

CONVENTIONAL TURBINOPLASTY AND COBLATION TURBINOPLASTY IN PATIENTS WITH BILATERAL INFERIOR TURBINATE HYPERTROPHY

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ABSTRACT

Objective: The objective of the study was to compare the efficacy of conventional turbinoplasty and coblation turbinoplasty in patients with bilateral inferior turbinate hypertrophy.

Methods: A prospective comparative study was conducted on 60 patients undergoing turbinoplasty at the Department of ENT, Sardar Patel Medical College and PBM Hospital, from July 1st, 2021, to June 30th, 2022. About 60 patients were randomly divided into two groups, Group A patients were surgically managed by conventional turbinoplasty, and Group B patients by coblation turbinoplasty. Intraoperatively, the time for each surgery was individually calculated from incision to nasal packing. Follow-up was done at 3 months and at 6 months to assess the post-operative efficacy.

Results: The mean age of participants was 36.57±8.01 years (21 years–49 years). On comparing the post-operative mean medial mucosal thickness, and mean airway space achieved in 6 months by both the surgeries, a statistically significant difference was found. The mean duration of surgery for coblation turbinoplasty was 435.50 s or 7.25 min (ranging from 6.17 min to 8.33 min) and 1039.33 s or 17.32 min (ranging from 19.16 min to 15.48 min) for conventional turbinoplasty (p<0.001).

Conclusion: Coblation has an upper hand in terms of improvement of patient symptoms and reduction in turbinate size. The only and major deterring factor in the regular usage of coblation is its cost.

Keywords: Conventional turbinoplasty, Coblation turbinoplasty, Inferior turbinate hypertrophy.

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INTRODUCTION

Chronic nasal obstruction is one of the most common problems in patients. Medical treatment is used to relieve obstruction. Patients who are refractory to the medical treatments and complain of persistent symptoms in them surgical reduction of inferior turbinate is needed to be performed [1]. The surgical techniques are classified into two types, mucosal sparing and non-mucosal sparing [2]. Surgical methods provide relatively satisfactory results, but adverse effects are frequently observed postoperatively.

Aggressive turbinectomy surgery may give better long-term results but has a higher risk of complications. To resolve these problems, less destructive endoscopic procedures using laser or radiofrequency have been introduced [1]. Coblation is a new technique, started in 1997, a unique method of rapid and controlled removal of tissue at relatively low temperatures while maintaining the integrity of surrounding tissue or structures [3].

In this study, hypertrophied inferior turbinate reduction was done by both the methods (conventional and coblation turbinoplasty) in two groups of patients, and efficacy and post-operative reduction of inferior turbinate size and alleviation of patient symptoms by each method were compared.

Aim

The aim of the study was to compare the efficacy of conventional turbinoplasty and coblation turbinoplasty in patients with bilateral inferior turbinate hypertrophy.

METHODS

A prospective comparative study was conducted on 60 patients undergoing turbinoplasty at the Department of ENT, Sardar Patel

Medical College and PBM Hospital, from July 1st, 2021, to June 30th, 2022. Patients aged between 20 and 50 years with complaints of nasal obstruction and rhinitis with B/L inferior turbinate hypertrophy refractory to medical management, were included. Patients with deviated nasal septum, unilateral inferior turbinate hypertrophy and chronic sinusitis and any other pathological nasal condition were ruled out. After obtaining the ethical committee clearance, all patients included in the study were subjected to detailed history taking and examination pertaining to the ear, nose, and throat. Medical management was tried for at least 3 months. Sixty patients were randomly divided into two groups, Group A patients were surgically managed by conventional turbinoplasty, and Group B patients by coblation turbinoplasty. Intraoperatively, the time for each surgery was individually calculated from incision to nasal packing. Follow-up was done at 3 months and at 6 months to assess the post-operative efficacy.

RESULTS

The mean age of participants was 36.57±8.01 years (21 year–49 year). The total number of male patients was 64 (53.3%) and female patients was 56 (46.7%) (Table 1).

In our study, we found a statistically significant reduction in mean medial mucosal thickness (post-operative 3.56 mm from 5.40 mm pre-operative) by conventional turbinoplasty. We also found a statistically significant reduction in mean medial mucosal thickness (post-operative 2.36 mm from 5.42 mm pre-operative) by coblation turbinoplasty.

In our study, we found a statistically significant improvement in mean airway space (post-operative 2.25 mm from 1.46 mm pre-operative) by conventional turbinoplasty. We also found a statistically significant improvement in mean airway space (post-operative 3.00 mm from 1.44 mm pre-operative) by coblation turbinoplasty.

