

## Functional and Aesthetic Consequences of Total Platysma Resection

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• The functional and aesthetic effects of total unilateral platysma resection during ablative surgery is described and outlined for the first time (to our knowledge). The consequences of this resection are analyzed with respect to the partial facial paralysis that is evident. A model describing the dynamics of this paralysis is presented. These data are important in understanding the contribution of the platysma to the smile and the effects of manipulating this muscle during aesthetic and reconstructive neck surgery.

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The platysma muscle has gained some prominence in the past decade as a functional and aesthetic component of the neck and lower third of the face. There exists a specific relationship to the movement of the lower lip and any surgical procedure that lyses its nerve supply or resects the muscle itself. The incidence of this single muscle being affected is very small, whereas it is involved more frequently in conjunction with the mandibular division of the facial nerve and with operations that might affect the muscles associated with that nerve. The functional deficit from platysma resection does not reach to the level of a clinical complication

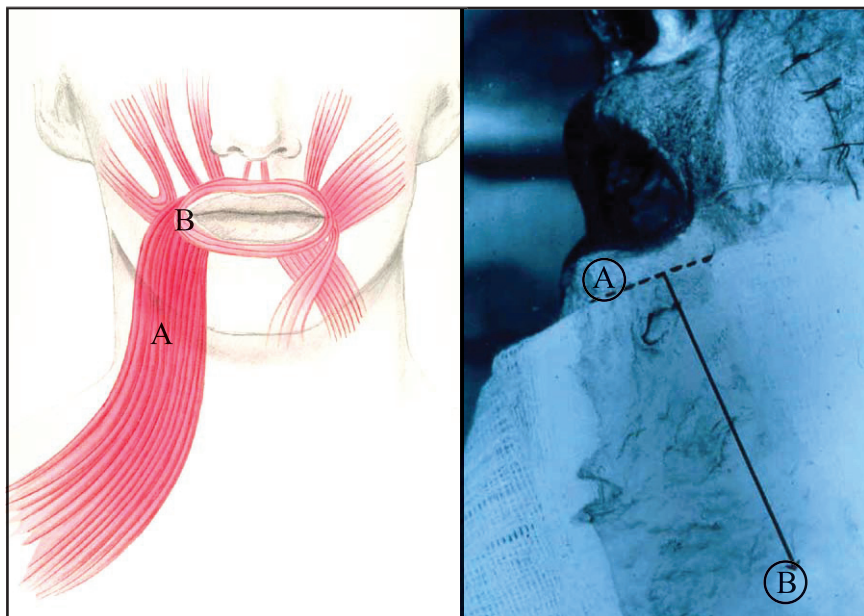


Fig 1.- Left, Facial muscles involved in smiling. Arrow points to insertion of platysma muscle A into orbicularis muscle B. Right side shows superficially placed muscles. Left side shows deeper plane of dissection. Right, Cadaver dissection exhibiting platysma's B inferior pull on orbicularis A.

and requires no remedial attention. The aesthetic deficit, on the other hand, is discernible, measurable, and at times unpredictable in how much spontaneous return of movement will eventuate at this site. Because this deficit is ordinarily associated with rather serious neoplastic disease, it is not terribly disturbing to the patient. If desired, however, it can be ameliorated.<sup>1</sup> More important, however, is the association of this deficit with platysma surgery in an aesthetic milieu.

### SUBJECTS AND METHODS

Ten cases of total unilateral platysma resection were examined during the integral part of the surgical treatment of certain melanomas in the head and neck, of large fungating cancers of the skin and

neck, and also of metastasizing cancers into the cervical lymph nodes that have fungated through the skin.

### FUNCTIONAL ANALYSIS

The contribution of platysma to the normal smile is only valuable if analyzed in the context of the total smile. The musculature associated with movement of the lips is similar to a perforated elastic drumhead that can be moved in any direction to fulfill its functional requirements and emotional responses.<sup>2</sup> This dynamic elastic musculature membrane is made up of essentially 21 muscles. Ten of these

