

Laser-turbinectomy: long-term results

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Abstract

Hypertrophy of the inferior turbinates is a common cause of nasal obstruction. Many cases respond to medical treatment with topical steroids or antihistamines. In some patients, however, this therapy is not sufficient and through the years many surgical procedures have been used to reduce the size of the inferior turbinates, but without any satisfactory long-term results. Furthermore, these procedures have often been painful to the patient and post-operative complications such as bleeding and crusting have not been uncommon. However, instead of conventional surgery of the turbinates, laser-surgery can be used to reduce their size. In order to investigate the long-term effect of such gross reduction of the turbinates we investigated the post-operative condition of 78 patients who had undergone CO₂-laser-turbinectomy due to symptoms of nasal obstruction. Twenty-four to 36 months post-operatively three quarters of all the patients reported a marked decrease in nasal obstruction as well as a reduced frequency of nasal and sinus infections. No complications were reported and the procedure was without any discomfort to the patient. Thus, laser-turbinectomy seems to be an effective, simple and painless method for treatment of nasal obstruction due to hypertrophy of the inferior turbinates.

Key words: Laser surgery; Nasal obstruction; Turbinates; Surgery, operative

Introduction

Patients with nasal obstruction are common in an ENT clinic. Although some obstructions are due to anatomical anomalies such as septal deviation or other nasal deformities the most common causes are allergic rhinitis, non-allergic rhinitis or hypertrophy of the turbinates of unknown reason. Most cases of nasal obstruction can successfully be treated with topical steroids and/or antihistamines. However, some patients do not respond properly to pharmacological therapy or they complain of crusting and bleeding due to side-effects of the topical steroids. In these cases different surgical methods have been used to reduce the size of the hypertrophic inferior turbinates (Moore and Bicknell, 1980; Elwany and Harrison, 1990; Carrie *et al.*, 1996). The procedures have, however, often been painful to the patient and in most cases nasal packing has been required for several days post-operatively to avoid profuse bleeding. Moreover, the long-term results have not been very satisfactory (Warwick-Brown and Marks, 1987; Cook *et al.*, 1993).

However, laser-surgery has been reported as an effective and simple method to reduce the size of the turbinates (Mittelman, 1982; Kawamura *et al.*, 1993; Englander, 1995; Lippert and Werner, 1997).

The purpose of this retrospective study was to investigate the long-term effects of gross reduction of the turbinates by means of laser-turbinectomy in patients with nasal obstruction due to hypertrophy of the inferior turbinates.

Material and methods

A total of 89 patients underwent laser-turbinectomy in 1994 at the ENT Department, Ystad Hospital, Sweden. Seventy-eight of these patients (30 females and 48 males; age-range 10–66 years) were available for a follow-up 24–36 months post-operatively. The indication for surgery was nasal obstruction due to hypertrophy of the inferior turbinates. Sixty-four patients had pre-operatively been treated with topical steroids and 26 patients had been given an antihistamine with slight or no effect. Twenty-seven of the patients treated with topical steroids complained of severe or moderate crusting and nose bleed.

Surgery was performed on an out-patient basis. A CO₂-laser (Sharplan 1030, Laser Industries Ltd.) was used at 3–10 Watts, continuous irradiation mode with a defocused beam, with an operation microscope. The anterior third of the inferior turbinates was vaporized until a suitable reduction of the mucosa was established. Seven patients were operated on under general anaesthesia (due to low age or

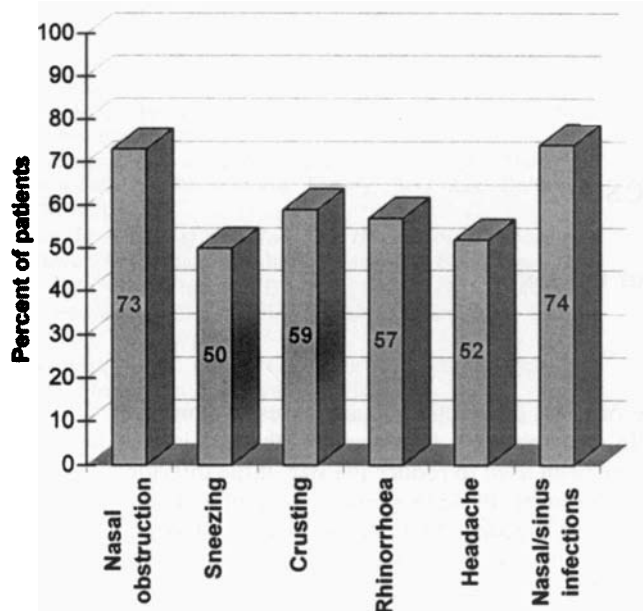


FIG. 1

Laser-turbinectomy: the distribution of pre-operative symptoms.

special request), and the rest of the patients had local anaesthesia with intravenous addition of alfentanil (Rapifen) and flunitrazepam (Rohypnol) per-operatively. After surgery a loose packing with steroid ointment (Terracortril) was inserted between the septum and the turbinate. This packing was removed by the patient on the following day.

