

# MODIFIED REDUCTION GENIOPLASTY

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*Chin is located on most prominent portion of the face, so make more important esthetic value in impression. So historically, many authors had made efforts on correction of deformed chin, termed genioplasty. But those technique have been performed on limited cases, which have normal shape or width of chin. In the cases with more narrow or short chin, location of mental foramen or root of incisors restrict the use of such technique. But modified genioplasty technique we used can be performed without any restriction and change of frontal profile of chin.*

*So we report a case that was performed with modified horizontal step osteotomy for advancement genioplasty, which had been reported by Hinds and Kent, with some complications.*

## I. INTRODUCTION

Macrogenia is defined as enlargement of the chin, including both the osseous and soft-tissue components. Osseous macrogenia may be classified into three subgroups<sup>1)</sup> according to the vectors of bone growth and as followings : there is isolated overgrowth in the anterior direction (anterior excess of pogonion) : there is isolated bone growth inferiorly (downward movement of menton) : there is combination growth of chin in a downward and anterior direction. These subgroups are not discret entities. However in most circumstances one type predominates and various surgical approaches may be needed for these different entities.

For the treatment of macrogenia, in 1965, Reichenbach et al<sup>2)</sup> advocated correction of the vertically elongated mandibular symphysis by a horizontal osteotomy and removal of a wedge of bone superiorly.

In 1969, Hint and Kent<sup>3,4)</sup> published the various surgical techniques based on horizontal osteotomy for jaw deformities including microgenia, macrogenia and chin asymmetry. For macrogenia patient with protuded chin, we present a case of modified technique<sup>5)</sup> of horizontal

step osteotomy described by Hint and Kent.

## II. CASE REPORT

A 22 year old woman came to our oral and maxillofacial dep. with chief complaint of prominent chin.

### Clinical findings

In profile view, maxilla is slightly retruded and chin was protruded more anteriorly than vertically (Fig. 1). In frontal view, mandible width and vertical height were normal appearance (Fig. 2). Her dentition was class III classification with posterior cross bite on left side. There were no anterior crossbite and complaint of malocclusion (Fig. 3).

### Cephalometric analysis

Gonial angle was within normal limits, but facial plane angle was greater than normal limits and SNA was under normal limits (Fig. 3 and Table 1).

### Surgical technique

Conventional genioplasty incision and dissection was



Fig. 1. Preoperative frontal view



Fig. 2. Preoperative lateral view

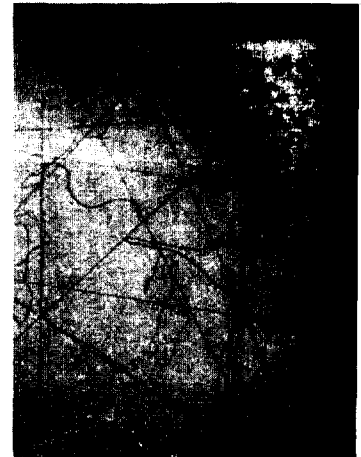


Fig. 3. Preoperative cephalometric lateral view

Table 1. Preoperative cephalometric analysis

Gonial Angle	125
SNA	75
SNB	79
Facial Plane Angle	84
Anterior Facial Height	132

performed at the bottom of the vestibule extending from canine to canine and mucoperosteum was reflected. Carefully mental nerves were identified and protected. After vertical marking of midline on mandible with saw horizontal osteotomy was made 5mm below the apices of the cuspids and extended posteriorly to a point 3mm anterior to mental foramina bilaterally. Then fibrst vertical osteotomy was made from the posterior point of horizontal osteotomy through the inferior border of the mandible and swecond vertical osteotomy was made anterior to the first osteotomy(Fig. 4 and 5). Same procedure was performed on opposit side. The wedge bones between vertical osteotomies were removed bilaterally. Then the chin segment was repositioned posteriorly into the pre-determined position and stabilized with wire(Fig. 6 and 7). Sharp bony edge created by setback was rounded with bur. The incision was closed in layers.



