

Improvement of the nasal airflow by the nasal dilator Nozovent®

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SUMMARY

The lateral wall of the nostril is considered as the functional unit in the regulation of the nasal resistance causing more than half of the total resistance. In 16 test-subjects both nostrils were dilated with a plastic nasal device, Nozovent®, and the airflow through the nose was measured with and without the device. In each object the mean value of ten inspirations at 150 Pa was calculated. Before the application the mean value of the subjects was 0.68 l/sec and with the device 0.84 l/sec. The improvement of airflow was comparable with that of treatment with nose-drops. The device ought to be helpful in patients with or without collapsing ala nasi during the night to increase nasal airflow when sleeping.

INTRODUCTION

It has been known for many years that the nasal valve area is the most narrow passage in the upper respiratory tract (Uddströmer, 1940; van Dishoeck, 1942; Bachman, 1983). In patients with ala nasi not capable of resisting the negative airpressure during inspiration the airflow might decrease severely. Different surgical methods have been presented to make the ala nasi more resistant to inspiration. Hinderer (1970) used advancing sutures, Georgi (1982) stabilized the ala with septal or ear cartilage and Rettinger and Masing (1981) rotated the lateral crura. Through the years different nasal devices have been proposed to mechanically stabilize the weak nasal ala. Nielsen (1975) has presented a technique in which casts of the vestibulum nasi are taken from which a plastic hollow plug is prepared, one for each nostril.

Recently Lancer (1986) has been reported a case in which a Francis ala nasi prop, described in 1905 and made of steel wire has been used with good result.

In this study a plastic nasal device, Nozovent®, was used to dilate both nostrils (Figure 1).

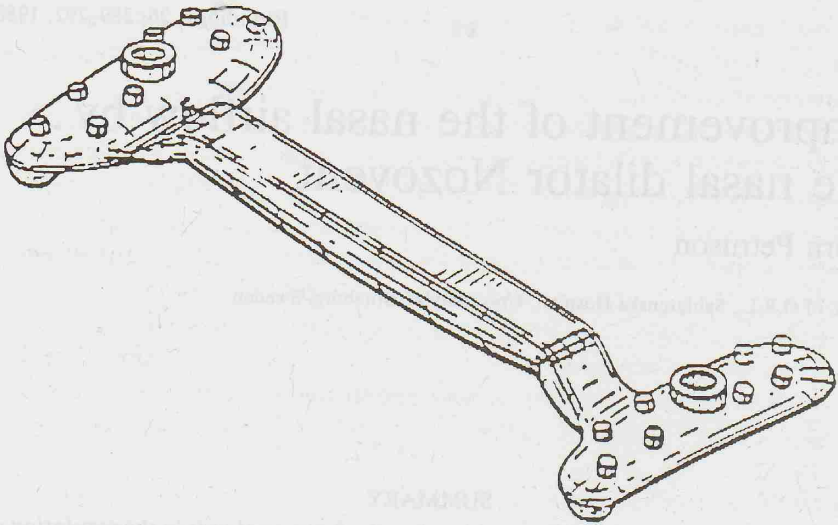


Figure 1. The plastic nasal device Nozovent®.

TEST-SUBJECTS AND METHODS

Sixteen subjects working at the ENT-Department of the hospital were chosen for the test. None of them had any difficulties in breathing through the nose, none had a common cold or any nasal abnormalities. They were between 25 and 60 years old. The nasal airflow was tested with active posterior nasal rhinomanometry in a sitting position before and after inserting the nasal dilator. A mean value of 10 inspirations measuring the airflow (l/sec) at a pressure of 150 Pa was calculated (Petruson, 1981).

RESULTS

All the tested subjects noted that their breathing through the nose was easier when the nasal dilator was used. Without Nozovent® the mean value of the airflow through the nose was 0.68 l/sec and with Nozovent® it was 0.84 l/sec. The mean value of the difference was 0.16 l/sec with a range from 0.09–0.32 l/sec (Figure 2).

DISCUSSION

The structure of the vestibulum and the anterior section of the cavum nasi cause more than half of the total resistance in nasal respiration in the healthy individual (Bachman and Legler, 1972). The whole of the mobile lateral wall should be considered as the functional unit in the regulation of the nasal resistance.

When the nasal device Nozovent® was inserted in the anterior part of the nose in the test-subject, both lateral walls of the nostrils were dilated and all subjects experienced that it was easier to breath through the nose.

When patients with breathing difficulties through the nose were measured before surgery the mean value of the inspiration was 0.48 l/sec and increased to 0.71 l/sec after surgery, an improvement with 48% (Lenz et al., 1985). In the healthy subjects treated over six weeks with xylometazoline nose-drops the mean value increased from 0.64 l/sec to 0.82 l/sec, an improvement with 28% (Petruson, 1981). In this study the test-subjects had a mean value of 0.68 l/sec before the application of the nasal device and increased to 0.84 l/sec when Nozovent® was inserted which means an improvement of 24%. When the mean value of inspiration after surgery and treatment with nose-drops are compared with the use of Nozovent® it is found that the dilation of the lateral nostril wall gives the best airflow through the nose.

Nozovent® is a useful nasal device for improving nasal airflow and ought to be helpful in patients with or without collapsing ala nasi during the night.

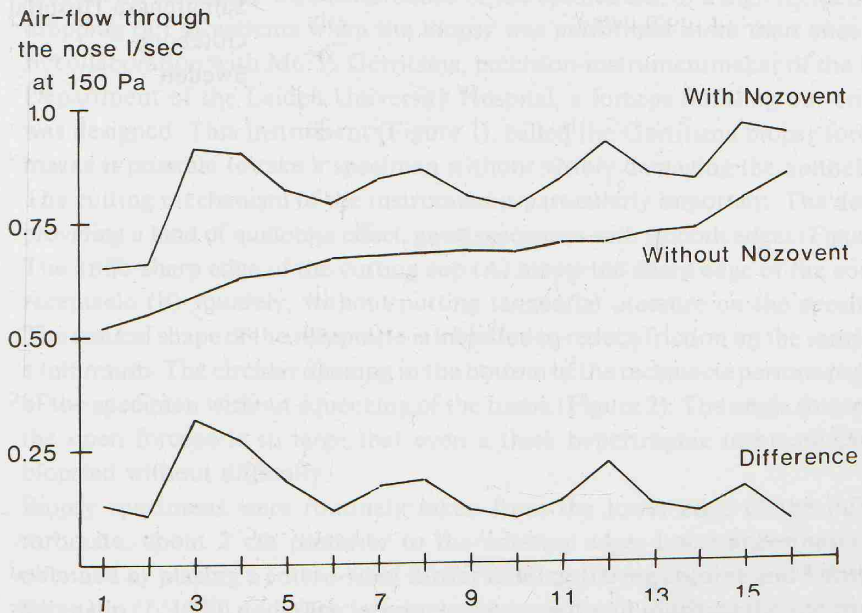


Figure 2. Improvement of nasal airflow with Nozovent® in 16 examined subjects.

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