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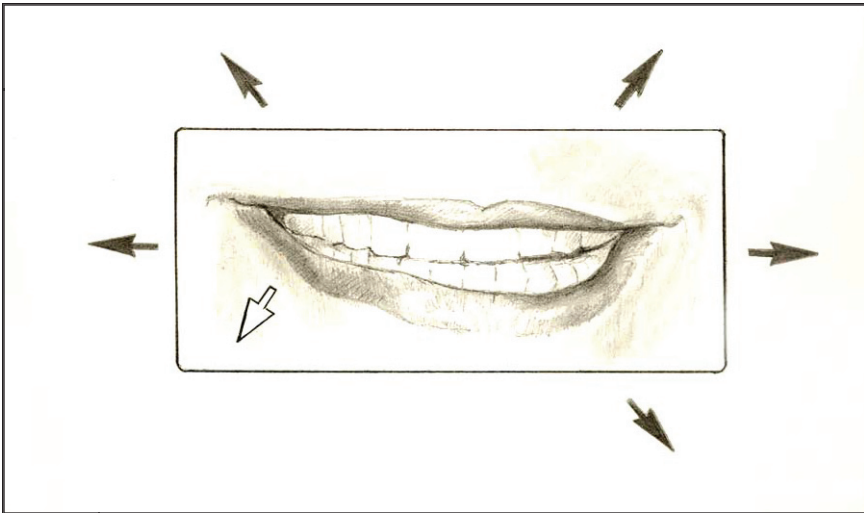


Fig 2.- Lower lip deformity associated with platysma resection. Circumferential orbicularis oris is pulled equally by balanced antagonists and antagonists. However, when platysma muscle is resected, evaluation of the lip ensues secondary to lack of depressor contribution.

## COMMENT

The aesthetic effects of resection of the platysma muscle are important in respect to the appearance of the lateral neck itself. The major deficiency in the neck in these instances is the depression associated with the radical, or conservation type, of neck dissection. The absence of the platysma muscle over the superficial or deep fascia reduces the volume of the neck very slightly and makes the skin surface thinner and tighter.

The absence of contractions of this muscle in the neck creates no problem. There is, however, a specific deficit about the ipsilateral lower lip, which is recognized in some instances of exaggerating smile, and is the product of active muscle contraction. It is also recognized in all cases of opening the mouth widely, which is the result of weakness of the ipsilateral lower lip and commissura. It is the product of the passive stretching of the intact antagonists against the weakened antagonists. The mouth appears normal in the position of repose because the antagonists and antagonists are not out of balance. Puckering of the lips is also normal because this is accomplished primarily by the orbicularis oris muscle, which is not affected by platysma resection. The main deficit of platysma resection, as evidenced earlier, is a lack of its depressive action on orbicularis, causing an asymmetric smile and an elevation of the lower lip.

The importance of isolating the contribution of the platysma to the smile is particularly important in light of increasing manipulations of the platysma during aesthetic and reconstructive neck surgery.

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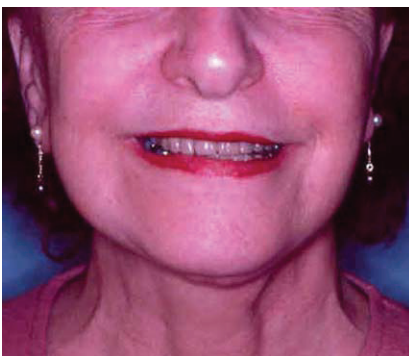


Fig 3.- Top, Right-sided platysma resection with obvious right lower lip deformities on smiling. (Marginal mandibular nerve isolated and electrically stimulated assuring anatomical and functional integrity.) Bottom, Same deformity in different patient.

the lips that responds to the 20 muscles that are attached to it directly and indirectly. In addition to the centrifugal movement created by these paired muscles, the intrinsic muscle of the lips can tighten, pucker, and purse-string the lips in a concentric fashion. Any weakness of the lip must be analyzed within the framework of this elastic dynamic muscular system. The orbicularis oris is a circumferential muscle of the lips to which these radiating muscles are attached. The platysma muscle is a long, thin, flat structure, originating in the fascia of the upper part of the chest and shoulder. It crosses up over the mandible to insert into the superficial fascia of the cheek and the muscles of the angle of the mouth and the lower lip. Figure 1, left, shows the insertion of the platysma to the orbicularis oris. The contribution to the smile can be variable, based on the total area of contact the orbicularis has with the platysma. Figure 1, right, displays the inferior lateral depressive vector, which the platysma exerts on the orbicularis. It can be seen from Fig 2 that the matched set of muscles that elevate, lateralize, and depress the orbicularis are in perfect balance and that when the platysma is resected, the depressive action of this muscle can no longer contribute, causing an elevation of the lower lip.

## RESULTS

The ten clinical patients who underwent total platysma resection all exhibited the same deformity, as evidenced by Fig 3. The lower lip, on smiling, became raised and very similar in appearance to what has previously been described by Ellenbogen<sup>3</sup> as a pseudomarginal mandibular paralysis.

muscles are paired and bilateral. They act as antagonists and antagonists to stretch, balance, tighten, elevate, and depress the lips. There is a single bilateral circular muscle contained in the circumference of