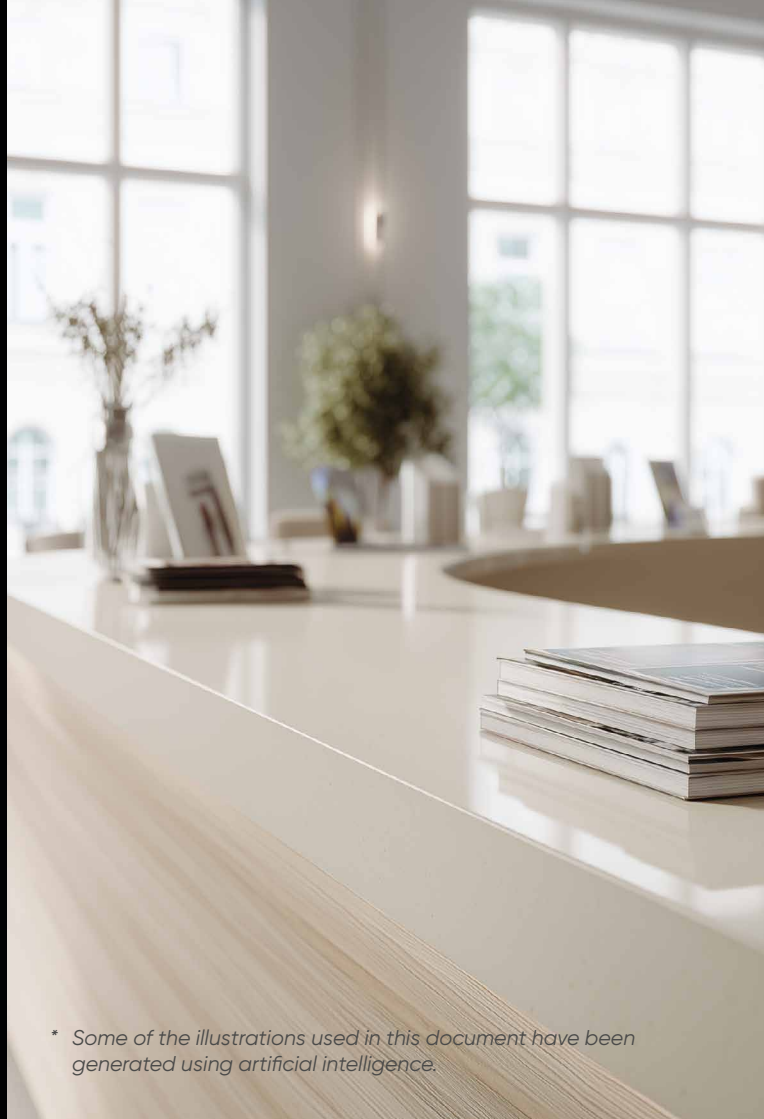


Important note: This booklet describes the treatment provided by the majority of surgeons, although there may be variations from one school to another.

For more information, please refer to our **patient information website**:

https://chirurgiedesmachoires.fr/



* *Some of the illustrations used in this document have been generated using artificial intelligence.*

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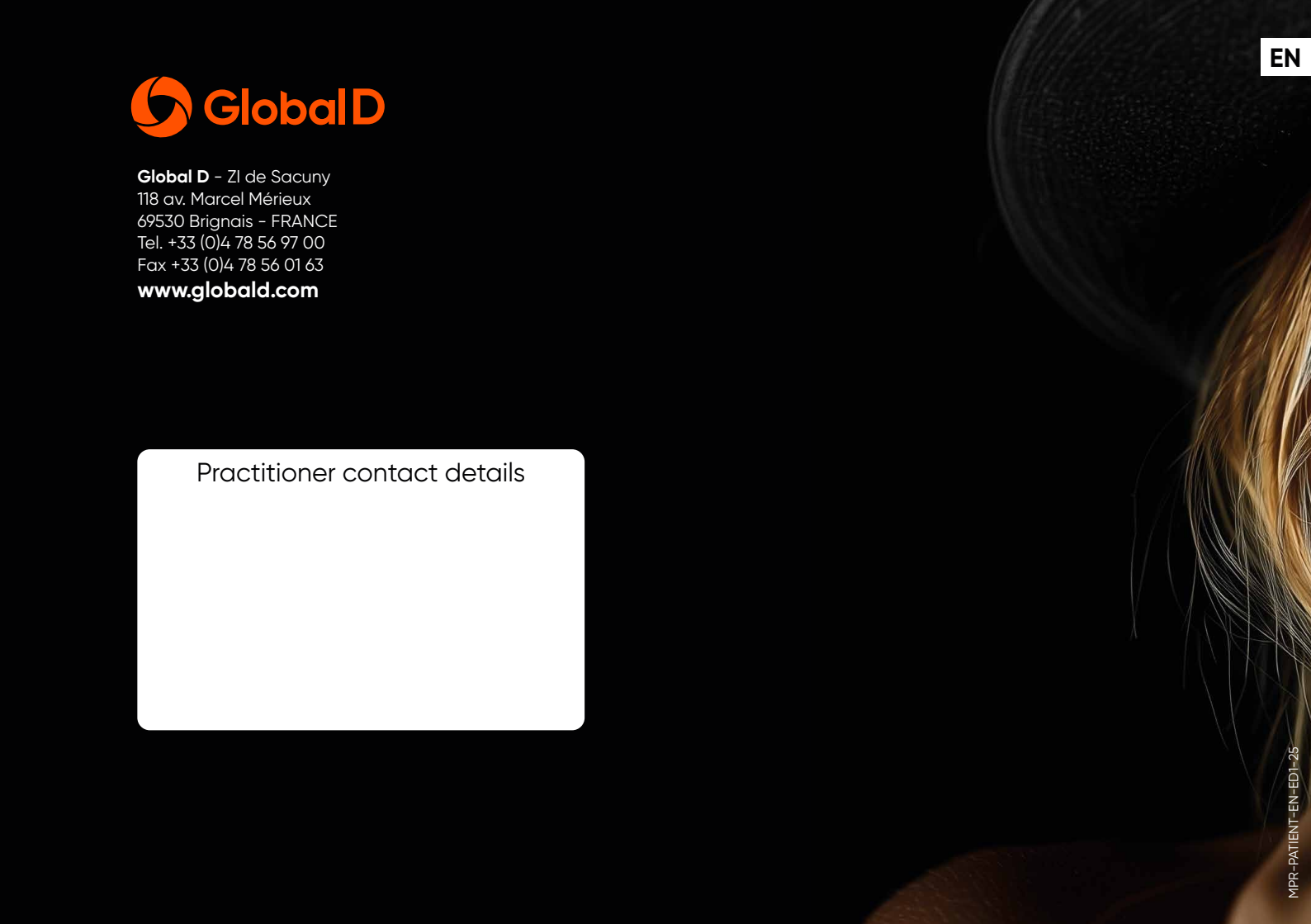

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