The interpretation of results of micro debrider assisted inferior Turbinoplasty

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ABSTRACT

One of the major causes of chronic nasal obstruction is inferior turbinate hypertrophy. The objective of the study was to compare the results of microdebrider assisted inferior turbino-plasty (MAIT) in relation to change in preoperative mucociliary clearance time and VAS for nasal obstruction, sneezing, snoring, headache in 30 patients aged 16-45 years having grade II or III hypertrophy of both inferior turbinates according to Friedman with the post operative follow up for 3 months after surgery. The mean postoperative VAS scores for nasal obstruction reduced to 0.40±0.81 from 6.73 ± 1.23, for sneezing reduced to 1.53±1.25 from 5.33±1.61, for snoring reduced to 0.27±0.69 from 1.33±1.92, for headache reduced to 0.93±1.02 from 3.20±1.24. The findings were statistically significant at all the follow up visits (p<0.01). The mean preoperative value of Friedman grade of inferior turbinate hypertrophy on anterior rhinoscopy reduced to 1.00±0.00 from 5.33±1.61 and that of posterior rhinoscopy reduced to 1.00±0.00 from 1.80±0.71. The mean preoperative value of nasal mucociliary clearance time was 17.93±3.47 minutes which reduced to 7.23±0.87 at 3 months follow-up. The decrease in NMCC time at all the follow up visits was statistically significant (p<0.01). In conclusion, microdebrider assisted inferior turbino-plasty is an effective technique to reduce the symptoms of nasal obstruction, sneezing, snoring and headache. Further, nasal mucociliary clearance is preserved.

Keywords: Inferior turbinate hypertrophy, microdebrider assisted inferior turbinoplasty, nasal mucociliary clearance, nasal obstruction, visual analog scale

INTRODUCTION

One of the major causes of chronic nasal obstruction is inferior turbinate hypertrophy.¹ The hypertrophy of the inferior turbinates may be due to various causes including allergic reaction, vasomotor rhinitis or drug-induced rhinitis². Many techniques of turbinate reduction have been performed, including partial or total turbinate resection, cauterization, cryotherapy, laser therapy, and radiofrequency ablation.³⁴ Turbino-plasty is an effective treatment for chronic nasal obstruction⁵. The multiplicity of techniques indicates the lack of consensus on the "gold standard" for inferior turbinate reduction. MAIT provides real-time suction with the ability of precise tissue resection⁵

MATERIAL AND METHODS

This prospective study was conducted in the Department of Otorhinolaryngology at PGIMS Rohtak, using microdebrider to reduce bilateral inferior turbinate hypertrophy in 30 patients, who did not respond to medical treatment. Patients of either sex in the age group of 16-45 years were selected and after obtaining their written and informed consent were enrolled in the study from ENT outpatient department. Anterior and posterior rhinoscopy was done for preoperative assessment and Friedman grading to confirm bilateral inferior turbinate hypertrophy. Patients with Friedman grade two and three hypertrophy of both inferior turbinates were selected for the study. All the patients rated their severity of symptoms for nasal obstruction, sneezing, snoring and headache on a visual analog scale.⁶⁷ The mean nasal mucociliary clearance time was estimated by saccharine clearance test pre and postoperatively.⁸⁹ Patients severed as control to themselves for regression in symptoms and nasal mucociliary clearance time before and after microdebrider assisted inferior turbino-plasty. The analysis was carried out using SPSS (Statistical Package for Social Studies) for Windows version 17.0. The data following normal distribution was analysed by Paired samples t-test for 2 groups and One way repeated measures ANOVA test for >2 groups. The data not following normal distribution was analysed by Wilcoxon Signed Ranks test for 2
groups and Friedman repeated measures ANOVA test for >2 groups. The statistical tests were performed at a 5% level of significance, thus an association was significant if the two-tailed p-value was less than 0.05.

