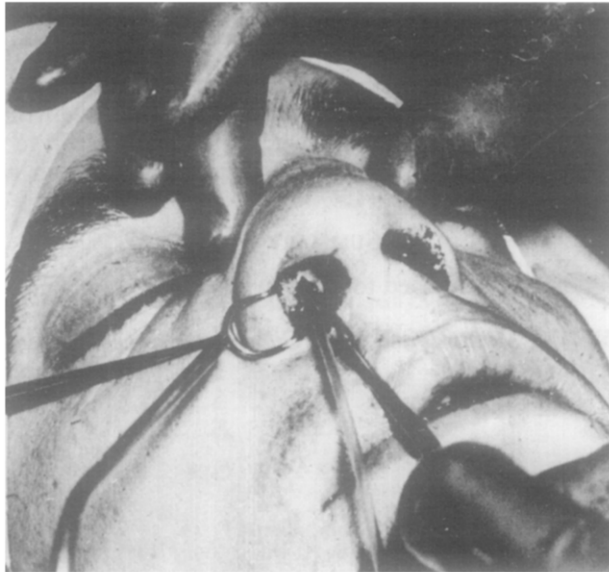


EVALUATION OF POLYETHYLENE TUBING TO REDUCE POST-RHINOPLASTY ŒDEMA AND ECCHYMOSES

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A SOURCE of concern to both the surgeon and the patient following rhinoplasty has been the degree and persistence of the post-operative periorbital œdema and ecchymoses. Numerous and varied attempts to control this unpleasant process have included compresses, positioning of the patient, and enzymes (Kazanjian and Converse, 1959;



Insertion and external palpation of tube at infraction site.

Calnan and Barr, 1960 ; Barney, 1967). None of these methods is entirely successful, and this has led to a continued search for other solutions. We have discontinued the use of " routine " oral enzymes in the post-operative rhinoplasty patient since there appeared to be little difference between those in whom it was used and those in whom it was omitted.

If the discoloration and swelling are related to an accumulation of blood or œdema at the site of nasal infraction, then a method permitting better drainage might either eliminate or reduce this problem. To evaluate this, we used a small-bore polyethylene tube inserted through the pyriform incision to the level of the nasal infraction and compared the amount of resultant post-operative œdema and ecchymoses with that of the control or " untubed " side.

Method.—A group of 20 consecutive patients undergoing either rhinoplasty alone or combined with submucous resection were studied. All patients were Caucasian with seven males and thirteen females, and an average age of 23 years. Patients with a known history of easy bruisability or previous nasal surgery were excluded. All operations were

performed by two plastic surgeons using a similar technique of alar cartilage revision infracture under 1 per cent. lidocaine with 1 : 100,000 epinephrine infiltration. At the conclusion of the operation, a sterile No. 280 silicone-lined polyethylene tube was inserted through the pyriform incision of one nostril and palpated at the site of nasal infracture externally (Fig.). The tube was held in place with a 4-0 black silk suture through the columella. Care was taken to avoid clogging the tube with the Vaseline gauze used for bilateral nasal packing. The tubing was cut so as to permit about one-quarter inch to protrude beyond the end of the columella. In most cases, before or during the application of the adhesive dressing and aluminium nasal splint, a drop or two of dark blood came from the end of the tubing.

TABLE I
Tissue Reaction Grading

1+ Minimal (+)	Upper lid touches corneal rim Slight discoloration	3+ Marked (+++)	Lid covers pupil Marked discoloration
2+ Moderate (++)	Upper lid reaches pupil Moderate discoloration	4+ Maximal (++++)	Lids approximated Complete periorbital (ecchymoses)

Post-operative care consisted of continuous iced saline compresses to both eyes, 45 degree elevation of the head of the bed, diet as tolerated and ambulation *ad lib*. The only medications were Darvon R compound and night-time sedation. No enzymes were used.

Following the findings of Kahn (1965) and of Lange (1964) that the maximal swelling and discoloration appeared between 36 and 48 hours post-operatively, we chose this period for our evaluation. The degree of swelling and discoloration was gauged by a method similar to that outlined by Kahn but with the following modification: the final grading was a composite one, taking into account both the swelling and discoloration (Table I). This was referred to as the "overall tissue reaction", and was graded according to the highest grade of either of its two components. All grading was done at the bedside although re-checking of the grading was done by reviewing standardised 35-mm. colour photographs. All patients were graded by the same investigator.

TABLE II
Degree of Tissue Reaction at 36-48 Hours Post-operation

Reaction <i>more</i> on "tubed" side	9
Reaction <i>less</i> on "tubed" side	7
Reaction <i>same</i> on both sides	4
<i>No advantage</i> from tube in 13 of 20 cases	

Results.—Of 20 cases studies, seven demonstrated less swelling or discoloration on the side where the tube was inserted *versus* the control (Table II). In six of these cases, however, this reduction in tissue reaction was only of a minor degree.

In nine other cases the control side had the less tissue reaction. In the remaining four cases, no difference was noted between the two sides.

Regardless of the variation in reaction between the two sides, in most cases by 72 hours there was equilibration.

CONCLUSIONS

The use of the polyethylene tube did not appear to reduce the amount of post-operative tissue reaction despite the fact that blood did seem to be given egress from the nasal infraction site. The reason for this is not readily apparent. It is generally believed that this type of tubing material is minimally reactive in the tissues when used as a drain. The mere presence of the tube, however, may act as a mechanical irritant and thereby prevent the rapid reabsorption of œdema and localised hæmatoma in the area. A third possibility is that the tubing, despite its small size, prevents the coaptation of the soft tissues to the periosteum and thereby maintains a dead space. That such may be the case is supported in part by our findings that in most cases by 72 hours, following tube removal, both sides looked alike.

SUMMARY

Twenty cases of æsthetic rhinoplasty were studied using a small-bore polyethylene tube at the site of nasal infraction in an attempt to reduce post-operative tissue reaction. One side of each patient acted as a control. No advantage appeared to be gained from the use of the tube in reducing the amount of reaction. Following removal of the tubes, the amount of tissue reaction on each side became the same in most cases.

REFERENCES

- BARNEY, B. B. (1967). *Plastic reconstr. Surg.* **40**, 263.
CALNAN, J. S. and BARR, A. (1960). *Br. med. J.* **2**, 261.
KAHN, S. (1965). *Plastic reconstr. Surg.* **35**, 428.
KAZANJIAN, V. H. and CONVERSE, J. M. (1959). "The Surgical Treatment of Facial Injuries", 2nd ed. Baltimore: Williams & Wilkins.
LANGE, W. A. (1964). *Curr. Probl. Surg.* June, p. 33.