Details of the patients' characteristics were obtained from clinical records and from questionnaires answered by the patients. In the questionnaires the patients were asked to state their condition prior to surgery and to evaluate the present post-operative condition with regard to the symptoms as follows: nasal obstruction, crusting, sneezing, rhinorrhoea, headache and nasal/sinus infections.

Results

Pre-operative diagnoses and symptoms

The pre-operative diagnoses were as follows: non-allergic perennial rhinitis in 35 cases, hypertrophy of the turbinates of unknown reason in 22 cases, septal deviation in combination with turbinate hypertrophy in 10 cases, allergic rhinitis in eight cases, and abuse of nose drops in three cases. The distribution of pre-operative symptoms is shown in Figure 1. All patients had a severe (in 63 cases) or moderate (in 15 cases) nasal obstruction.

Post-operative results

The duration of the post-operative follow-up was 24–36 months. The results at the end of this period were as follows: complete relief or definite improvement was obtained in 73 per cent (57/78) of cases of nasal obstruction, in 50 per cent (12/24) of cases of sneezing, in 59 per cent (16/27) of cases of crusting, in 57 per cent (16/28) of cases of rhinorrhoea, in

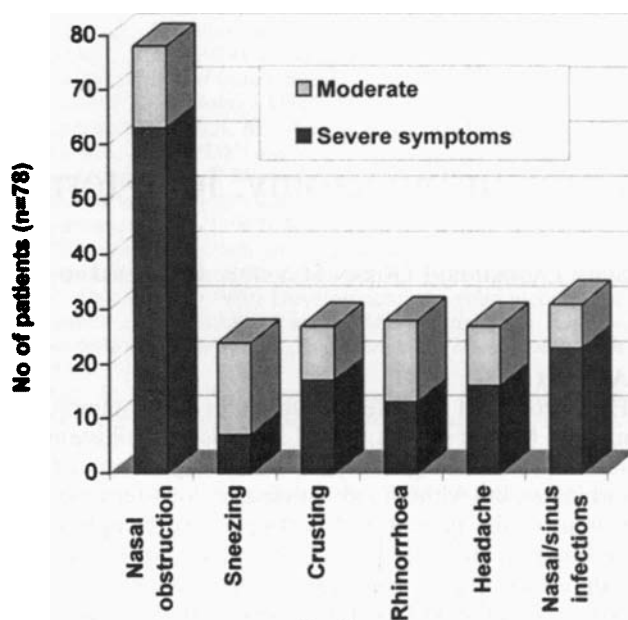


FIG. 2

Laser-turbinectomy: post-operative results after 24–36 months with regard to pre-operative symptoms (percentage of patients with complete relief or definite improvement).

52 per cent (14/27) of cases of headache, and in 74 per cent (23/31) of cases of nasal/sinus infections (Figure 2).

The results with regard to the energy output of the CO₂-laser were as follows: Complete relief or definite improvement was obtained in 53 per cent (8/15) of cases treated with three Watts, in 82 per cent (28/34) of cases treated with five Watts, and in 76 per cent (19/25) of cases treated with 10 Watts.

In all 10 cases of septal deviation in combination with turbinate hypertrophy a complete relief or definite improvement was obtained and no further operation required.

In two patients a synechia between the septum and the inferior turbinate developed. In both cases the synechia was cut with CO₂-laser and no further synechiae developed.

Due to persisting nasal obstruction four patients underwent a second laser-turbinectomy during the follow-up period. In one of these cases a moderate improvement was obtained, while the other three patients reported no improvement after the second operation.

There were no cases of per- or post-operative haemorrhage. No patient reported any side-effects after the operation.

Discussion

In this study patients with nasal obstruction were treated with laser-turbinectomy to reduce the size of the inferior turbinates. Two to three years after surgery 73 per cent of the patients were completely relieved or definitely improved. In addition, other symptoms such as sneezing, rhinorrhoea, crusting and sinus infections were improved in 50–74 per cent of the cases. Furthermore, patients with septal

deviation combined with a turbinate hypertrophy reported such post-operative improvement that a septoplasty could be avoided.

The energy output of the laser may influence the results since patients treated with three Watts reported less improvement than those treated with five or 10 Watts.

In patients with no effect after a primary laser-turbinectomy no additional improvement seems to be obtained by a re-operation, as previously reported in cases with early post-operative relapse (Kawamura *et al.*, 1993).

An objection to this study might be that the results are based only on the subjective evaluation of the patient and that no objective measurement of the nasal resistance was used. However, since the correlation between rhinomanometric measurements and the subjective perception of the patient has been reported to be poor (Mygind, 1980), the subjective well-being of the patient must be the most important criterion.

Conclusion

To sum up, we find laser-turbinectomy to be an effective, simple and painless method for treatment of nasal obstruction due to hypertrophy of the inferior turbinates.

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