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The postoperative nasal dressing. A new intranasal splint

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SUMMARY

A new intranasal dressing is presented, which helps avoid discomforts caused by intranasal packings. The splint, made of polypropylene, is introduced into the nasal cavity folded like a tent, achieving a good readaptation of the mucosa and permitting breathing inmediately after surgery of the septum.

INTRODUCTION

Since the beginning of surgery of the nasal septum attempts have been made to solve the postoperative problems produced by the intranasal packing. Killian noted in 1904 that after surgery of the septum, patients only complained about their packed noses.

Different nasal packs have been described. Huizing proposes the expression "internal dressing" instead of "packing" (Huizing et al., 1989). They usually consist of half inch gauze soaked in furacin or petroleum (Loré, 1962), paraffin mesh or vaseline gauze dressing (Schultz, 1957; Wieland, 1959), loose saline-soaked 2 cm gauze, gauzes with different antibiotic ointments or sponges (Huizing et al., 1989). Kazanjian (1952) used Stent's mass. The inner splints intended often to support fractures of the nasal bones (Oldfield, 1947; Denecke and Meyer, 1964).

Maliniac (1948) combined inner and outer support through transcutaneous fixation. Some of the newer packs are shown in Figure 1. They are generally made of synthetic material.

The first attempt to preserve nasal airways was described by Paulus Aegineta (A.D. 625-690) in one of the seven books he wrote "On Medicine" (cited in Wieland, 1959): "In order to prevent the bones from changing their position, two wedge-like tents, formed of a twisted linen rag, are to be applied one to each nostril even if but one part of the nose be deranged and these are to be allowed to remain until the bone or cartilage gets consolidated. And some sew quills of the

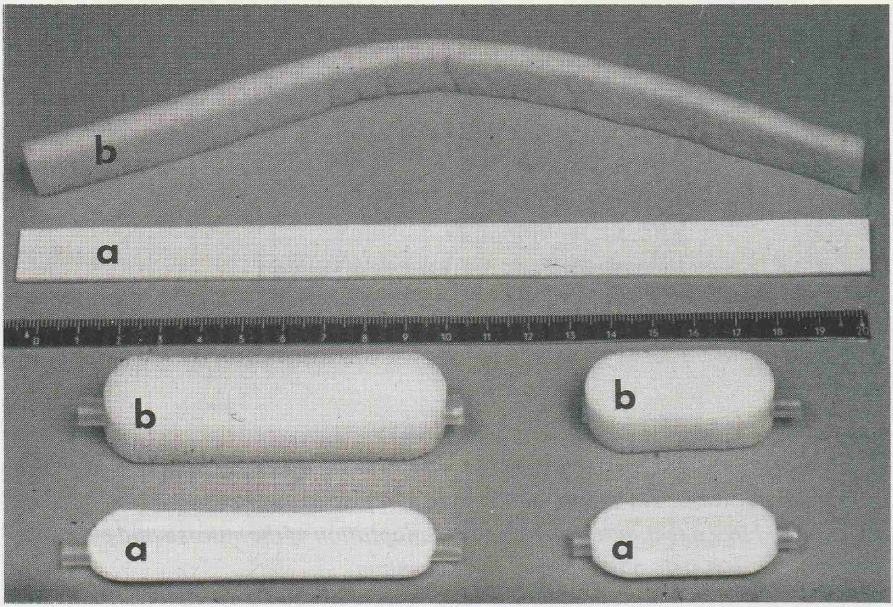

Figure 1. Variety of intranasal packs made of synthetic sponge with or without rubber tubes before (a) and after (b) distension.

feathers of a goose into the rags, and thus introduce them into the nose in order that they preserve the parts in position without obstructing the respiration". Maliniac (1948) introduced a wired septal splint to reinforce the immobilization of the septum, which may be employed dispensing of endonasal packing.

