Rhinology, 19, 35-39, 1981

Incision in the gingival margin for approaching the maxillary sinus: a comment after an eight years experience

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SUMMARY

After an eight years experience performing an incision in the free border of the gum (the Neumann's incision) to approach the maxillary sinus - the first written communication had been six years before (Rev. Brasil. Oto-Rino-Laring., 40: 398, 1974) - the authors describe the details of the technique justifying also their enthusiasm for its almost exclusive use now a days.

In 1974, one of us (Neves-Pinto, 1974) presented a paper on an incision in the gingival margin for approaching the maxillary sinus (Neumann's incision).
On that occasion, we concluded that such incision could substitute advantageously the classical Caldwell-Luc incision modified by Martensson (1950). After six more years, despite its adoption by several colleagues (including Prof. Ermiro de Lima) and a publication in which a similar incision is defended (Goodman, 1976), this technique is n't so much diffused as we think it deserves. That is the reason why we come back to the subject, now adding an eight years experience of two surgeons.
We adopted as a rule, in bilateral operations, to make the classical incision on one side and Neumann's incision on the other side. This made it possible to form a better opinion on both incisions in the same patient, consequently eliminating the interference of factors such as the psychic make-up, the individual biological response of the tissues and the medicines employed post-operatively.
Only now, in 1980, as a consequence of our utmost belief in the superiority of the Neumann's incision, we decided to use the classical incision just in the few cases where the Neumann's one would be inadvisable.

TECHNIQUE

1. With general anesthesia: anesthetic infiltration of the region with a 0,5% solution of bupivacaine plus 1 : 200.000 of adrenaline, in order to reduce bleeding. With local anesthesia or under neuroleptical analgesia: we add infiltrations of the same anesthetic solution quoted above in order to block the maxillary nerve.

Paper presented at the 8th Congress of the European Rhinologic Society and 2nd ISIAN, Bologna (Italy), October 1980.

2. With a Bard-Parker no. 11 bistouri we perform an incision, as shown in Figure 1/A, since the medial aspect of the superior lateral incisor tooth to the lateral aspect of the second bicuspid or the first molar (according to the necessities). The incision cuts the gingival papillae, exactly in the joint of its vestibular and lingual faces, and goes up till the attached gingiva. The gingival margin must be preserved to the most. A vertical extension, till the gingivo labial sulcus or to its vicinity, coming from the lateral extremity of the incision ("B" or "C" in Figure 2), is always needed. The medial vertical extension ("A" in Figure 2) is optional. Nevertheless, when it is not performed we extend the incision in the gingival margin till the central incisor (Figure 1/B). In Figure 3, we call the attention for the patterns of extensions to be avoided, because they can produce undesirable retractions.

3. Elevation of the free gingiva and, afterwards, separation of the attached gingiva, in a smooth way and following all the extension of the incision in order to

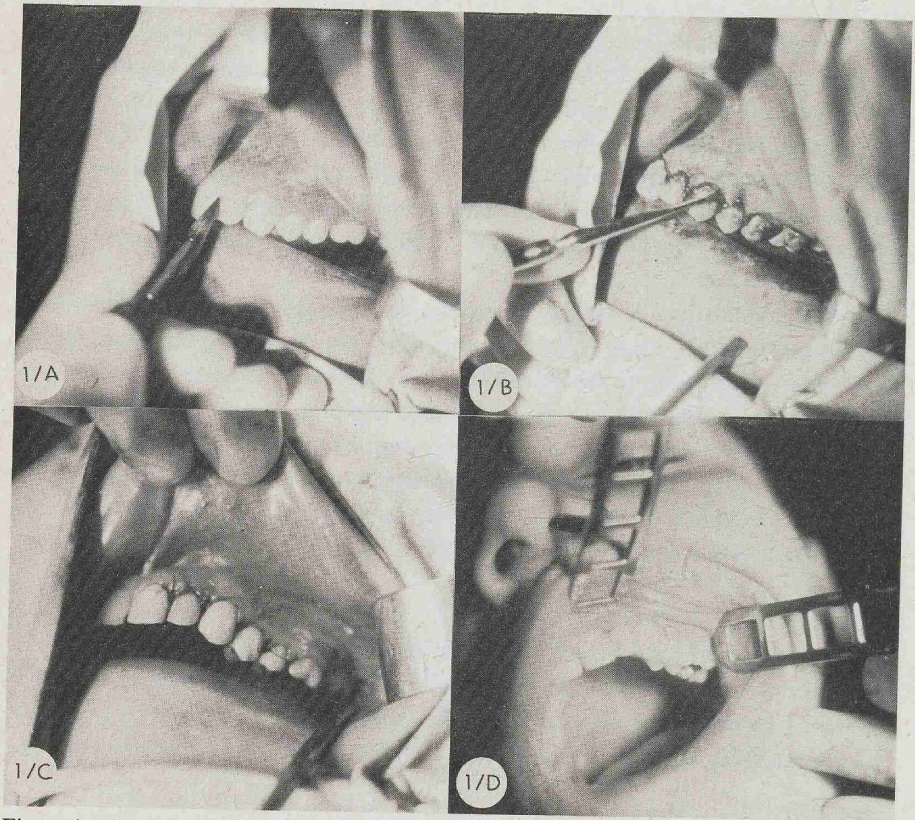

Figure 1. Incision in the margin of the gingiva: (A) beginning, (B) finished, (C) sutured after the sinus operation and (D) completely healed two weeks after surgery.

avoid the laceration of the gingival margin (Figure 1/B). This step requires a meticulous performance. We usually employ the Neves-Pinto's straight bistoury for it. After the elevation of the attached gingiva it won't be difficult to expose all the surgical area, either with a gauze and/or a Joseph elevator. The point where the infraorbital nerve emerges should always be identified. An interesting modification is the one proposed by Ermiro de Lima (1979). After the incision described in item 2 has been made, the medial vertical extension is done and through it we introduce an elevator (The Joseph one, for instance) which, in an up-down manoeuvre, will permit the separation of the attached gingiva in an easier, quicker and safer way (to the gingival margin).

