Immediate Obturation of the Surgical Defect after Partial Maxillectomy in the Endentulous Patient

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Closure of the surgical defect immediately after partial maxillectomy is the treatment of choice. The advantages are: maintaining facial contour, rapid re-establishment of speech, swallowing and mastication. A number of methods for the fixation of the immediate obturator in patients without teeth have been described. A new technique is reported where a transnasal wire holds the existing denture in position after partial maxillectomy. The method has been carried out on 7 patients with sino-nasal cancer during the period 1978–1994. The advantages of the technique are that the wire acts as an axis of rotation which together with the sponge in the cavity provide good stability of the denture. There is minimal preoperative laboratory work and simplification in replacing the surgical dressing.

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Various methods of treatment are employed for malignant tumours of the nose and paranasal sinusis, depending to a great extent on the histological findings. These may include different combinations of surgery, radiation therapy and chemotherapy. Partial maxillectomy is employed in some patients, but the defect following this procedure often means that the patient is unable to swallow or speak and, in addition, there will be disfigurement. To avoid these undesirable side-effects, it is essential that an obturator be inserted after the ablative procedure so that the patient recovers from the anaesthetic in a condition which produces the least psychological stress and is acceptable to the next-of-kin. Several methods to achieve these aims in patients with their own teeth have been described (1–5) using plates that are attached to the remaining teeth and which close and possibly fill-out the defect, thus re-establishing oral function. However, in cases where the patients have no teeth there are considerable difficulties (2, 4) in maintaining stability of the immediate surgical obturator. The aim of the present paper is to describe a new method by which the obturator can be inserted and maintained in position after partial maxillectomy.

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MATERIAL AND METHODS

A new method to insert and maintain the obturator is employed in the operative treatment of cancer of the nose and paranasal sinusis and cancer of the upper jaw at the Centre for Head and Neck Cancer at the Odense University Hospital. The basic principle of the method is to insert and fix the patient's upper denture by means of a transnasal (TN) wire. The insertion of the denture and mounting of the TN-wire takes place immediately after the partial maxillectomy. Prior to surgery, a small loop of wire is attached to the front of the denture between the two central incisors, and a hook is fastened to the denture palate in the mid-line as far back as possible (close to the posterior edge) (see Fig. 1).

A TN wire is inserted after the patient has been subjected to maxillectomy. The TN-wire is formed from 0.5 mm stainless steel bent double. This is introduced into the nasal cavity on the intact side, loop first, and runs along the base of the nasal cavity and ends in the nasopharynx; here it can be grasped with an instrument (i.e., artery forceps) and pulled downwards and anteriorly into the oral cavity. An appropriate 0.5 mm split skin to cover the cavity is taken from the outside of the thigh. A foam rubber sponge is then formed so as to fit the cavity. It stabilizes the skin grafts and ensures that they are pressed against the underlying tissue. The sponge also supports the

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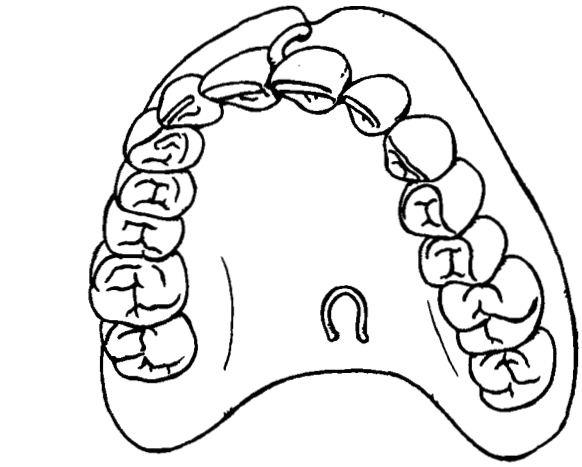

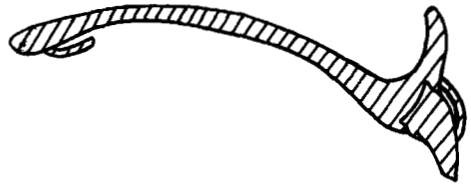

Fig. 1. A small loop of wire is fastened to the front of the denture between the two incisorss. A hook is fastened to the denture plate in the midline as far back as possible. This hook must be almost parallel to the plate in order not to irritate the tongue.

oro-facial soft tissue, so that the appearance of the patient becomes symmetrical and almost normal. The sponge is soaked in chlorhexidine 0.1% and covered with jelonet gauze before insertion. The necessary sutures are then inserted, apart from those in the upper lip.

