

## Anterior septal deviation and contralateral alar collapse

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**Key-words.** Septal deviation; alar collapse; septoplasty

**Abstract.** *Anterior septal deviation and contralateral alar collapse.* **Introduction:** Septal deviation is often found in conjunction with other pathological conditions that adversely affect nasal patency. Anterior septal deviation, together with contralateral alar collapse, is a relatively rare type of anatomical and functional incompetence. In our experience, it can often be resolved with septoplasty, without the necessity of surgery involving the external valve. The aim of this paper was to verify this hypothesis prospectively.

**Patients and methods:** Twelve patients with anterior septal deviation and simultaneous alar collapse on the opposite side were prospectively enrolled in the study. Subjective assessment of nasal patency was made on post-operative day 1, and again 6 months after surgery, using a subjective evaluation of nasal breathing. The width of the nostril (alar-columellar distance) on the side with the alar collapse was measured during inspiration pre-operatively, 1 day after surgery and again 6 months after surgery.

**Results:** Immediately after surgery, all patients reported improved or excellent nasal breathing on the side of the original septal deviation. On the collapsed side, one patient reported no change in condition. With the exception of one patient, all measurements showed some degree of improvement in the extension of the alar-columellar distance. The average benefit 6 months after surgery was an improvement of 4.54 mm.

**Conclusion:** In our group of patients (anterior septal deviation and simultaneous contralateral alar collapse and no obvious structural changes of the alar cartilage) we found septoplasty to be entirely suitable and we recommend it as the treatment of choice in such cases.

### Introduction

Septal deviation is a very common anatomical variation in adulthood. Clear criteria regarding the clinical relevance of a deviated septum have yet to be established.<sup>1</sup> Moreover, this anatomical abnormality is often found along with other pathological conditions that adversely affect nasal patency. Specifically, these comorbidities include incompetence of internal or external nasal valves (alar collapse) and inferior nasal turbinate hypertrophy. Septal surgery should therefore be planned for all presenting pathologies, and surgical procedures should be individually tailored to each patient.<sup>2</sup>

On the other hand, nasal valve surgery is a relatively risky procedure, and scarring, loss of support

and thickening can lead to irreversible damage to this delicate structure.

Cranial deviation of the nasal septum in the valve area can sometimes be confused with valve dysfunction. Proper recognition of this type of septal deviation and its correction is often quite sufficient in functional terms, and patients can therefore be spared surgery of the nasal valve. In some patients, however, we see the opposite phenomenon, i.e. anterior septal deviation together with contralateral alar collapse accompanied by bilateral deterioration in nasal breathing.

In our experience, this relatively rare type of anatomical and functional incompetence can often be resolved with septoplasty and without resorting to surgery

involving the external valve. The aim of this paper was to verify this hypothesis prospectively.

### Patients and methods

Twelve patients with anterior septal deviation – in areas 1 and 2 based on Cottle<sup>3</sup> – and simultaneous alar collapse on the opposite side and no obvious structural changes in the alar cartilage were prospectively enrolled in the study. All patients reported pre-operative deterioration of nasal patency on both sides and were operated at the ENT Clinic of the University Teaching Hospital between 2006 and 2009. Alar collapse was defined as retraction of the nasal wing during inspiration. Septoplasty (maxilla-premaxilla

approach) was the only procedure performed on all patients.

Patients with previous nasal trauma or nasal surgery, inferior turbinate hypertrophy or internal valve dysfunction were excluded from the study. Cleft lip patients<sup>4</sup> and patients with large concha bullosa associated with septal deviation<sup>5</sup> were also excluded from the study.

The study was approved by the local ethics committee and all patients signed informed consent.

*Subjective evaluation*

A subjective assessment of nasal patency was made on post-operative day 1 after the removal of nasal packing, and again 6 months after surgery, using a subjective evaluation of nasal breathing (excellent; improvement; no change in condition; deterioration). Results were obtained separately for the side with septal deviation and the side with alar collapse.

*Objective evaluation*

The width of the nostril (alar-columellar distance) on the side

with alar collapse during inspiration was measured pre-operatively (T0), 1 day after surgery (T1), and again 6 months after surgery (T2).

**Results**

Originally, 12 patients were included in the study; one had to be excluded due to a lack of cooperation. Evaluations therefore took place of 11 patients (8 men and 3 women; average age 28.3 years, range 19-35 years).

*Subjective evaluation*

Before surgery, all patients reported deterioration of bilateral nasal patency. Immediately after surgery, at time T1, all patients reported improved or excellent nasal breathing on the side of the original septal deviation (Figure 1a).

On the collapsed side, one patient reported no change in condition (Figure 1b). This finding also matched the results of the objective measurement.

Similar results were also achieved 6 months after surgery with a slight redistribution in the

rating from excellent to improvement (Figure 2a, b).

None of the patients reported any deterioration in nasal patency after surgery.

