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Measuring the size of nasal septal perforations. A simple radiological method

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SUMMARY

A simple method of preoperative documentation of nasal septal defects is described. The borders of the defect and the surrounding regions of the nasal septum are marked with an X-ray contrast medium and a lateral radiogram is performed. The perforation is outlined and the image allows evaluation of the size, shape and location of the septal defect. Some clinical examples are presented.

INTRODUCTION

Numerous reports deal with the surgical or prosthetic closure of septal perforations. Clinical results are correlated to the size of the defects but there are no descriptions concerning the way of measuring the diameters. Due to the oblique view on to the perforation, we found it very difficult to evaluate the exact length of the horizontal and the vertical diameter. The results (length in millimeters) depend on the individual investigator and there is a tendency to overestimate the dimensions. Therefore we were looking for a simple method to determine and document the size, shape and position of septal perforations.

MATERIAL AND METHODS

After decongestion and anaesthesia of the nasal mucosa using a mixture of Pantocaine 1 % and Xylometazolin (Otriven ® 0,1 %) the borders of the perforation and the adjacent septal areas were outlined by application of a viscous radiopaque medium (Micropaque ® H.D. oral=bariumsulfate) using cotton wool applicators. Redundant material was removed with a suction tip. A lateral radiogram was taken by 60 kV with the center near to the perforation. For comparison a wire of defined length (30 mm) was fixed to the dorsal nasal skin. The method was used in 11 patients with perforations of different sizes (3 mm to 25 mm). This way, the perforations could be classified as small, medium or large (Masing et al., 1980)

RESULTS

The radiograms offered an excellent image and gave a possibility not only to

determine the size and shape of the septal defect but also the position. It proved to be a very reliable method, especially, when the perforation was located in the caudal parts of the septum. Problems were encountered when the perforation was superponed by the facial bones in the lateral view. In these cases the contrast medium markings had to be traced very carefully. Sometimes it was necessary to repeat the X-ray investigation using higher voltage. After having correlated the visible and true length of the standard wire on the nasal dorsum measurement of the septal perforation could be executed.

COMMENTS

In the current literature on nasal septal perforations, no one ever described exactly, how the reported diameters of the defects were determined. This is especially true for one of our own papers and the literature mentioned in this publication (Rettinger et al., 1986). There is only one report with the use of a dye and a sheet of paper for measuring (Facer and Kern, 1979). The introduction of the paper into the nasal cavity is not comfortable for the patient and mucous secretion will cause a spread of the dye, therefore the delineation may be difficult. Using modern imaging techniques like computed tomography or even magnetic resonance tomography are too expensive for this purpose.

The use of plain X-ray (lateral view) after marking the septal defect reveals several advantages. It will demonstrate a) the size, b) the shape and c) the location of septal perforations and it allows direct measurement of the diameters.

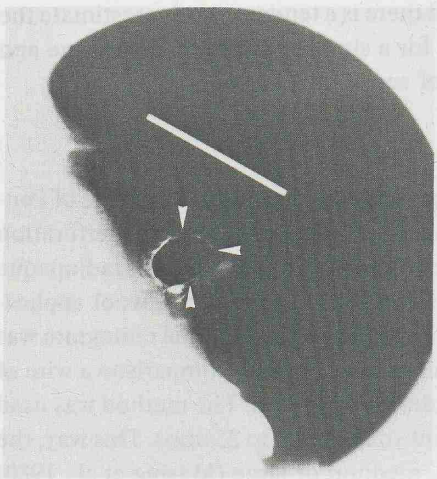

Figure 1. Medium sized elliptical septal perforation, 12 x 9 mm, located in the caudal parts of the cartilaginous septum (right lateral view).

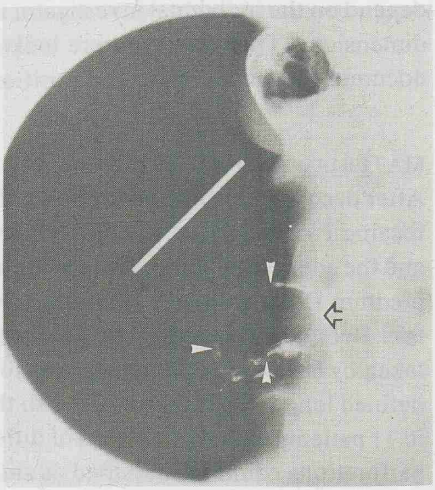

Figure 2. Large septal perforation, 22 x 13mm. Posterior part of the perforation partially hidden by maxillary bone (left lateral view).

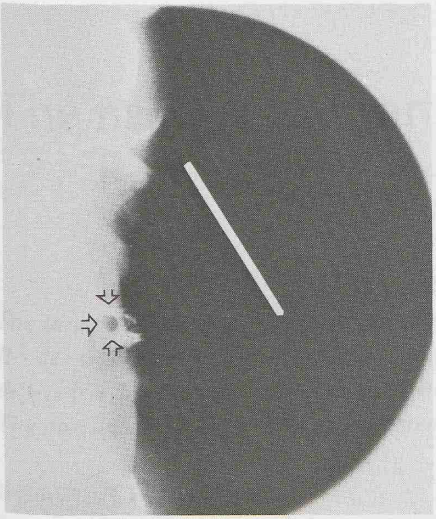

Figure 3. Small septal perforation, 4 x 3 mm, located near the junction of cartilage, vomer and perpendicular plate (right lateral view).

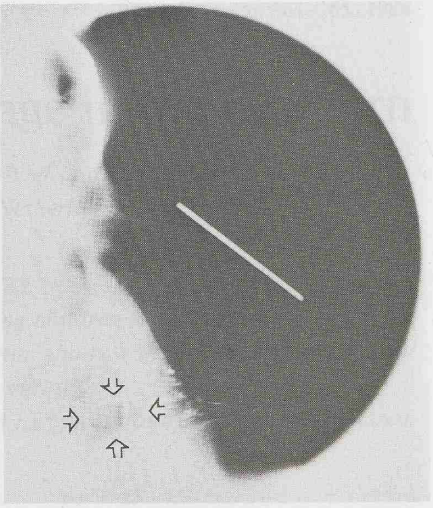

Figure 4. Medium sized perforation, 11 x 4 mm. Clear delineation in spite of superposition of facial bones (right lateral view).

Problems may occur, when the perforation is superponed by facial bones on the lateral view. Those defects of the middle and posterior parts of the septum rarely cause symptoms and therefore treatment is not frequently demanded. The technique is more relevant to evaluate the caudal perforations, which are easily accessible by the diagnostic procedure described. If necessary, a medial sagittal conventional tomogram can be added, when the perforation is hidden by facial bones. The method may also serve in the preparation of an individually dimensioned prosthetic septal button. Our simple technique can be the basis for comparing results, when surgical closure is achieved. The surgical problems increase and the success rates decrease with increasing sizes of septal defects. The method allows an evaluation of the correlation between the defect, success of the operation and the chosen surgical technique.

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