

MANDİBULAR REKONSTRÜKSİYONDA VASKÜLARİZE FİBULA SERBEST FLEP OSTEOTOMİSİ İÇİN YENİ BİR ŞABLON; ESMARCH BANDAĞI

A NOVEL TEMPLATE FOR OSTEOTOMY OF THE VASCULARIZED FREE FIBULA FLAP IN MANDIBULAR RECONSTRUCTION; ESMARCH BANDAGE

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Dear Sir,

Free fibula osteocutaneous flap has become almost the gold standard for mandible reconstruction since its first use by Hidalgo.^{1,2} Flap's rich blood supply through peroneal artery, its distant location from the mandibular region, good bearing surface of the bone for placing implants, and minimal morbidity of the donor region are its main advantages.³ One of the most challenging steps during surgery is the fibula shaping with osteotomies in order to match the missing mandible exactly.³ Although various techniques have been reported such as templates like tongue depressors, still many surgeons use gross measurements and visual estimates for fibula shaping. However, this frequently causes multiple revisions during surgery.^{4,5} In order to shorten operating time by determining the exact osteotomy position in a single step without bone loss, a method using an Esmarch bandage has been used at our clinic routinely. In this paper we would like to describe this technique briefly.

An Esmarch bandage strip is cut matching exactly with the resected mandible in dimensions (Figure 1a). After, a linear cut is made at the angle of bandage, so it's straightened to resemble the natural shape of the fibula (Figure 1b). With this action, a triangle is formed at the site of the cut, indicating the location of the required osteotomy on fibula. A fibular wedge osteotomy is done at that place by removal of the triangle (Figure 2a). Same steps can be repeated for further osteotomies. Reconstruction plates and screws are placed and now the flap is ready to be transferred to the mandibular defect (Figure 2b).

The technique we used above brings many advantages to the surgeon. First of all, it's time-saving. It determines the optimal location of the wedge osteotomies preventing repeated burring and recutting

of the bone which is important for flap ischemia. It's inexpensive and easy to use. Due to the elastic nature of the bandage, it can easily be cut, shaped and can be brought back to its original position. Even multiple strips of Esmarch bandage can be used during surgery without a significant cost.

The biomodels based on 3-dimensional computerized tomography and rapid prototyping can be used for the planning of complex craniomaxillofacial defects.⁶ However, they are expensive and generally suitable for delayed reconstructions. Resected bone and plate assisted template modeling is another method for surgical planning. This method is rapid, easy and it does not require preoperative planning similar to our method.⁷ However, when compared to the 3-dimensional computerized tomography assisted stereolithographic simulation, main disadvantage of this method is the inability of three dimensional planning. Therefore, it would be reasonable to use methods other than the Esmarch technique in cases requiring complex three dimensional planning.

In conclusion, fibula osteocutaneous flap contouring by using an Esmarch bandage is safe, easy, inexpensive and time-saving with its high precision. We strongly recommend this method particularly for beginners.

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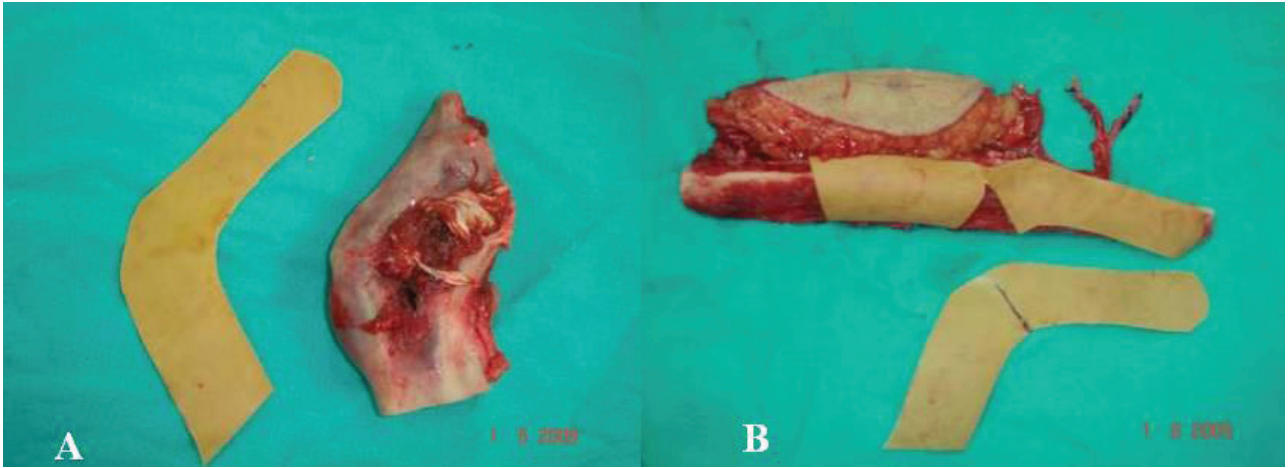


Figure 1a. Esmarch bandage is cut simulating the resected mandible.

Figure 1b. Linear cut is made at the angle of the L-shaped bandage. The bandage is straightened, so a triangle is formed pointing the wedge osteotomy site on fibula.

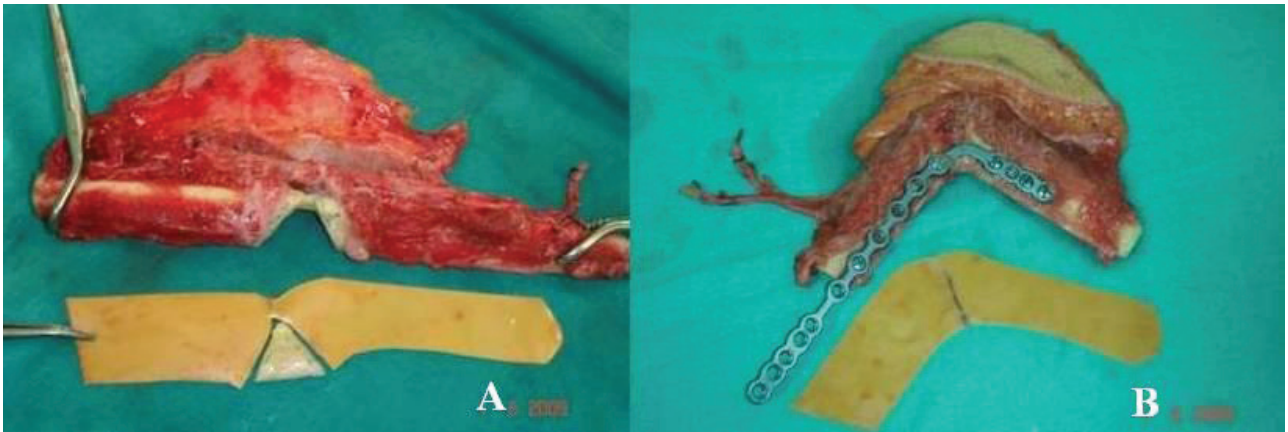


Figure 2a. A wedge osteotomy is done on the fibula matching exactly the missing triangle on the bandage.

Figure 2b. Bending and fixation of the fibula with a reconstruction plate. Note the similar dimensions and shape of fibula with the template

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