RESULTS

Patients included in the study were between 16–45 years out of which majority of the patients i.e. 86.6 percent were between 16–35 years and remaining 13.4 percent belonged to 36–45 years. The mean age was 26.86 ± 8.25 years. There were 20 males (66.7%) and 10 females (33.3%).

The mean preoperative value of VAS score for nasal obstruction was 6.73 ± 1.23, which reduced to 3.40±1.50, 2.07±1.70 and 0.4±0.81 at 2 weeks, 4 weeks and 3 months follow-up respectively. These were statistically significant at all the three follow ups (p<0.01).

The mean preoperative value of VAS score for sneezing was 5.33± 1.61 which reduced to 2.40± 1.10 and 1.53± 1.14 at 2 weeks and 4 weeks respectively and remained so at 3 months follow up. The findings at 2 and 4 weeks were statistically significant (p<0.01).

The mean preoperative value of VAS score for nasal obstruction was 6.73 ± 1.23 which reduced to 1.00±0.00 at 4 weeks (II follow up) and remained so at 3 months follow up respectively. These were statistically significant at all the three follow ups (p<0.01).

The mean preoperative value of VAS score for headache was 3.20± 1.24 which reduced to 2.07± 0.98, 1.00±1.15 and 0.93± 1.02 at 2 weeks, 4 weeks and three months follow-up respectively. The findings were statistically significant at all the follow visits (p<0.01).

The mean preoperative value of Friedman grade of inferior turbinate hypertrophy on anterior rhinoscopy was 2.47± 0.51 which reduced to 1.03± 0.18 and 1.00± 0.00 at 2 weeks and 4 weeks respectively and remained so at 3 months follow up. The findings were statistically significant at 2 and 4 weeks (p<0.01) and remained like 4 weeks at 3 months follow up.

The mean preoperative value of Friedman grade for inferior turbinate hypertrophy on posterior rhinoscopy was 1.80±0.71 which reduced to 1.00±0.00 at 2 weeks postoperatively and remained so in the second and third follow up visits respectively. It was statistically significant at first follow up and was consistent till last follow up.

The mean preoperative value of nasal mucociliary clearance time was 17.93± 3.47 minutes which reduced to 10.17± 1.85, 7.90± 1.05 and 7.23± 0.87 at 2 weeks, 4 weeks and 3 months follow-up respectively. The decrease in NMCC time at all the follow up visits was statistically significant (p<0.01).

DISCUSSION

Regarding the commonest complain of nasal obstruction, we found that the preoperative mean value of VAS score for nasal obstruction was 6.73±1.23 in the present study which reduced to 0.40±0.81 at three months (III follow up). The findings at all the three follow up visits were statistically significant (p<0.01). This is in accordance to Wexler et al (2005) who in their prospective study of microdebrider assisted partial turbinectomy on 35 adults suffering from bilateral inferior turbinate, found that there was widening of the nasal airway space, improvement of nasal patency at their 4 months follow up postoperatively.9 Similar findings were reported by Joniau et al (2006) who in their 5 years follow up in a comparative study of powered turbinoplasty on one side with submucosal cauterization of inferior turbinates on other side of 19 patients in medication-resistant chronic nasal obstruction caused by inferior turbinate hypertrophy. They concluded that powered turbinoiplasty was superior to submucosal cauterization in relieving symptom of nasal obstruction.10 For sneezing, preoperative mean value of VAS score was 5.33±1.61 in the present study, which reduced to 1.53±1.14 at 3months (III follow up). The findings were statistically significant (p<0.01) at first two follow ups. The similar results were seen by Kumar et al (2014) in their prospective and comparative study of bipolar radiofrequency assisted turbinoplasty and microdebrider assisted inferior turbinateoplasty in patients with chronic nasal obstruction due to inferior turbinate hypertrophy, who concluded that sneezing as a complain significantly improved in microdebrider assisted turbinoiplasty group but there was reoccurrence in RF group in three patients after 6 months follow up.11 Taking sneezing as a complain in the present study in patients with bilateral inferior turbinate hypertrophy, preoperative mean value of VAS score was 1.33±1.92, which reduced to 0.27±0.69 at three months (III follow up). Chen et al (2008) also observed similar results in their comparative study of microdebrider assisted inferior turbinoplasty to submucosal resection for hypertrophic inferior turbinates. They concluded that both the techniques were equally effective in relieving the symptoms of sneezing at 3 years of follow up after surgery.12

