SUBMUCOSAL DIATHERMY VERSUS BIPOLAR SURFACE CAUTERY FOR HYPERTROPHIED INFERIOR TURBINATE, COMPARATIVE ANALYSIS

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ABSTRACT
Objective: To evaluate and compare outcome of submucosal diathermy versus bipolar surface cautery for hypertrophy of the inferior turbinate. Methods: Retrospective analysis of 123 patient who underwent turbinate surgery, patients were divided into two groups, group A patients who underwent bipolar surface cautery and group B, patients who underwent Submucosal diathermy. Data analysis done; comparing nasal obstruction, crust formation, adhesions and nasal bleeding. Visual analogue score was used in symptoms analysis. Results: Both groups were comparable with regards to nasal obstruction, adhesion formation and incidence of nasal bleeding, crust formation was more in group A at four weeks, but it was comparable at eight weeks. None of study groups were comparable with regards to nasa formation, adhesions and nasal bleeding. Visual analogue score was used in symptoms analysis. Conclusion: Bipolar surface cautery of the inferior turbinate is as effective and safe as submucosal diathermy in patients followed up for 1 year.

INTRODUCTION
Although inferior turbinates play an important role in the function of nasal cavity and this is especially in humidification, heating, and chemosensations of air flow. These functions depend on three factors with regards to turbinates, mucosal surface, size and contour of the inferior turbinate.[1] Hypertrophy of the inferior turbinate is one of the common causes of nasal obstruction which we almost daily encounter people present with this complaint in our outpatient clinics. Medical treatment sometimes offers good option for management but it needs compliance and time for the patient to feel the effect and achieve the goal.[2,3] Surgical options on the other hand, might offer fast and long standing effect, and it may be an office procedure which is done under local anesthesia or an operation done under general anesthesia. These procedures include; turbinectomy whether partial or complete, laser reduction, radiofrequency ablation, submucosal diathermy, coblation reduction, bipolar surface cautery, and microdebrider assisted turbinoplasty.[3,4] In our hospital, we use different surgical procedures and in this study, we will evaluate the outcome of submucosal diathermy in comparison to bipolar surface cautery.

METHODS
This is a retrospective analysis of 123 cases of inferior turbinate surgery done at Prince Rashid Military Hospital in the period between January 2014 and December 2016 after ethical committee approval was granted. Clinical records abstract form was designed to collect data for our study which includes; age, gender, procedure done, post operative nasal obstruction, crusting, adhesions, and incidence of bleeding. Patients were divided into two groups; group A is patients who underwent surface cautery which was done using bipolar forceps applied to at least three surface lines over the inferior turbinate and group B is patients who underwent submucosal diathermy of the inferior turbinate using the monopolar turbinate probe with at least three passes inside the turbinates. Procedure outcome was measured using visual analogue score VAS for nasal obstruction and crusts formation post surgery. Score was from zero to ten; where increase in number resembles more troublesome complain, and number of hospital visits for nasal bleeding in first four weeks post surgery. Exclusion criteria were age less than 16, history of revision surgery, and presence of nasal septum deviation without correction. Statistical analysis was done using SPSS for windows, using chi-squared tests and t-test when appropriate. All data are expressed as the mean ± standard deviation (S.D.). A value of P<0.05 was considered statistically significant.
RESULTS
The demographic data of our study groups were comparable, table 1. 68 patients were in group A, of which 39 (57%) of the patients were males and 29 (43%) were females, and the mean age was 34.5± 4.3 years, while there were 55 patients in group B, of which 32 (58%) were males and 23 (42%) were females and the mean age was 33.7± 4.5 years. There was significant improvement in nasal obstruction in both groups and there was no statistically significant difference between the study groups. Nasal crusting was more in group A during the first four weeks post surgery and the difference was clinically significant but not statistically. But there was no difference in crust formation at 8 weeks post surgery. Adhesions were present in one patient in each group. Only one case present with history of nasal bleeding in group B, while there were no reported cases of bleeding in group A.

Table 1: Demographic Data of Study Groups.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group A (68)</th>
<th>Group B (55)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)± S.D.</td>
<td>34.5± 4.3</td>
<td>33.7± 4.5</td>
</tr>
<tr>
<td>Sex (M:F)</td>
<td>39:29</td>
<td>32:23</td>
</tr>
<tr>
<td>Total</td>
<td>123</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: analysis data of the study groups.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group A</th>
<th>Group B</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal obstruction preoperative VAS</td>
<td>8.7 ± 1.1</td>
<td>8.5 ± 1.2</td>
<td>0.441</td>
</tr>
<tr>
<td>Nasal obstruction One year post operative VAS</td>
<td>2.3 ± 1.6</td>
<td>2.2 ± 1.4</td>
<td>0.512</td>
</tr>
<tr>
<td>Crust formation at 4 weeks</td>
<td>8.7 ± 1.8</td>
<td>7.5 ± 1.5</td>
<td>0.056</td>
</tr>
<tr>
<td>Crust formation at 8 weeks</td>
<td>2.7 ± 1.0</td>
<td>2.5 ± 1.1</td>
<td>0.523</td>
</tr>
<tr>
<td>Adhesions</td>
<td>1</td>
<td>1</td>
<td>1.00</td>
</tr>
<tr>
<td>bleeding</td>
<td>0</td>
<td>1</td>
<td>0.745</td>
</tr>
</tbody>
</table>

DISCUSSION
There are many causes for hypertrophy of the inferior turbinate, and the most common causes in our practice are; vasomotor rhinitis, allergic rhinitis, and compensatory hypertrophy in cases with nasal septum deviation[5,6] and it is reported that best outcome is achieved when turbinate volume is reduced with preservation its mucosa and mucociliary function.[5] This balance will affect the results and outcome after the procedure with regards to nasal obstruction and crust formation post surgery. In our study; we have found that bipolar surface cauter is as effective and safe as submucosal diathermy, and our results are comparable to studies done by other groups.[11] A lot of studies had been done to evaluate different procedures for the reduction of inferior turbinate size, Meredith[6] found that almost 31% of patients managed with bipolar surface cautery combined with out fracturing of the inferior turbinate had noticed recurrence of nasal obstruction after 33 months of the procedure. Another study done by Mark and Brown[8] in which they had evaluated patients who underwent submucosal diathermy of enlarged inferior turbinates with or without fracturing, and reported a decrease in patient’s satisfaction from 82% at 4 weeks after procedure to almost half at one year. Complications of inferior turbinate surgery depend on the procedure used, bleeding, infection, adhesions, and crusting had been described after inferior turbinectomy (9) and to a lesser degree in patient who had laser or microdebrider reduction, submucosal diathermy and surface bipolar cautery reported to had least complications (10,11) in addition to reports that radiofrequency ablation had least complications (2) although patient satisfaction is less as time after the procedure.

CONCLUSIONS
Bipolar surface cauter is as effective and safe as submucosal diathermy in patients followed up for 1 year. Longer follow-up time is recommended with the possibility to be done as an office procedure.

Conflict of interest: None
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REFERENCES
7. SANTOSH UTTARKAR PANDURANGA RAO, PRASHANTH BASAVARAJ, SUPRIYA BASAVARAJ YEMPALLE, ARAVIND DARGA RAMACHANDRA, A Prospective Study of Different Methods of Inferior Turbinate Reduction.