

THE USE OF ACOUSTIC RHINOMETRY IN PREDICTING OUTCOMES AFTER SINONASAL AND MAXILLO-FACIAL FRACTURES

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ПРИЛОЖЕНИЕ НА АКУСТИЧНАТА РИНОМЕТРИЯ ПРИ АМБУЛАТОРНО ПРОСЛЕДЕНИ ПАЦИЕНТИ СЛЕД СИНОНАЗАЛНИ И МАКСИЛАРНИ ФРАКТУРИ

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РЕЗЮМЕ

Представен е анализ на съвместно проследени и изследвани пациенти чрез акустична ренометрия и отчетен капацитета и ефективността на носното дишане и обема на аерация.

Ключови думи: акустична ринометрия, синоназални фрактури, максиларни фрактури.

Key words: acoustic rhinometry, sinonasal fracture, maxilar fracture

INTRODUCTION:

The recent rhinologic literature has established acoustic rhinometry (AR) as a valid instrument to objectively document nasal patency. The acoustic rhinometry introduced by Hilberg⁷ in 1989 abolishes a lot of the important shortages of the other techniques for evaluation of the nasal airways and is already approved as a significant investigation technique in rhinology. This method is fast requires minimal cooperation and has no side effects.

It is very convenient for investigation of the nasal cavity in different diagnosis⁹.

The method describes clearly nasal geometry through acoustic reflections¹. AR is especially useful in the investigation of the upper and middle third of nasal cavity.

The purpose of this study is to evaluate the utility of AR in predicting outcomes after sinonasal fractures.

MATERIAL AND METHODS:

Key elements in diagnosing sinonasal fractures include the history, physical examination and ancillary studies. During the evaluation, information may be gained in a disjunctive fashion, but key elements in each of these areas help a physician determine the presence and extend of the nasal injury.

In the Department of Otorhinolaryngology of the Medical University Plovdiv, Bulgaria we have acoustic rhinometer SRE2100 of the Dutch Company Inter-acoustics. If the breathing is quiet all age groups can be measured within seconds. The acoustic rhinometric curves can be interpreted only in accordance with the rhinoscopic findings of each separate patient. Graphically the nasal pathology can be described in the following manner (Fig.1, 2).

Fig.1. AR curves of a 17 year child.

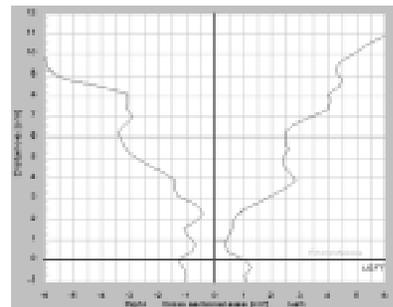
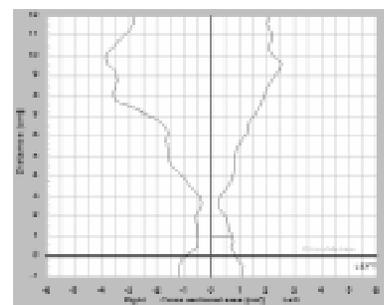
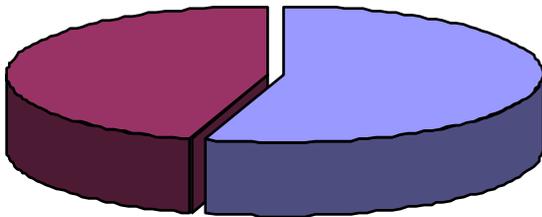


Fig.2. AR curves of a 38 year woman.



We investigated 31 (17 female and 14 male) patients underwent AR and completed a sinonasal survey one day before and 2 months after their incident (Fig. 3).

Fig.3. Sex



RESULTS:

The row scores improved from mean of 7.91 (± 3.72) before to 3.34 (± 2.31) after incident ($p < 0.05$). The I-notch revealed no significant change. The mean bilateral predecongestion C-notch increased from 1.255cm² to 1.453cm² ($p < 0.05$). We observed our results before and after surgery (Fig.4, 5)

Fig.4. AR curves before surgery

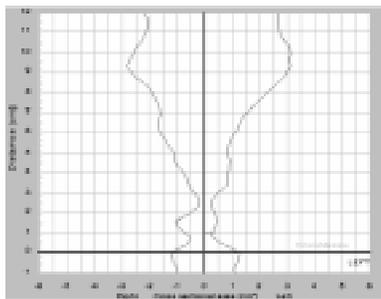
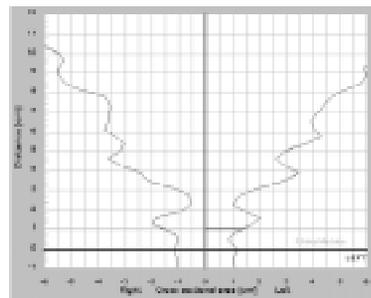


Fig. 5. AR curves after surgery



DISCUSSION:

The physical examination together with the history should provide an accurate complex². Certainly, injuries with tissue loss have a significant potential for morbidity related to the injury³. For evaluation, it is important to identify whether the tissue loss is skin, skin and supporting structures, or a full-thickness defect including mucosa⁴. A second element that characterized complex nasal injuries is life-threatening injuries or injuries that preclude acute reduction⁵. Associated fractures of the facial skeleton increase the complexity and potential morbidity of nasal injuries⁶. Zygomatic, naso-ethmoid and Le Fort fractures increase the potential for persistent external deformity and increase the time involved in reducing the bony fractures^{8,10}. In these cases acoustic rhinometry is objective and useful method for understanding nasal physiology in predicting outcomes after sinonasal fractures¹.

We conclude that the use of acoustic rhinometry in the otorhinolaryngologic and maxillo-facial surgery practice eases up the correct diagnostic process and facilitates treatment.

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