

# An Alternative Technique for Arch Bar Fixation

Montri Kitmanee, M.D.\*

Sorawuth Chu-Ongsakul, M.D.\*

**Abstract :** Another technique for the fixation of an arch bar which is needed to maintain proper occlusion is described. It gives secure fixation for the treatment of maxillo-mandibular fracture with shorter fixation and removal time from about thirty minutes to fifteen minutes. This technique can also be used in orthognathic surgery.

**เรื่องย่อ :** การตรึงฟันอีกวิธีหนึ่ง

มนตรี กิจมณี พ.บ.\*, สรวุฒิ ชูอ่องสกุล พ.บ.\*

\*สาขาวิชาศัลยศาสตร์ตกแต่ง, ภาควิชาศัลยศาสตร์, คณะแพทยศาสตร์ศิริราชพยาบาล, มหาวิทยาลัยมหิดล, กรุงเทพมหานคร 10700.

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ได้ศึกษาวิธีตรึงฟันเพื่อให้ฟันสบกันได้เหมาะสมในการรักษากระดูกกรามหักหรือในการผ่าตัดความพิการของกรามอีกวิธีหนึ่ง โดยใช้ arch bar กับลวดไร้สนิม โดยการมัดกับฟันของกรามส่วนล่างหรือบนข้างละ 2 ซี่ ทำให้ใช้เวลาในการมัดฟันลดลงจากประมาณ 30 นาที เหลือประมาณ 15 นาที และเอาออกได้ง่าย รวดเร็ว โดยผู้ป่วยไม่ต้องดมยาสลบอีก ทั้งยังมีราคาถูกด้วย

## INTRODUCTION

Arch bar fixation is needed for the treatment of fractures of the maxilla and mandible. Many techniques have been described for arch bar fixation with some problems, e.g., loosening of the bar, time consuming, difficulty in applying and removal, uneasiness of availability, and expensiveness. We have developed a technique for fixing the arch bar with stainless steel wires which gives stable fixation and is easy to apply and remove.

## MATERIALS AND METHODS

After the appropriate arch bar has been prepared, stainless steel wires of 0.015 inch in diameter and about nine inches long are bent 180° at the mid position after being fully stretched (Figure 1). This bending part is used as a leading tip for insertion between the teeth (Figure 2). The wires are applied around the first premolar and the first molar on each side (Figure 3).

\*Division of Plastic Surgery, Department of Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.

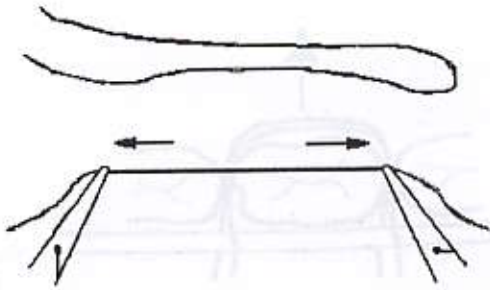


Figure 1. Stretching and bending the stainless steel wire.

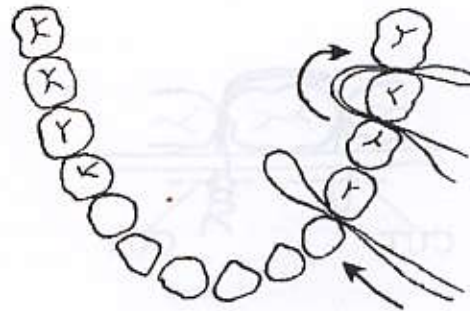


Figure 2. Wire insertion.

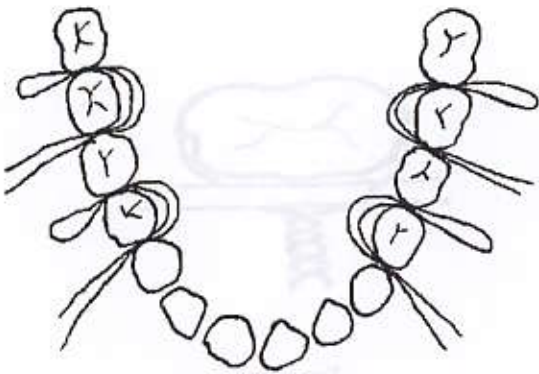


Figure 3. Completed insertion.