The denture is introduced into the mouth, making sure that the sponge does not cause incorrect positioning. When the denture is in place, it should exert slight pressure on the sponge. The wire is then attached to the hook on the posterior edge of the denture (Fig. 2). The wire projecting from the nose is cut off approximately 20 mm outside the nose, and then drawn into the oral cavity using an Obwegesar awl (see Fig. 3). Traction is gently applied to the doublewire which is attached to a small ring. At the same time the doublewire is twisted together, tightening the ring in position in the labial sulcus. The loop in the denture is then tied to this ring using a thinner wire, i.e., 0.4 or 0.3 mm in thickness (Fig. 4). It is advantageous during this procedure to support the denture using a finger to press the palate up towards the non-operated side so that it remains stable. The upper lip is finally sutured. The TN-wire acts as an axis of rotation so that the pressure exerted

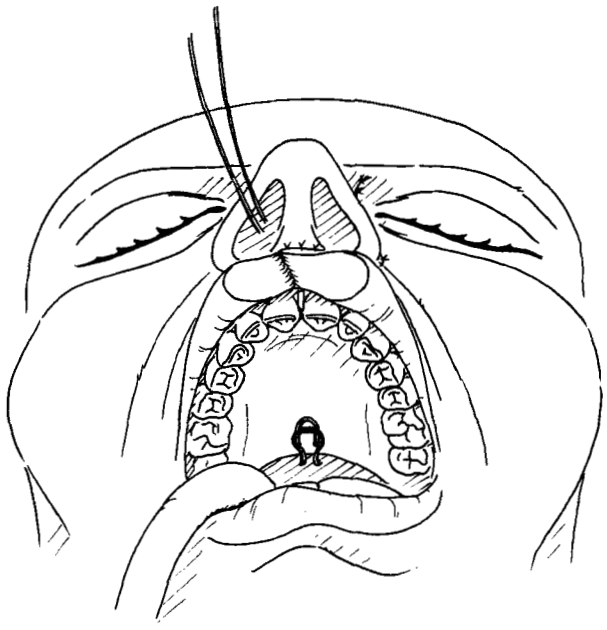

Fig. 2. The loop of the wire is attached to the hook at the posterior edge of the denture, and the two wires protruding from the nose are then gently tightened.

by the sponge ensures stability of the denture by pressing it against the intact palate (Fig. 5).

The patient is fed for roughly one week by means of a stomach tube and thereafter soft food can be given; the patient should be instructed in careful oral hygiene using mouth washes with chlorhexidine several times a day. The sponge is changed after a further 2–3 days, inasmuch as local infiltration anaesthesia should be given in the upper lip and a local anaesthetic sprayed into the nasal cavity. As a general rule, the patient is hospitalized for 2–3 weeks but changing of the sponge can be carried out as an out-

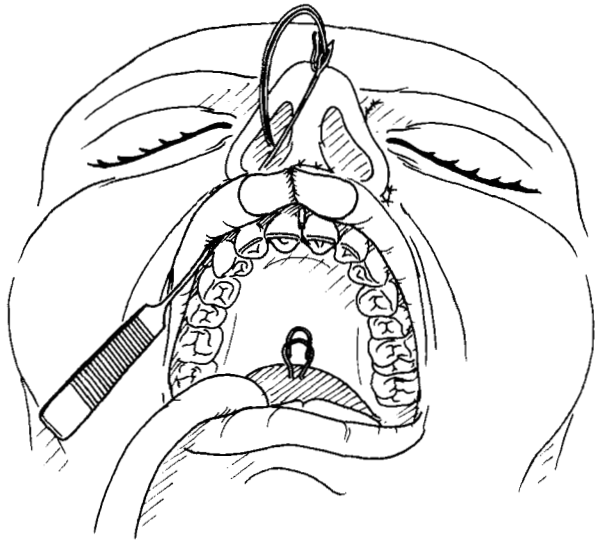

Fig. 3. The wire projecting from the nasal cavity is drawn into the oral vestibule using an Obwegeser awl.

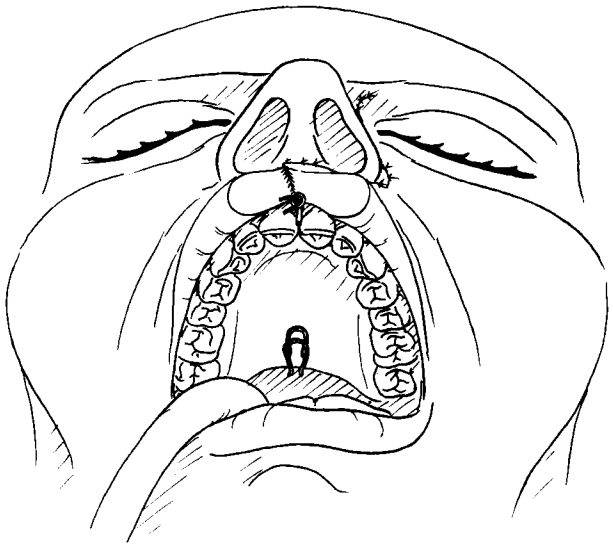

Fig. 4. A prefabricated ring is attached to one of the two wires in the oral vestibule. The wires are twisted together, tightening the ring in position in the labial sulcus. A thin wire (0.3 or 0.4 mm) is then used to connect this ring with the loop in the denture.