The mean preoperative value of VAS score for headache in the present study was 3.20±1.24 which reduced to 0.93±1.02 at three months (III follow up),The similar results were observed by Romano et at (2015) in their comparative study of the inferior turbinotomy and the microdebrider-assisted inferior turbinoplasty in 158 patients with hypertrophy of the inferior turbinate in a retrospective period of seven years. They concluded that both the techniques were equally effective to control headache post operatively.13 The mean preoperative value of Friedman grade of inferior turbinate hypertrophy on anterior rhinoscopy was 2.47±0.51 which reduced to 1.00±0.00 at 4 weeks (II follow up) and remained so
at three months (III follow up). The mean preoperative value of Friedman grade of inferior turbinate hypertrophy on posterior rhinoscopy which was 1.80±0.71 which reduced to 1.00±0.00 at two weeks postoperatively (I follow up) and remained so in the second and third follow up visits. These findings are in accordance to the earlier study by Friedman et al. (1999) who in a prospective study with powered microdebrider on 120 patients concluded that the sub mucous resection of inferior turbinates with a microdebrider was a safe method of achieving turbinate size reduction with minimal morbidity. Similar results were also observed by Bouet el et al (2009) in which they assessed the objective and subjective outcomes on twenty patients with perennial non-allergic rhinitis with substantial mucosal hypertrophy of the inferior turbinates by microdebrider-assisted partial turbinoplasty technique. They concluded that the microdebrider-assisted inferior turbinoplasty was effective to reduce the turbinate size significantly at 6 months post operatively. The mean preoperative value of nasal mucociliary clearance time was 17.93±3.47 minutes which reduced to 7.23±0.87 minutes at three months (III follow up). Similar findings were reported by Liu et al (2009) who in their comparative study of microdebrider-assisted inferior turbinoplasty (MAIT) and radiofrequency assisted inferior turbinoplasty (RAIT) for hypertrophic inferior turbinates in 120 patients with persistent allergic rhinitis and chronic nasal obstruction, found that MAIT was more effective than RAIT at relieving nasal symptoms and decreasing saccharin transit time 3 years postoperatively in patients with persistent allergic rhinitis and who had substantial nasal obstruction. The problem of nasal obstruction and associated symptoms such as snoring, sneezing and headache due to bilateral inferior turbinate hypertrophy remains one of the major complaints of patients in ENT clinics. Microdebrider assisted inferior turbinoplasty promises to be a better surgical approach to control the symptoms associated with bilateral inferior turbinate hypertrophy. The technique is safe and keeps the nasal respiratory mucosa intact during surgery thereby decreasing the nasal mucociliary clearance time. The present study included only 30 patients and three months of follow up, however a large number of patients and longer follow up are required to validate the results of present study.

![BEFORE](image1.png) ![AFTER](image2.png)

![BEFORE](image3.png) ![AFTER](image4.png)

![BEFORE](image5.png) ![AFTER](image6.png)
CONCLUSIONS

The overall reduction in mean VAS scores of subjective parameters of nasal obstruction, sneezing, snoring and headache showed that patients were relieved of their complains after microdebrider assisted inferior turbinoplasty. The mean NMCC reduced and became normal at last follow up showed that the mucociliary function remains intact during and after the surgery. The objective finding of decrease in hypertrophy grades at the second follow up and remaining so till the last follow up showed that the turbinate reduction was consistent and there was no recurrence of hypertrophy. Microdebrider assisted inferior turbinateoplasty is an effective technique to reduce the symptoms of nasal obstruction, sneezing, snoring and headache. Further, nasal mucociliary clearance is preserved.

REFERENCES