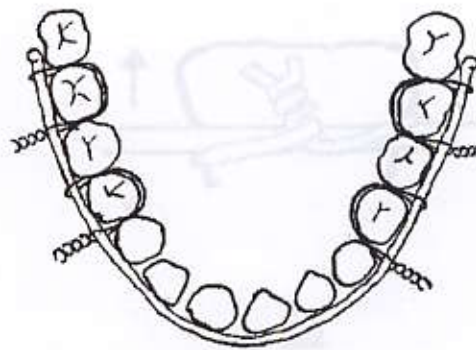


Figure 4. After an arch bar is applied, the wires are tightened and twisted.



Figure 5. Never let the wire kink.

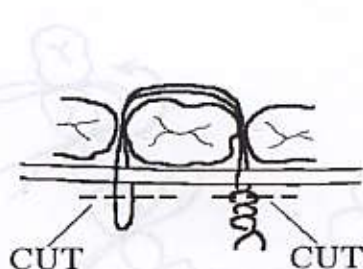


Figure 6. Loosening and cutting for wire removal.

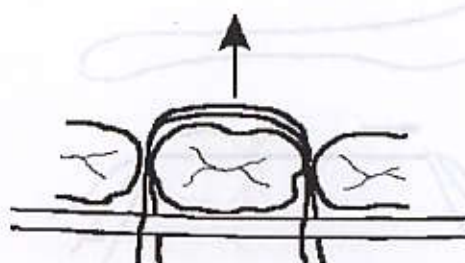
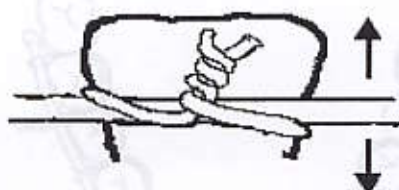


Figure 7. The wire is removed via lingual side.



Side view



Top view

Figure 8. Showing simple wiring, movement in vertical direction is possible, and only one point of force is applied. Six to eight teeth are needed for the fixation of each arch bar.



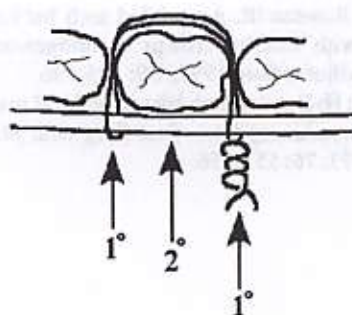


Figure 9. Three points of force acting on the arch bar per one tooth.

The prepared arch bar is inserted into the wire loops and pressed to make contact with the teeth. The free ends of the wires are then tightened and twisted (Figure 4). Care must be taken not to make the wire uneven (Figure 5). Otherwise, removal will be difficult and painful for the patient. The twisted ends are turned close to the arch bar. Another arch bar is fixed by the same manner. Now both arch bars are ready for intermaxillary fixation.

Another wire can be applied to the second premolar when tension band action is required for a more firm fixation.

## RESULTS

We have used this technique to treat 34 cases of maxillo-mandibular fracture and two orthognathic surgery cleft cases. Fixation time is about 15-20 minutes. No loosening occurred. One un-cooperative boy needed mild sedation for arch bar removal.

## DISCUSSION

Arch bar fixation is usually made by simple wiring.<sup>1-4</sup> The wire is oblique to the arch bar and only one point of force is applied thus movement in vertical direction is possible (Figure 8). Many wires (6 to 8) are needed for one arch bar to make a firm fixation and this produces a long operative time. This technique uses only two wires on each side of the arch bar. There are actually three points of force acting on an arch bar for each tooth compared to one point of force in simple wiring. If we look closer at one tooth wiring, two primary forces are made directly by the wire to the arch bar (Figure 9) and one secondary force from pressing the arch bar to the tooth.

Subluxated teeth can also be fixed by this technique.

The technique of Rowe<sup>5</sup> may provide secure fixation for incisors and the cuspid area, there is only one point of force to the arch bar per one tooth.

Some other techniques are described with some problems; some reports used miniscrews and wires.<sup>6-8</sup> These screws need to be imported. Some techniques need special types of arch bars<sup>9-12</sup> which are not easily available and are also expensive.

This technique might be appropriate for the present economic status with reliable result.

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