*Int. J. Oral Maxillofac. Surg. 2015; 44: 1240–1245*
http://dx.doi.org/10.1016/j.ijom.2015.05.007, available online at http://www.sciencedirect.com

International Journal of Oral & Maxillofacial Surgery

Clinical Paper
Cosmetic Surgery

# External Nasal Valve Efficacy Index: a simple test to evaluate the external nasal valve

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*B. Bohluli, P. Varedi, R. Kahali, S.C. Bagheri: External Nasal Valve Efficacy Index: a simple test to evaluate the external nasal valve. Int. J. Oral Maxillofac. Surg. 2015; 44: 1240–1245.* 

*Abstract.* Many methods and techniques have been proposed for the assessment of the nasal valve, most requiring special equipment. Furthermore the main focus has been on the internal valve, while the role of the external nasal valve (ENV) has usually been underestimated. An index to assess ENV is presented herein. Two photographs of the basal view of the nose are taken, one in the resting position and the other after deep inspiration. These two life-size views are used to calculate the External Nasal Valve Efficacy Index (ENVE Index). Using simple software, the surface area of the nostril in the resting view (*A*) and breathing view (*B*) is measured. The ENVE Index is calculated by dividing the deep inspiration surface area by the resting surface area (*B*/*A*). The clinical indications for the use of the ENVE Index include rhinoplasty treatment planning, postoperative evaluation to assess the effects of surgery with regard to improvement or deterioration of the airway, and orthognathic surgery and the planning of appropriate postoperative care (such as elastic or intermaxillary fixation) according to the airway patency. The ENVE Index is a relatively simple, reproducible, and documentable test. This index can help the surgeon to make better decisions during treatment planning and postoperative care.

Key words: rhinoplasty; internal nasal valve; external nasal valve; index.

Accepted for publication 5 May 2015
Available online 26 May 2015

The external nasal valve is a determinant part of the nasal airway. It is estimated that this part of the nose is responsible for 75% of nasal airway resistance.[1]

A detailed examination of the nasal valves is a crucial part of the airway assessment prior to any procedure that is planned in the region of the nose.[1–3,6,8,9] Many methods and techniques have been proposed for the assessment of the nasal valve, including rhinomanometry,[7] acoustic rhinometry,[5] and computed tomography (CT).[4] Most of these methods require special equipment and skills, and nearly all of them are focused on the internal nasal valve. The role of the external valve is usually underestimated.

A simple index to assess the external nasal valve is presented herein. This index is based on simple photography, which is obtained routinely as part of the preoperative documentation. This test is easily repeated and documented at each stage of treatment and the authors recommend it for all rhinoplasty and orthognathic cases.

## Materials and methods

### External Nasal Valve Efficacy Index (ENVE Index)

This study was approved by the research and ethics committee of the study university. The guidelines of the Declaration of Helsinki were followed in this study.

 

The index is based on standard basal view photographs of the patient. The patient's head is tilted backwards until the two pupils of the eyes and the nasal tip are seen in a single line. This provides an exact reproducible basal view of the nose. The first photograph is taken in the resting position (Fig. 1A). The patient is then asked to take in a deep breath and the second photograph is taken in the same position (Fig. 1B). These two life-size digital views are used to calculate the ENVE Index. Using simple software, the surface area of the nostril in the resting view (*A*) and breathing view (*B*) is measured. The ENVE Index is calculated by dividing the deep inspiration surface area by the resting surface area (*B*/*A*).

