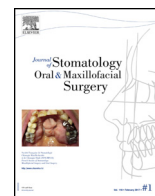




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## Technical Note

# Modified technique used for sagittal splitting of the mandible



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## ARTICLE INFO

### Article history:

Received 17 November 2016

Accepted 29 March 2017

Available online 6 April 2017

### Keywords:

Mandibular osteotomy  
 Mandibular sagittal splitting  
 Orthognathic surgery

## ABSTRACT

Sagittal osteotomy of the mandible is the most common orthognathic surgery procedure. The drawbacks of this technique are: nerve disturbance, the common formations of a pre-angular notch after mandibular advancement, and the impossibility of lowering the mandibular angle bicortically. The goal of the described technique is to maintain the basal mandibular edge and the internal valve in one single piece. This split prevents unsightly notches appearing after mandibular advancement and it moves down the mandibular angle during counterclockwise rotation and does not increase the intergonial distance. It is especially indicated for skeletal class II cases.

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## 1. Introduction

The sagittal osteotomy of the mandible is the most common orthognathic surgical procedure. Currently, there are two variations: the Obwegeser/Dal Pont split osteotomy [1,2] which affects the mandibular ramus, and the Epker technique [3] which goes along the inferior alveolar (IAN) nerve canal.

Kater and Paulus [4] have described a short sagittal osteotomy which reduces nerve disturbance and does not create preangular notches but this technique does not allow significant anterior movement due to the lack of coaptation of bony surfaces, and for which osteosynthesis seems problematic.

The goal of this article is therefore to describe a modified technique for mandibular osteotomies.

## 2. Technique

After electrocautery incision in the jugal-vestibular mucosa of the angular area, a sub-periosteal dissection of the whole angular area is carried out with an incision of the pterygomasseteric sling done with a rugine, this is particularly important if the mandibular angle has to be lowered.

This dissection goes up to the second premolar.

Dissection of the lingual side of the ramus exposes the Spix spine and the IAN, as it is carried out on the posterior edge of the mandible.

The horizontal osteotomy line is initiated directly above the Spix's spine after placing a protective spacer on the inner side.

The line must be cut at the strongest point, at the opening hole of the mandibular canal, till it reaches the posterior edge of the ramus (Fig. 1).

The line continues forwards, as in the conventional method, along the oblique external line until the interdental space between the first and second molars.

The vertical line is made with a round bur or a piezoelectric device and stops 5 mm above the basilar edge (Fig. 2).

The horizontal line starts on the front done with a piezoelectric device, after a retractor has been placed at the mandibular angle. Then, the posterior ramus is cut approximately 5–10 mm above the mandibular angle (Fig. 2).

The cut can be mono or bicortical over 1/3 of the posterior edge of the ramus (approx. 5 mm) to break the strongest point of the mandible.

It must be monocortical when getting close to the nerve to join the anterior vertical line.

The splitting is performed with the help of a rugine, and as a general rule, the nerve is preserved inside the canal [5].

Therefore, we have an external valve which contains the condyle, and positions itself naturally, without any muscular traction and an internal valve that supports the dental arch and the basilar edge to the mandibular angle.

When the IAN is located on the external valve, the neurolysis is much easier and less damaging than with other techniques, because the fracture does not cut the mandibular canal.

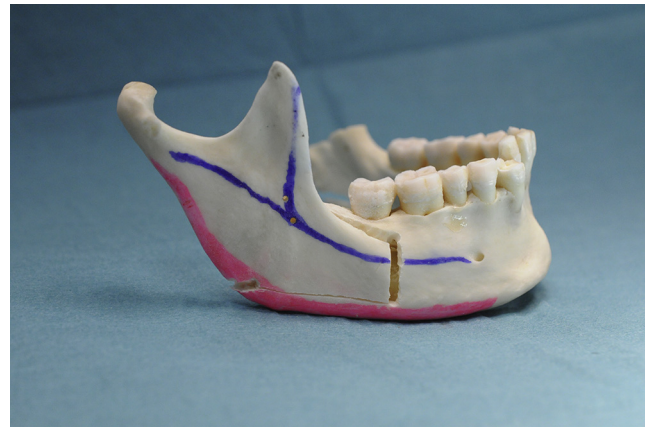
The split is then performed on the other side and intermaxillary fixation (IMF) is used with or without surgical splint.

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**Fig. 1.** Internal view of the right mandibular ramus. The osteotomy line must run until the posterior margin of the ramus.



**Fig. 2.** Right lateral view of the mandible. The vertical osteotomy line must stop between 4 and 5 mm above the basal margin. The horizontal line starts from the posterior margin of the ramus 5–10 mm above the angle.

The ostosynthesis is made with 2 plates on each side, one of them adjustable.

A single layer closure is made with monocryl 5/0.

There is no postsurgical intermaxillary fixation and the occlusion is held with 2 elastics bands.

After procedure and until the patient is dismissed the next day, a refrigerated cooling face mask with a constant temperature between 15 °C and 19 °C is applied.

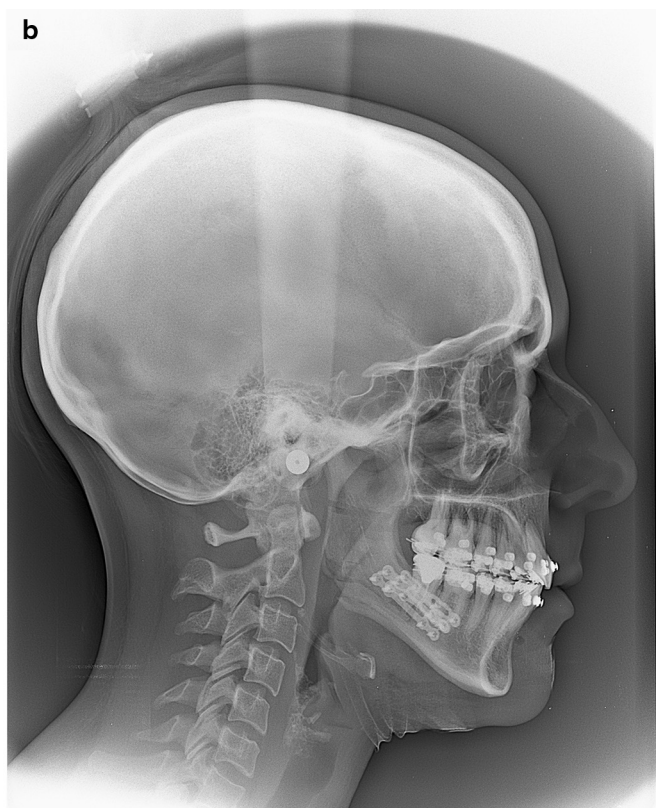
A liquid diet is allowed in the evening of surgery then soft food is acceptable afterwards.

### 3. Discussion

This technique has the advantage of being able to lower the bicortical mandibular angles (Figs. 5 and 6) in the hyperdivergent class II cases (Figs. 3a, b and 4a, b).

It also enables the preservation of the basilar edge for large mandibular advancements and therefore prevents formation of the pre-angular notches (Fig. 7).

It allows clockwise rotation of the mandible as well and, in such case, bone resection is required on the lower edge of the external valve.



**Fig. 3.** (a) Pre-operative imaging of a hyperdivergent class II case; (b) post-operative follow-up.

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