But as all dressings normally fill up the nasal cavity completely, patients complain of side effects (Table 1), regardless the time they remain placed. Difficulty in breathing may be tolerated relatively well, but, associated with the dryness of the mouth and pharynx, a patient with an obstructed nasal airway may become restless and may sometimes panic. Drinking will improve this situation only partially. Patients refer to feelings of pressure in the nose and the head, a sensation of fullness in the head and a discomforting tearing. Each act of

Table 1. Relationship of complaints while intranasal dressings remain placed.

nasal obstruction (no breathing)
tearing
pressure and fullness
discomfortable eating
earache
(intermittent) deafness

swallowing produces a partial vacuum in the postnasal space (Maliniac, 1948). Chewing is performed with an open mouth. Pressure changes transmitted through the Eustachian tube may produce earache and intermittent deafness (Maliniac, 1948) due to the secretory otitis media. Sneezing occurs very frequently.

MATERIALS AND METHODS

The splint is made of polypropylene (Brömeda, FRG-6272 Niedernhausen), measuring 7 × 4 cm, adaptable to different noses by cutting down to the necessary size (Figure 2). The splints were used in patients who underwent surgery of the nasal septum, sometimes additionally a submucous resection of the lower turbinates, and/or endoscopic surgery of the ethmoidal region.

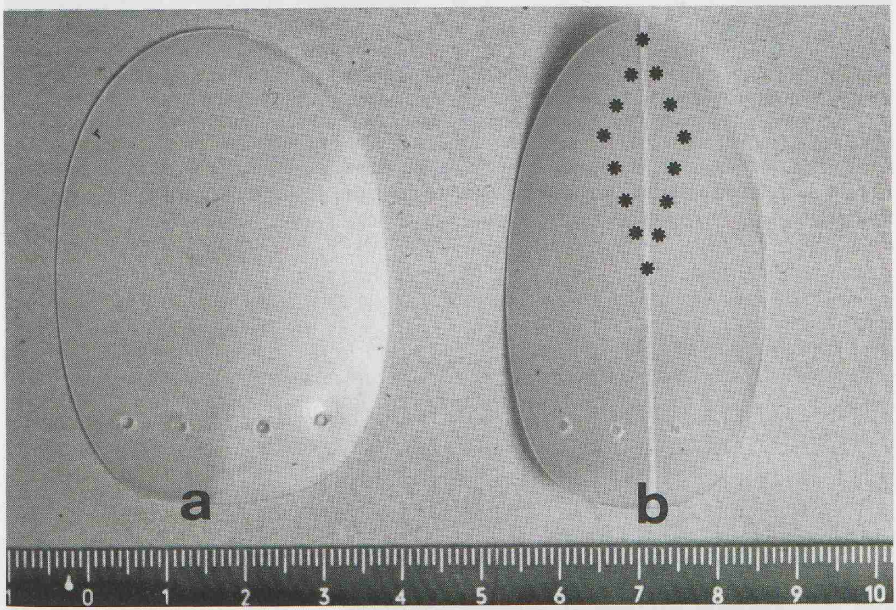

Figure 2. a: unfolded splint. b: folded splint. Marks indicating area to be cut for placement of supplementary finger cot packs after simultaneous surgery of the ethmoidal region.

The positioning of the splint is reconstructed with the help of a cranium, as intraoperative photographic documentation was unsatisfactory (Figure 3).
The splints were introduced into both nasal cavities, folded like a tent. In vivo, the edges should not reach the floor of the nasal cavity in order to avoid lesions of the mucosa. In the anterior part, the splints should be placed behind the valve area to avoid sensations of pressure or pain. Each splint has to be modified in size to suit