Table 1: Sociodemography of study participants

| Age group | Group | | | | p-value |
|-------------|-----------|------|--------------|------|---------|
| | Coblation | | Conventional | | |
| | n | % | n | % | |
| 21–30 years | 24 | 40.0 | 10 | 16.7 | 0.389 |
| 31–40 years | 14 | 23.3 | 34 | 56.7 | |
| 41–50 years | 22 | 36.7 | 16 | 26.7 | |
| Sex | | | | | |
| Female | 30 | 50.0 | 26 | 43.3 | 0.583 |
| Male | 30 | 50.0 | 34 | 56.7 | |

In our study, we found a statistically significant reduction in mean NO (NQ) score (post-operative 42.17 from 79.33 pre-operative) by conventional turbinoplasty. We also found a statistically significant reduction in the mean NO (NQ) score (post-operative 34.33 from 79.50 pre-operative) by coblation turbinoplasty.

On comparing the post-operative mean medial mucosal thickness, and mean airway space achieved in 6 months by both the surgeries, a statistically significant difference was found (Table 2).

DNE grading done preoperatively in patients planned for coblation turbinoplasty was Grade C in 31 subjects and Grade D in 29 subjects. DNE done postoperatively at 3 months showed a reduction of turbinates size to Grade A in 20 subjects and Grade B in 11 subjects from Grade C preoperatively and to Grade A in 21 subjects and Grade B in 8 subjects from pre-operative Grade D. At 6 months showed further reduction in the size of turbinates from Grade C preoperatively to Grade A in 22 subjects and from Grade D to Grade A in 22 subjects.

In the conventional group, DNE done postoperatively at 3 months showed a reduction of turbinates size to Grade A in 15 subjects and Grade B in 15 subjects from Grade C preoperatively; and to Grade A in 19 subjects and Grade B in 11 subjects from pre-operative Grade D. At 6 months further reduction in the size of turbinates from Grade C preoperatively to Grade A in 14 subjects and from Grade D to Grade A in 20 subjects (Table 3).

The mean duration of surgery for coblation turbinoplasty was 435.50 s or 7.25 min (ranging from 6.17 min to 8.33 min) and the mean duration of conventional turbinoplasty was 1039.33 s or 17.32 min (ranging from 19.16 min to 15.48 min). Conventional turbinoplasty took more time in our study and it was statistically significant with $p < 0.001$ (Table 4).

DISCUSSION

In our study, the majority age group was 31–40 years (40%), and 53.3% were male. Similar observations were seen in studies by Singh *et al.* [1] and Lee and Lee [4] The DNS grading results were similar to Singh *et al.* [1].

In our study, the mean duration of surgery for coblation turbinoplasty was 435.50 s or 7.25 min and the mean duration of conventional turbinoplasty was 1039.33 s or 17.32 min conventional turbinoplasty took more time in our study ($p < 0.001$), similar duration was reported by Singh *et al.* [1].

The mean score for nasal obstruction had reduced significantly individually for both surgeries: Conventional turbinoplasty (79.33–42.17) and Coblation turbinoplasty (79.50–34.33) ($p < 0.001$), similarly reported by Berger *et al.* [5].

In our study, comparing the post-operative mean medial mucosal thickness achieved in 6 months by both the surgeries statistically significant difference was found. Group A had a mean medial mucosal thickness of 3.56 mm and Group B had a mean medial mucosal thickness of 2.36 mm. In our study, the increase in mean airway space achieved at the end of 6 months by both surgeries early than reported by Farmer and Eccles [6].

Table 2: Pre- and post-comparison

| MMT (in mm) | Conventional group | Coblation group | p-value |
|-------------------------|--------------------|-----------------|---------|
| Pre-operative | 5.40±0.43 | 5.42±0.39 | 0.790 |
| Post-operative 6 months | 3.56±0.47 | 2.36±0.31 | <0.001 |
| Mean airway space | | | |
| Pre-operative | 1.46±0.31 | 1.44±0.27 | 0.707 |
| Post-operative 6 months | 2.25±0.44 | 3.00±0.19 | <0.001 |
| NO (NQ) | | | |
| Pre-operative | 79.33±8.00 | 79.50±8.37 | 0.911 |
| Post-operative 6 months | 42.17±7.99 | 34.33±8.51 | <0.001 |

Table 3: DNE grading

| Pre-operative | Coblation group | | Conventional group | |
|-------------------------|-----------------|----|--------------------|----|
| Post-operative 3 months | A | B | A | B |
| C | 20 | 11 | 15 | 15 |
| D | 21 | 8 | 19 | 11 |
| At 6 months | | | | |
| C | 22 | 9 | 14 | 16 |
| D | 22 | 7 | 20 | 10 |

Table 4: Mean operative time

| Operative time | n | Mean | SD | p-value |
|----------------|----|---------|--------|---------|
| Coblation | 30 | 435.50 | 64.81 | <0.001 |
| Conventional | 30 | 1039.33 | 110.51 | |

When the conventional turbinoplasty was compared with the coblation turbinoplasty, the mean airway space had increased more in coblation turbinoplasty patients due to better turbinate size reduction followed by the use of coblation.

CONCLUSION

Both conventional and coblation turbinoplasty provide statistically significant results for the patient. When comparing the methods with each other, coblation has an upper hand in terms of improvement of patient symptoms and reduction in turbinate size. The only and major deterring factor in the regular usage of coblation is its cost.

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AUTHORS' CONTRIBUTION

All the authors have contributed equally.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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