Fig. 4. Showing the anterior segment after osteotomies

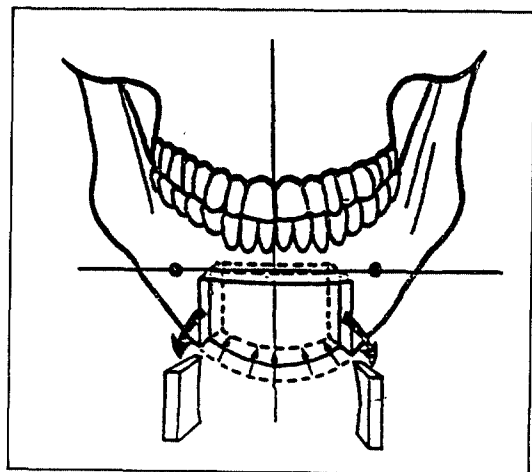


Fig. 5. Drawing of osteotomies  
(Reproduced from Hinds and Kent<sup>9</sup>)



Fig. 6. Showing the segment fixation with wire and packed bone chips between gap

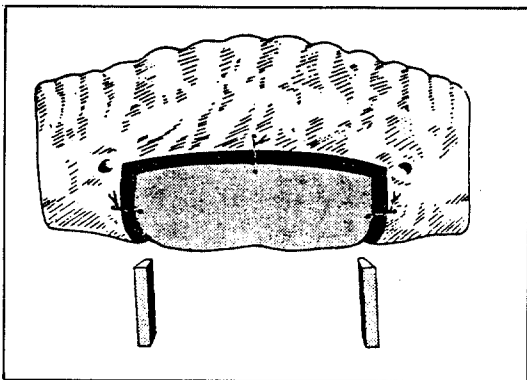


Fig. 7. Drawing the segment fixation and retruded segment  
(Reproduced from Hinds and Kent<sup>9</sup>)

### III. DISCUSSION

Generally the surgical techniques for genioplasty are the methods using the horizontal osteotomy<sup>6,7,8</sup>. These techniques have been used for microgenia, macrogenia and chin asymmetry popularly, and the results are superior than other techniques. However, in macrogenia patient with pogonion excess only, use of the conventional horizontal reduction osteotomy has some limitations due to the position of the mental foramina, the height of anterior mandible, and the apices of lower anterior teeth, and will change the mandibular width. The reduction genioplasty technique described is a modification of the horizontal step osteotomy for microgenia described by Hinds and Kent. This modified technique is indicated when the gonial angle and mandibular plane angle are

normal, and only reduction if chin is desired with maintaining of vertical dimension of chin, and it can be used for macrogenia patient with a narrow, pointed chin. It has some advantages as followings : It maintains a soft tissue pedicle to the genial segment for viability<sup>9,10</sup> : It allows for maximum bony approximation and easy stabilization through removal of wedge shaped segment of bone. : It is not difficult and requires the same amount of time to perform as conventional techniques. : additionally, it can control the mandible height by angulation of osteotomy. However, it has difficulty in bone segment fixation with wire, and can produce unpredictable soft tissue change such as double chin (Fig. 8,9 and Table 2).



Fig. 8. Postoperative frontal view



Fig. 9. Postoperative view showing unpredictable soft tissue change such as double chin

Table 2. Postoperative cephalometric analysis

Gonial Angle	127
SNA	75
SNB	79
Facial Plane Angle	80
Anterior Facial Height	134

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국문초록

## 변형된 이부축조술 치험 1례

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이부는 안면 외모에서 뚜렷한 부위를 차지하고 있어 사람의 특징을 나타내며 인상을 결정짓는다 할 수 있겠다. 따라서 옛부터 이 부위는 안면 미용에서 관심의 대상이 되었고 이에 대한 성형 수술도 시행되었다. 그러나 요즘 시행되는 Genioplasty는 짧은 역사를 가졌을 뿐만 아니라 방법도 부위 및 구조적 특성 등으로 다양성이 제한되었다. 기존의 Horizontal reduction genioplasty는 턱이 정상적인 형태 및 전방폭을 가졌을 때에 이부의 높이를 줄이거나 후방위 치시킬 때에는 좋은 효과를 볼 수 있으나 하악골의 전방 폭경 및 높이의 결손등이 있을 때에는 mental foramina의 위치, 전방 하악골의 높이와 치근의 위치 등에 의해 사용이 제한된다 할 수 있다. 따라서 이러한 환자에 있어서는 다른 방법이 요구된다 하겠다.

본 교실에서는 Hinds와 Kent에 의해 서술된 Horizontal step osteotomy for advancement genioplasty에 대해 변형된 방법으로 narrow, pointd chin과 짧은 전방하악골 높이를 가진 chin prominence환자에 대해 시술한 바 비교적 양호한 결과를 얻었기에 이에 보고하는 바이다.