

“HOW I DO IT” - HEAD AND NECK

A Targeted Problem and Its Solution

THE PINCH SCISSOR TECHNIQUE FOR MOTOR NERVE DISSECTION.*

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INTRODUCTION.

A surgical technique is described which allows the facile operator the opportunity to simultaneously dissect a motor nerve while continuously evaluating its functional integrity. These two complementary surgical objectives, when performed concurrently, permit a more exacting, yet efficient, procedure. Although principally employed during parotidectomy, this technique finds wide application in all areas of head and neck surgery.¹⁻⁴

This method offers several distinct advantages over currently acceptable practices, including enhanced accuracy and specificity of dissection, expanded control over the surgical environs and increased efficiency. In addition, the inherently delicate nature of this maneuver significantly decreases trauma to the nerve, imparting an adjunctive margin of safety to the entire operation, and thus decreasing nerve related postoperative complications.

OPERATIVE TECHNIQUE.

The basic technique for parotidectomy utilizes a small blunt plastic scissors of the Stevens type, but can be modified in larger dissections by using any available scissors, most notably the curved Metzenbaum.

The scissors, first introduced in a closed fashion, delicately find the surgical plane just superficial to the motor nerve. The blunted tips advance while the belly of the scissors gently rides over and parallel to the length of the nerve, separating it from the surrounding tissue. In parotidectomy, the developmental nature of the gland facilitates this maneuver by allowing the scissors to enter the potential embryologic space between the facial nerve epineurium and the parotid parenchyma. After a variable distance, which is dependent upon the extent of peripheral exposure and other related local factors, the scissors are carefully opened, maintaining a continuum of sensitive exacting pressure. This step atraumatically senses occult nerve fibers lateral to the line of dissection by exerting transmitted pressure on any adjacent nerve through a buffer of interposed soft tissue. If a nerve is, in fact, traversing the field in this vicinity, an efferent impulse will be initiated. By systematically scanning the operative field during this maneuver, the surgeon notes any neuromuscular activity and is thus

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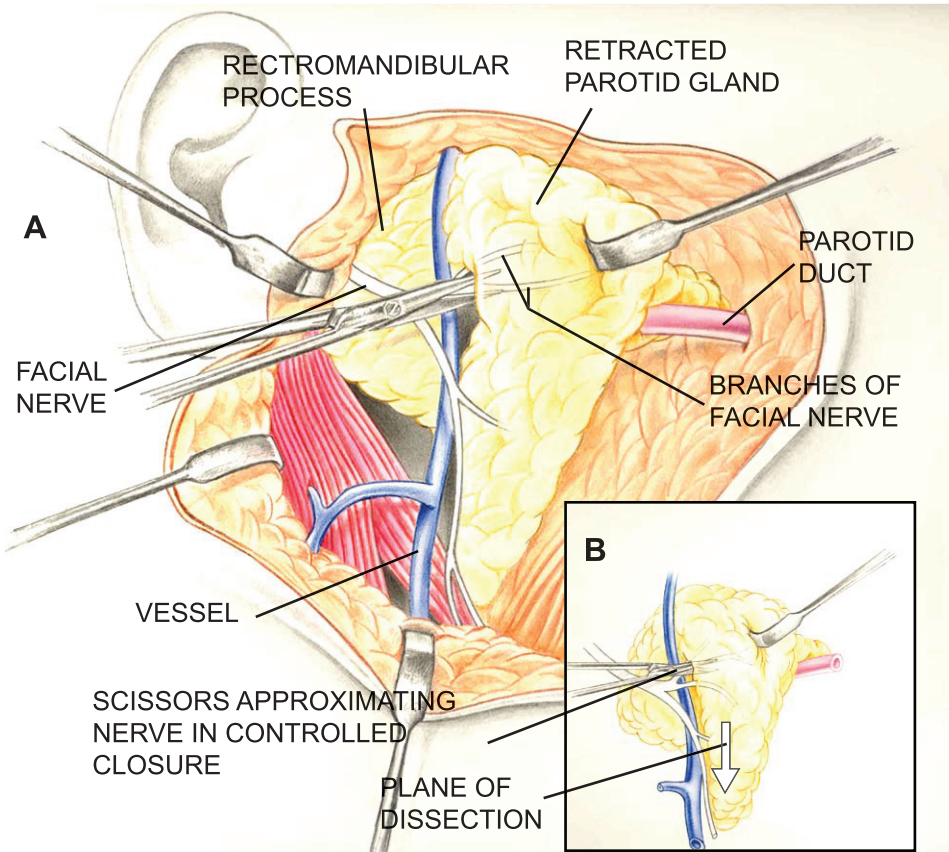


Fig. 1. A. Scissors entering potential embryologic space in preparation for first step of dissection. B. Definitive second step of dissection showing actual pinch of facial nerve.

warned of the nerve's presence well in advance of any definite and irreversible action (Fig. 1-A).