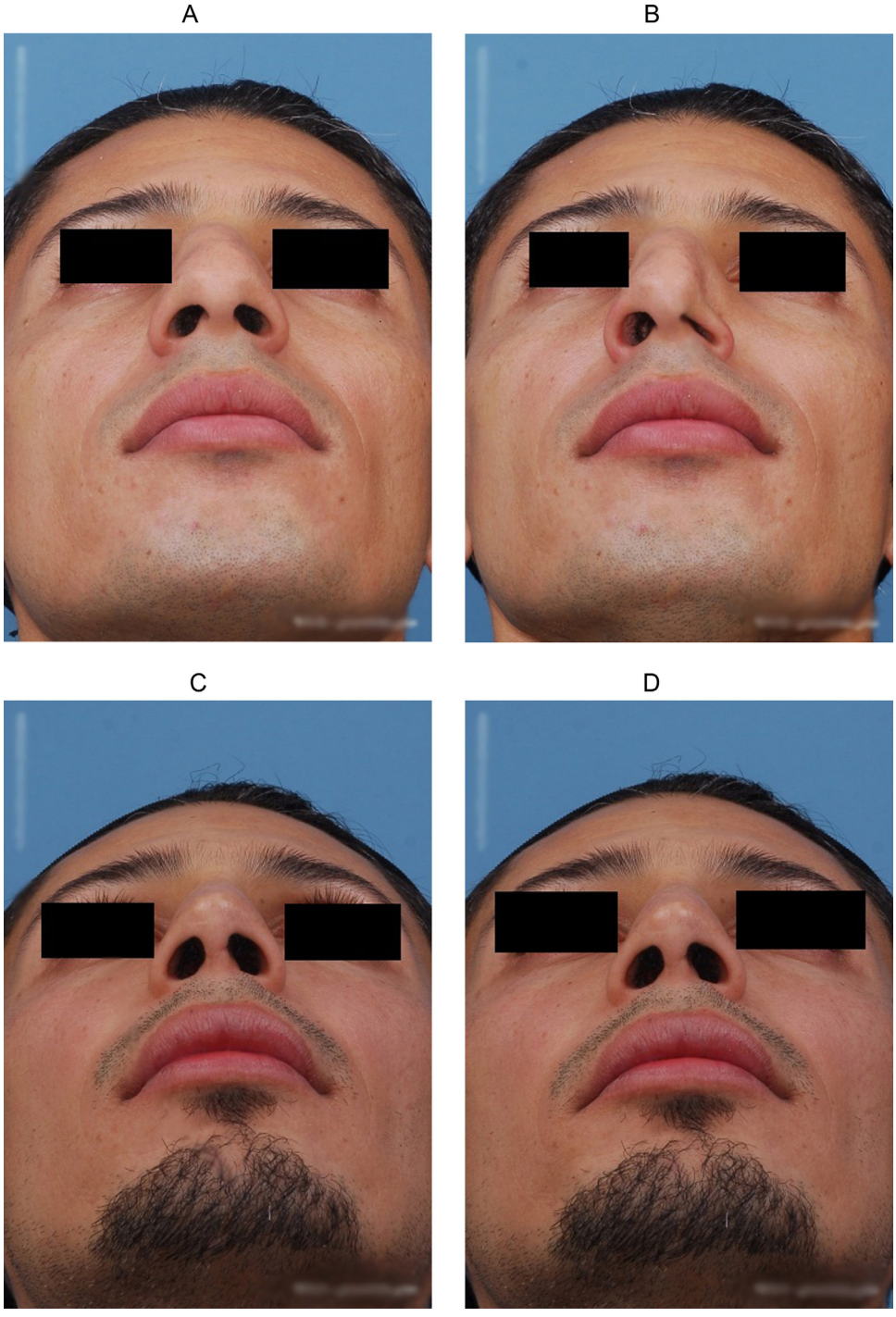


*Fig. 1.* (A) Preoperative basal view of the nose in the rest position in a 25-year-old male candidate for primary open rhinoplasty. (B) Preoperative basal view of the nose in the deep inspiration position in the same patient; a weak ENVE Index was documented for the left external nasal valve. (C) Postoperative basal view of the nose in the rest position. (D) Postoperative basal view of the nose in the deep inspiration position after reinforcement of the weak external nasal valve; a considerable improvement in the external nasal airway was obtained, while aesthetic demands were simultaneously met.