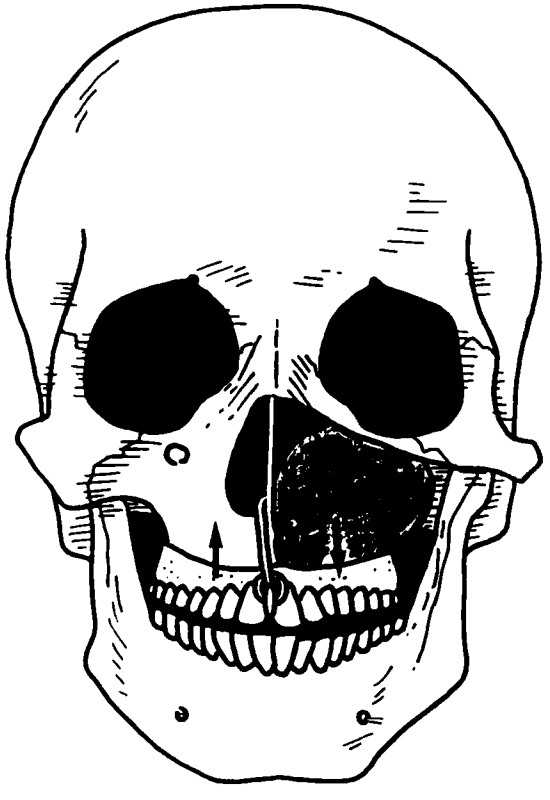

Fig. 5. The wire acts as an axis of rotation, thus providing good support for the surgical dressing in the cavity; this again ensures good stability of the denture.

patient. Fourteen partial maxillectomies are reported by Svane-Knudsen et al. (unpublished study) on sino nasal cancer. Seven endentulous patients were treated by the TN-wire method. The average period before the permanent denture could be employed was 39 days (range 32–44).

DISCUSSION

The aims of inserting an immediate obturator in connection with partial maxillectomy are: 1) To support the soft tissue and thus achieve a normal orofacial appearance, and possibly reduce scar contraction and disfiguration. 2) To provide good conditions for speech and swallowing. 3) To provide a barrier between the operative field and the oral cavity. 4) To reduce psychological trauma.

An immediate obturator has the additional advantage of allowing a 1–3-month delay before the permanent prosthesis has to be made; this is the period required for the cavity to heal and become stable (5). The alternative would be to produce a temporary obturator denture 5–10 days after the operation. However, this is unpleasant for the patient and entails the risk of causing damage to the operative field by pulling the sutures while taking the impression, as well as causing lesions to the skin transplants (6). It is essential to have easy access to the wound cavity in order to attend the wound during the period from surgery to the time at which the permanent denture can be inserted, which will improve postoperative wound healing (3).

Either suspension wires have been employed (3) or transalveolar wiring (1) in patients without their natural teeth, if you use e.g., a zygomatic arch suspension, the denture can easily rotate in the horizontal plane, especially if the alveolar process is low, which is likely to cause a pressure sore. Another alternative is to insert the patient's original denture to which an obturator has been added and possibly adapted with for example gutta-percha (6, 7).

Compared with these methods, TN-wiring requires minimal preoperative dental preparation in cases where a complete denture is available. The changing of the sponge is simple and can be carried out in the outpatient department, as local infiltration anaesthesia can be used in the upper lip and local anaesthetic sprayed into the nose. As mentioned earlier, a ring is attached to the TN-wire below the upper lip and the former is fastened by means of a thinner wire to the anterior loop of the denture. The reason for this is that it can be cut and removed quite simply when changing the dressing, and thus requires little manipulation of the TN-wire itself. After replacement of the sponge and denture, the ring is again fixed to the denture, using a new thin wire. This permits the TN-wire to remain in the nasal cavity while the sponge is changed, thus reducing the unpleasantness of postoperative care. The removal of the plate/denture in connection with postoperative care is far more complicated when transaleolar fixation is employed. The method described here can also be employed in other situations where a major part of the maxilla has to be removed, i.e., in cases of ameloblastoma or benign sialoma of the maxilla.

In conclusion, the maxillofacial prosthodontist is an essential member of the team treating patients with maxillary cancer, and the toothless, maxillectomied patient can

be restored to health and rehabilitated by inserting the patient's denture peroperatively and holding it in place by a transnasal wire. The denture will, together with the sponge in the cavity, restore the facial contour, rapidly re-establish swallowing, mastication and speech, and thus contribute to improvement in the nutritional state of the patient, as well as to their general well-being; further, it reduces the period of discomfort until a permanent prosthesis can be made.

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