After this initial monitoring effort, which additionally exposes the nerve, the second step is to close the scissors in a soft pinching manner in the parenchyma just lateral to the nerve. The operator continues to gradually and deliberately close the scissors to completion if there has not been any sign of neuromuscular activity, clarifying the fact that nerve tissue is not located within the proposed plane of dissection (Fig. 1-B). These two basic steps are then repeated until the motor nerve is sufficiently exposed. The scissors, by virtue of this technique, have thus been transformed from an indiscriminate cutting instrument into an exacting, sensitive dissecting device which actually tests nerve function.

TECHNICAL ADVANTAGES.

Efficiency: The pinch technique owes its efficiency to the inherent simplicity of its instrumentation. Since only one tool is necessary for the completion of the dissection, the time consumed in selecting and handling additional instruments is obviated. Without these interruptions in the rhythm of the procedure, the entire scope of the surgery is more concentrated, with a resultant decrease in total operative time.

Accuracy: Many authors advocate a two-stage concept of motor nerve dissection wherein a clamp or elevator is first positioned in a plane above the nerve, serving to identify and protect it from the second-stage maneuver which definitively incises the soft tissue superficial to this plane with scissors or scalpel.^{5,6} This type of procedure, by the nature of its disparate instrumentation, results in a vertical skewing of the incision through the overlying soft tissue and an added potential for inaccurate nerve dissection secondary to the intrinsic nature of a repetitive two-stage procedure.

Unlike the pinch method, which dissects the parenchyma in the most accurate and efficient manner just superficial to the nerve in a parallel horizontal plane, the two-stage procedure cuts into the soft tissue in a perpendicular vector, contributing to a circuitous and imprecise dissection. In addition, there is increased potential for hemorrhage secondary to needless manipulation of soft tissues not in the direct plane of dissection. The pinch technique, which tends to parallel the perineural vasculature, is quite bloodless, especially if a hypotensive anesthetic protocol can be instituted.

A further problem with the two-stage procedure is that the slightest degree of motion in the dissecting instrument, while preparing and handling the cutting utensil, can lead to subsequent inaccuracies in the dissection.

During Parotidectomy: During lateral lobectomy, this technique allows for increased safety in dissecting the plane of parotid tissue which intervenes between two major facial nerve branches. In other techniques, dissection in this area is fraught with hazard because, previous to the pinch technique, there was no reliable method for identifying nerve tissue accurately and in an atraumatic manner. With the pinch, however, one simply extrapolates a plane of dissection between two previously dissected main branches and then utilizes the technique to identify the connecting branches located in this area which serve to define the precise plane of dissection for lateral parotidectomy. The technique can be further utilized in total parotidectomies, if this should prove necessary.

ADJUNCTIVE USES IN HEAD AND NECK SURGERY.

Although highly specific to parotid surgery, the pinch technique finds application in all areas of head and neck surgery:

1. In preparation of dynamic muscle transfer flaps (masseter, digastric, temporalis), the pinch can accurately define the subtle changes in the intramuscular motor innervation patterns before irreversible damage has occurred.
2. Identification of motor components of the vagus in and around the esophagus.
3. During face-lifting, the scissors, when used in the pinch fashion, can assess facial nerve location, especially in the periphery of the dissection.
4. During glossectomy, hypoglossal integrity can be consistently monitored.
5. During conservative neck dissections, definitive location of the spinal accessory nerve and its branches can be defined.
6. In preparation for motor nerve cable grafts, the sensory components can be delivered from the sural, greater auricular or cervical plexus in a

most atraumatic way to assure accurate and functional re-anastomotic connections.

7. During general head and neck dissections, the pinch technique is invaluable in recognizing motor nerves, which, in turn, can be utilized to identify structural and anatomical relationships.

DISCUSSION.

Although the pinch technique is a highly specific and refined maneuver, it is best considered in the general context of a single component within a complete philosophy of surgical dissection. Within this framework, the surgeon obtains unrestricted control of his surgical environment by constantly receiving information from the tissues and reacting to this input in a responsive style. Thus, a continuum of feedback exists across the surgical terrain, allowing for a safe, efficient and thoughtful dissection. The pinch technique exemplifies this surgical philosophy of high control and responsiveness, and aids in propagating this concept throughout the individual procedure.

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