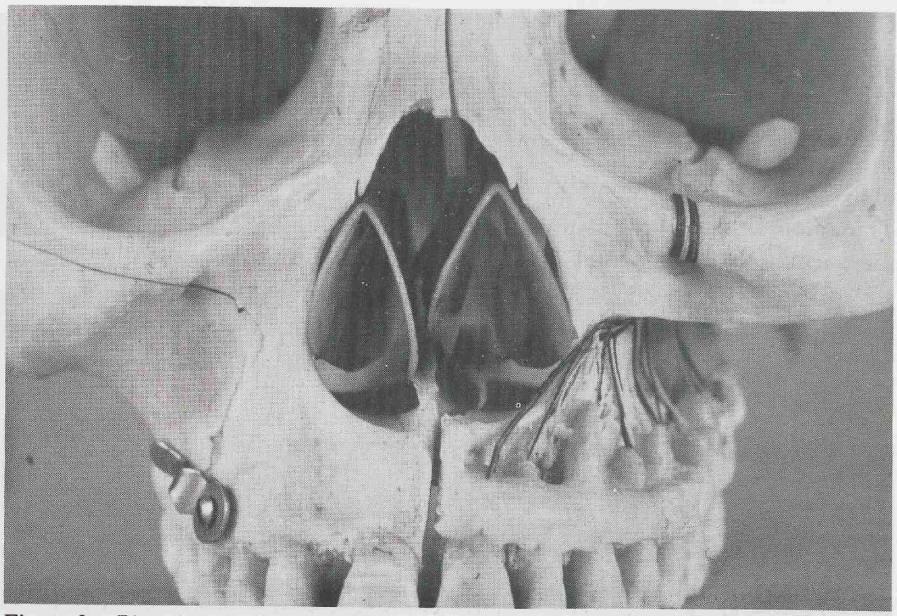

Figure 3. Placed splints in an anterior view. In vivo, the position of the inner branch after its fixation with the matress suture should be vertical, parallelly to the septum.

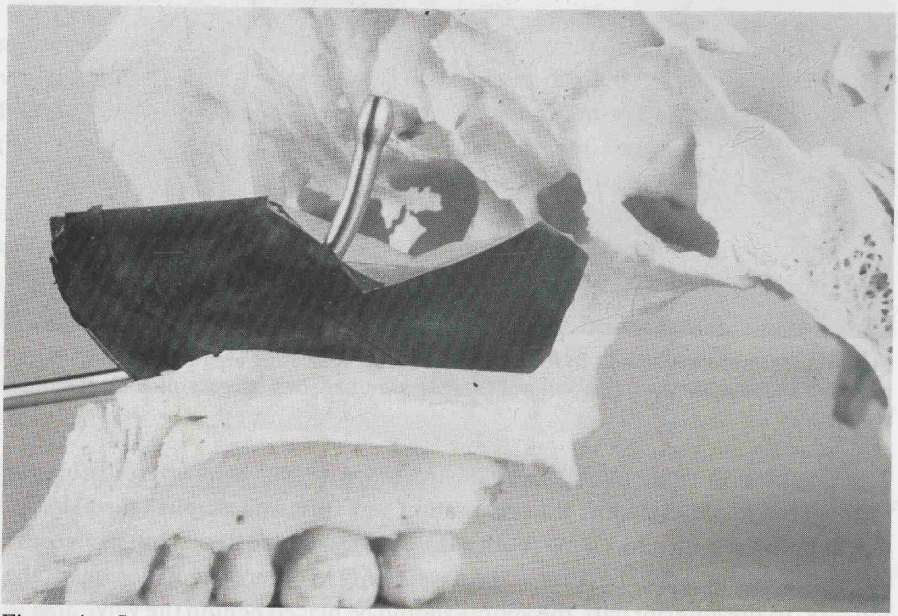

Figure 4. Suction procedure of the ethmoid region through a splint modified in its posterior part as shown in Figure 2b.

the individual anatomy of the nasal cavity. Once placed, they should be visible only with a speculum. No other nasal packing was used, except supplementary finger cot packs for the first postoperative day after endoscopic surgery on the ethmoidal region. The splints were fixed through their anterior holes with a 3-0 vicryl mattress suture and removed between 4 and 10 days after surgery.
In cases of endoscopic surgery of the ethmoid the splint was modified in its posterior part (Figure 2b), allowing the introduction and extraction of the finger cot packing and the postoperative care by suction (Figure 4).
Extraction followed after removal of possible scabs and application of a superficial anaesthetic spray to avoid possible discomfort.
To prevent obstruction due to scabs, a smoothening solution consisting mainly of liquid paraffin was applicated by the patients themselves 3-5 times a day. No antibiotics were given. Decongestant nose drops were prohibited.