*Objective measurement*

With the exception of one patient (No. 9) all measurements at T1 and T2 indicated some degree of improvement in the extension of the alar-columellar distance during inspiration (Table 1). The average benefit 6 months after surgery was an improvement of 4.54 mm. Although benefits as expressed by increasing alar-columellar distance varied, the vast majority of patients stated improved nasal breathing on both sides.

**Discussion**

Deviation of the nasal septum may be associated with other abnormalities that can contribute to impaired nasal patency. When planning surgical treatment, it is necessary to emphasise careful pre-operative evaluation of abnormalities and the contribution of

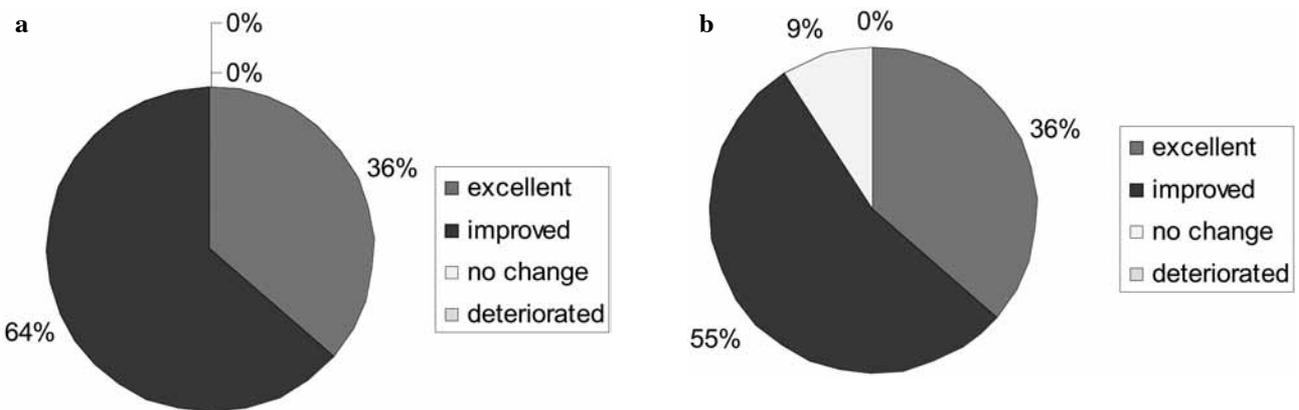


Figure 1

Subjective assessment of nasal breathing in T1. On the side of the deviated nasal septum, all patients reported improved or excellent nasal patency (Figure 1a). On the side of alar collapse, one patient reported no change in nasal breathing compared to before the surgery (Figure 1b).

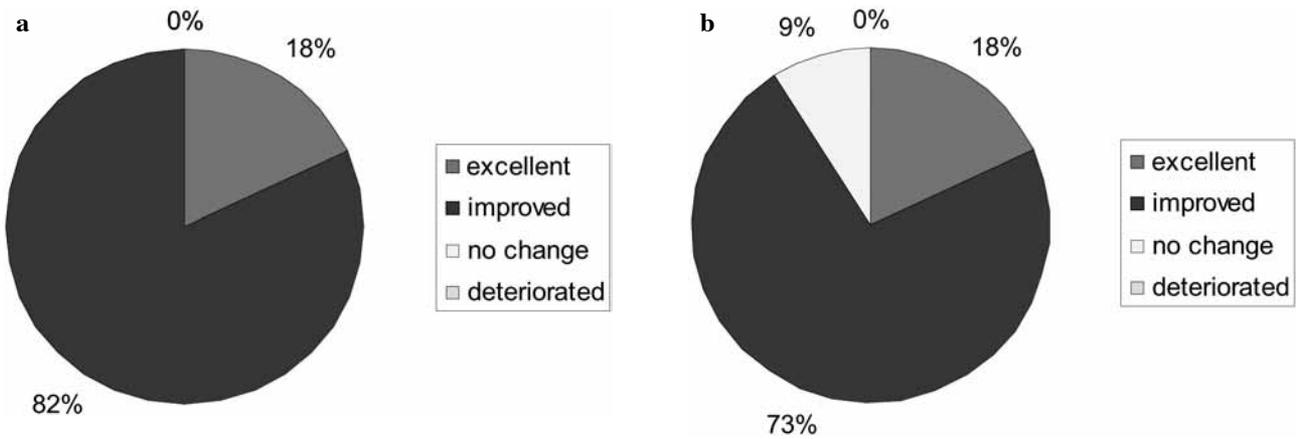


Figure 2

Subjective assessment of nasal breathing 6 months after the surgery in T2. On the side of the deviated septum, all patients reported good nasal patency with slight redistribution from "excellent" to "improved" (Figure 2a). On the side of alar collapse one patient still suffered from poor nasal breathing (Figure 2b).