4. The sinus operation finished, the mucosal flap is replaced in its original location. The papillae are then sutured with atraumatic needle and non-absorbable thread four zeros (Figure 1/C). The vertical extensions of the incision are sutured also. A compressive dressing is kept over the cheek for 12–24 hours.

5. The sutures are taken out after seven days and after seven days more the aspect of the region is anatomic (Figure 1/D).

Till the present moment we aren't enthusiastic about the employment of the odontologic surgical cement to protect the incision. However, the use of some sort of magnification may be helpful.

The following precautions seem important to us: the patient should avoid to blow-out the nose, to masticate, to employ a toothbrush or to make a mouthful rinse in the operated side for seven days. In the bilateral operations, the diet should be watery or very soft. After this period of time, the patient should just be careful to observe an up-down direction when teeth brushing and to avoid the mastication of solid foods (on the operated side) for seven days more. After these two weeks, there are no restrictions more.

ADVANTAGES OF NEUMANN'S INCISION

1. Because it is an incision which preserves to the most the vases and nerves of the region, which are only cut in their more distal point, we have:

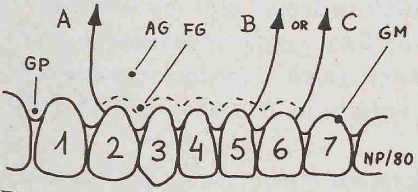

Figure 2. Vertical extension of the incision in the gingival margin (A and B or C) GP = Gingival papilla, AG = attached gingiva, FG = Free gingiva, GM = gingival margin, 2 = lateral incisor, 6 = 1st molar.

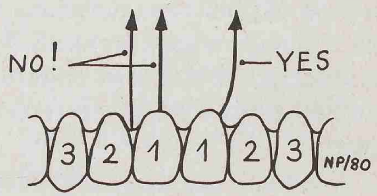

Figure 3. The patterns of vertical extensions to be avoided and the correct one.

- Minimal sensitive disturbances, which disappear completely till 3-4 weeks after the surgery. These perturbations have always proved to be sensibly smaller than the ones produced by the classical incision. However, we should keep in mind that some sensitive disturbances can be produced by opening the anterior bone wall of the maxillary sinus and not by cutting the soft tissues.
- Minimal bleeding during the surgical act.
- Minimal vasomotor disturbance and remarkably smaller post-operative edema.

2. Because a broad exposition of the region is obtainable, we have:
- A better view of the dental root prominences, in the anterior wall of the sinus which helps avoiding that the bone opening be enlarged in such a way to reach the alveolar plexus or even the root of a tooth.
- Better opportunity to obtain a convenient flap for closing a sinus fistula with the simultaneous performance of a maxillary or a transmaxillary sinusectomy.
- Better approaching when after a previous first surgery the periosteum and/or the cicatricial tissue invade the sinus cavity through the window existent in its anterior wall.

3. Because of the big gap between the anterior bone wall opening performed and the incision in the gingival margin, we have:
- An infinitely smaller possibility of occurring a sinus fistula.
- A smaller possibility of invasion of the sinus cavity by periosteum and/or cicatricial tissue, as the bone window will be covered by a complete periosteum.

4. Edentulous patients may replace their dental fixtures immediately after surgery.

DISADVANTAGES OF THE NEUMANN'S INCISION

They are minimal and irrelevant:

1. Its performance requires more dexterity, work and time on the part of the surgeon. However, it is not as much as it seems to be when we begin its practice.
2. It is not advisable to be performed when the patient presents pathology of the gingiva (gingival retraction, paradentosis). However, this contra-indication is relative. We must just remember that the surgeon-dentist uses this incision for the treatment of such problems. Nevertheless, for the otolaryngologist, in order to avoid any medical-legal problem (such an accusation of producing or aggravating the gingival pathology) it seems more prudent to us not to use it, in these cases.
3. It requires that the patient must be more careful about feeding and bucal hygiene, in the first days following the surgery.

CONCLUSIONS

Our personal experience, these last eight years, in the Hospital Central da Aeronáutica, in the Insituto Brasileiro de Otorrinolaringologia, in the Hospital dos Servidores do Estado, or in the private practice, have pointed to us the convenience of choosing the incision in the gingival margin (Neumann's incision) instead of the Caldwell-Luc's one for approaching the maxillary sinus, even in edentulous individuals. in re-operations or in patients presenting a sinus fistula.

We have avoided its practice just when the patients presented gingival pathology.

Despite the requisition of more dexterity, work and time on the part of the surgeon, the advantages above described justify, in our opinion, its broader adoption.

ZUSAMMENFASSUNG

Eigene Erfahrung in den letzten acht Jahren weist auf die Konvenienz der Bevorzugung des Einschnittes in den Zahnfleischrand (Neumann incisio), anstelle der Caldwell-Luc Eröffnung für den Zugang zur Kieferhöhle, selbst bei zahnlosen Patienten, in re-Operationen oder Fällen vorhandener Kieferfisteln.

Nur bei Vorhandensein gingivaler Pathologie der Patienten haben wir diesen Eröffnungsschnitt vermieden. Trotz Notwendigkeit einer erhöhten Präzisionsarbeit und Zeitaufwandes seitens des Chirurgen, sind wir der Anschauung, dass die oben erörterten Vorteile eine verbreiterte Anwendung des Neumann Eröffnungsschnittes in den Zahnfleischrand (margo gingivalis) rechtfertigen.

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