RESULTS

During surgery, a good readaptation of the septal mucosa was observed, especially in cases of accidental perforations. The inner branch constitues a perfect support of the reimplanted pieces of cartilage. When extraction and reimplantation of septal cartilage was performed, the splints remained seven days or more.
After submucous surgery of the inferior turbinates, the outer branch of the splint prevented adhesions to the septal mucosa, as well as postoperative bleeding by exercising a light pressure.
Due to a too anterior placing of the splints, the first patients referred to pains limited to the anterior part of their nose, near the nostrils. Supplementary medication with 3×50 mg Diclofenac (Voltaren®) for two or three days stopped the pains. A more posterior fixation of the splint precluded pains in the other cases.
Patients were able to breath immediately after surgery. No complaints were noted. Daily suctions served to clean the nasal airway.
After extraction of the splints a thick layer of mucus was observed between the branches and the mucosa of the septum and of the lower turbinates.

DISCUSSION

The time of postoperative remainance of the "internal dressing" (Huizing et al., 1989) seems not only to be dependent on the type of nasal surgery, but also on the surgeon's criteria (Huizing et al., 1989). Lewin (1954) and Maran (1983) remove the packs at one week after septoplasty, Wallace (1962) removes the inserted rubber tubes and gauze plugs after 3-5 days, Wieland (1959) after four and Seiffert (1929) after 1-2 days. Loré (1962) removes the petroleum gauze one day after submucous resection of nasal septum, Bull and Mackay (1983) the following morning, when rhinoplasty without septal surgery was performed.

Depending on the packing, we remove finger cots after four days and iodoform gauze soaked in liquid paraffin with an antibiotic ointment after two days.
We would not agree with Williams (1983), leaving the nose unpacked or removing the dressing after a few hours, unless fibrin glue was used to fix the mucoperichondral flaps. But this was not our routine procedure.
Some nasal packs, especially the surgical sponge are not allowed to remain longer than four days as pointed out by the instructions to read before use. Tissue ingrowth has been described, as well as the subsequent bleeding when removing the tampons.
The use of small rubber tubes with iodoform packing placed around them was first described by Lewin (1954), later by Schultz (1957) and Wallace (1962). Variations of this method, today with synthetic sponges, as shown in Figure 1, maintain the nasal airway only temporarily before obstruction, especially if they are too long, as stated by Wallace (1962).
Using the splints described above, none of the complaints summarized in Table 1 were referred postoperatively. A good ventilation of the sinuses can be presumed if no sensation of pressure or fullness in the head was noticed (Table 2).

Table 2. Management and advantages of the splint.

one matress suture	no supplementary tampons
daily suctions	sinuses remain aired
removal after 4–10 days	no antibiotics necessary

Adhesions are usually located between the septum and the middle and lower turbinates, and are initially caused by surgical trauma (Cohen, 1951). Placing these splints exactly in this area might be used to prevent and treat cicactricial adhesions.
This kind of intranasal packing may be an alternative method to those already proposed. Surgery of severe deviations of the nasal septum, which necessitates the reimplantation of fragmented cartilage, septal haematomas, and/or prevention of adhesions after simultaneous surgery on the lower turbinates or the ethmoidal region may be considered indications for the use of the splint method.
As polypropylene seems to be a difficult material to handle with fine surgical instruments, we are looking for alternative materials which could be used the same way.

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