Table 1

Alar-columellar distance in T0, T1, T2 (in millimetres). With the exception of one patient (No. 9) all measurements at T1 and T2 showed some degree of improvement in the extension of the alar-columellar distance during inspiration

Patient No.	T0	T1	T2
1	2	8	6
2	4	7	7
3	1	5	5
4	2	9	9
5	0	8	7
6	1	9	8
7	2	7	6
8	2	4	4
9	3	3	3
10	0	7	6
11	1	7	7
Mean	1.63	6.72	6.18
SD	1.20	1.95	1.72

each to the nasal obstruction. Surgical planning needs to be tailored to each patient, with the goal of treating as many of the abnormalities as possible during a single operative procedure. The surgeon needs to be aware of the fact that the nose, as an organ, is

functionally and cosmetically very vulnerable and surgery should be confined to those structures for which it is necessary. This is particularly true of the valve area.

Alar collapse is a cosmetic-functional defect that is often associated with direct morphological damage to the alar cartilage, commonly resulting from over-resection during rhinoplasty<sup>6</sup> or after injury. This abnormality can also be seen as a consequence of the malposition (malrotation) of the lateral crus of the alar cartilage or as a result of the aging process.<sup>7</sup>

This paper describes a relatively rare combination of anterior septal deviation and contralateral alar collapse. In our review of the literature we failed to find any other studies dealing with this narrowly defined group of patients.

Although Ural et al. found no correlation between collapse of the nasal valve and anterior septal deviation,<sup>8</sup> we believe that deviation of the nasal septum anteriorly, especially the cranial part, can, in some patients, functionally affect the whole region of the nasal tip and alar complex. If the lateral crus of the alar cartilage does not

run parallel to the alar rim, a malrotation of this kind may result in dysfunction in the external valve during inspiration. An appropriate correction of the nasal septum could, in some patients, therefore also result in the correction of other morphological-functional problems.

From this perspective, the work of Constantian *et al.*<sup>9</sup> is also interesting; they reported that, of 110 patients with lateralised nasal obstruction, only 46 percent had a septal deviation towards the obstructed side. By contrast, the correction of valvular incompetence is the most frequent procedure performed during revision rhinoplasty for persistent nasal obstruction.<sup>9,10</sup> Becker *et al.*<sup>10</sup> reported performing nasal valve surgery on more than half of the patients needing revision surgery for unrelieved nasal obstruction following primary septoplasty.

This study confirms that some of these patients do not need surgery of the external nasal valve. This does not apply in cases where there are obvious morphological defects in the alar cartilage. In such cases, surgical correction is

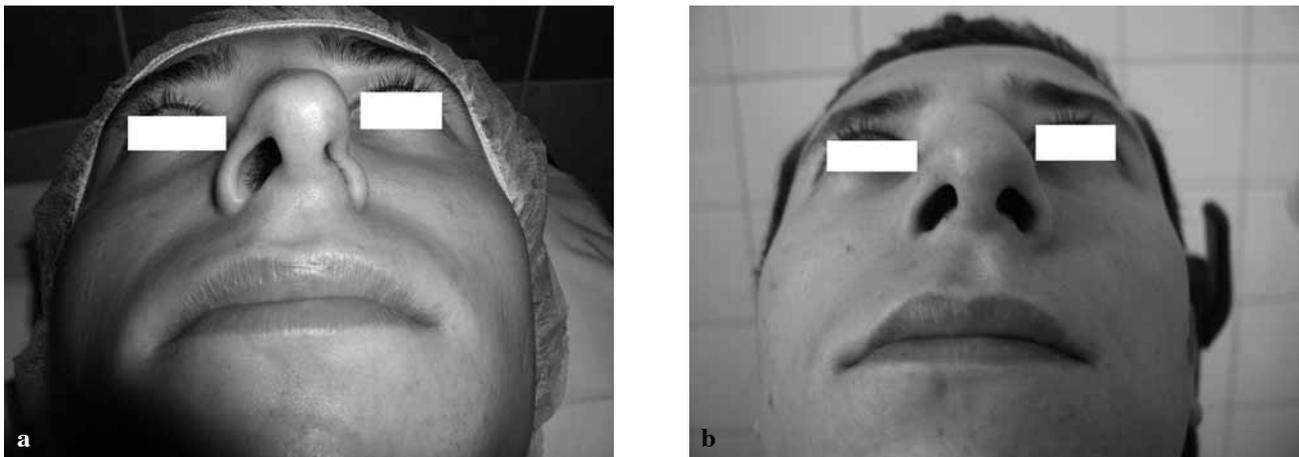


Figure 3

Pre- (a) and post- (b) operative views of a patient with right-sided anterior septal deviation and left-sided alar collapse 6 months after septoplasty.

entirely appropriate and, in our patients, treatment with the alar batten graft technique was generally effective.<sup>11</sup> In cases of external valve dysfunction caused by aging or pure malrotation, we prefer cranial rotation of the lateral crus as described by Rettinger *et al.*<sup>12</sup>

### Conclusion

We agree with other authors that the indication for septoplasty must be carefully assessed and addressed as it may be related to other pathological conditions that reduce nasal patency.<sup>2,10,13</sup> However, in our group of patients (anterior septal deviation and simultaneous contralateral alar collapse and no obvious structural changes of the alar cartilage) we found septoplasty to be entirely suitable and we recommend it as the treatment of choice in such cases (Figure 3).

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