

# Inferior Turbinate Reduction by Infrared Coagulation - a study on surgical outcome, postoperative crusting and bleeding

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## ABSTRACT

**Aim:** To assess safety of technique regarding surgical outcome, post operative crusting and bleeding.

**Design:** Single Blind interventional type of study.

**Place and duration of study:** This study was conducted at Govt. Kot Khwaja Saeed Hospital Lahore from July, 2009 to June, 2011.

**Methods:** Fifty patients were included in the study and the results of procedure regarding surgical outcome, post operative crusting and bleeding were analyzed.

**Results:** Fifty patients of age between 15-60 years were included in the study. It was found that all the patients had improvement in their nasal obstruction. Five patients developed post operative crusting and one patient developed mild epistaxis showing results to be significant.

**Conclusion:** It was concluded that inferior turbinate reduction by IRC was a better and safe technique regarding surgical outcome and post operative complications.

**Keywords:** Turbinates, Infrared coagulator(IRC) ,Nasal crusting.

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## INTRODUCTION

Inferior turbinates surgery dates back to the 1980,s when Jones first described it .In 1990 Holmes described the stages of inferior turbinate hypertrophy and his surgical experience with 1500 turbinectomies<sup>1</sup>The main complications of his surgical experience were hemorrhage, drying, crusting and mucosal atrophy<sup>2</sup>.

The most common cause of nasal obstruction is hypertrophy of inferior turbinate, followed by septal deviation<sup>3</sup> .Numerous interventions are available for the treatment of inferior turbinate hypertrophy including medical treatment like antihistamines, decongestants ,local steroids and surgical options like ,cryosurgery, submucosal diathermy, surgical trimming, micro debrider assisted turbinectomy, radiofrequency turbinate reduction and infrared coagulation of inferior turbinates<sup>5</sup> .

Infrared coagulation (IC) was first developed by Nath and Kiefhaber in 1975." Light from a 15-V tungsten-halogen lamp reflects from a gold surface<sup>6</sup> . The reflected light is not coherent and multispectral, with a spectral maximum, in the infrared range, of 10,000 A. Reflected light then passes through a solid-quartz column to a 2-, 6-, or 10-mm diameter tip. On contact with tissue the tip causes injury by thermal necrosis at 1000<sup>0</sup>C without surface adhesion or carbonization<sup>7</sup>. The depth of injury is determined by the duration of exposure, maximum up to 3 seconds<sup>8</sup> . Depth and therefore extent of injury are easily,

precisely controlled. The procedure is well tolerated by patients under local anesthesia and is associated with minimal swelling, no pain and no bleeding, and remucosalization is noted to occur within 3-4 weeks<sup>9</sup> .

The spectral maximum of IRC is similar to the neodymium-yttrium aluminum garnet laser but differs in requiring tissue contact for coagulation<sup>10</sup> . No Sparking or electrical current is transferred to the patient, and no protective eye wear is required<sup>11</sup> . These features allow usage with patients having pacemakers, during pregnancy, near the eye, and in the presence of inflammable gases<sup>12</sup> . Infra red coagulator is also used in nasal surgery hemorrhoids vaginal papilomatosis and bleeding control in blunt liver trauma<sup>13,14</sup> . We believe strongly that IRCIT (infrared coagulation for inferior turbinate) is an effective and safe method to reduce the inferior turbinate. However, patients must be chosen carefully for procedure<sup>15</sup> .

The main finding of this study was that this procedure led to early (less than 4 days) and sustained (at longest follow-up, including more than 18 months) improvement in nasal obstruction for the majority of patients (45 of 50 or 90%). It was associated with minimal patient discomfort and few self-limiting complications (bloody nasal discharge and crusting). Preliminary results showed that infrared coagulation of inferior turbinates causes a significant reduction in airway resistance.

## MATERIAL AND METHODS

The study was conducted at department of ENT Govt. Kot Khawaja Saeed Hospital Lahore and total

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50 patients were operated from July 2009 to June 2011. The patient between 15-60 years were selected. The study was conducted after approval from hospital ethical committee. Infrared coagulator with repeated pulses (8 on each side) of 2 seconds was used as a technique for reduction of inferior turbinates under local anaesthesia.

Patients between 15-60 years of age, belonging to either sex, with history of nasal congestion, rhinorrhoea and obstructive symptoms due to inferior turbinate hypertrophy were included in the study, Patients with gross septal deformity and nasal polyposis were excluded from the study. Inferior turbinate reduction was done by infrared coagulation with 8-9 pulses on each side and the results of procedure regarding surgical outcome post operative crusting and bleeding were analyzed.

## RESULTS

Regarding age distribution out of 50 patients, 20 patients (40%) were between 15-25 years, 20 patients (40%) were between 25-50 years and 10 patients (20%) were between 50-60 years.

Table 1: Age distribution

Age in years	n
15-25	20(40%)
25-50	20(40%)
50-60	10(20%)

On analysis of post-operative crusting 5 patients [10%] had post operative crusting. One patient [2%] had mild epistaxis.

Table 2: Post operative crusting and Epistaxis .

Complications	n
Crusting	5(10%)
Epistaxis	1(2%)

The analysis of operative outcome showed that 45 patients [90%] showed maximum improvement in nasal obstruction, 5 patients (10%) showed minimal improvement in these symptoms.

Table 3: Surgical outcome

Improvement of nasal obstruction	n
Maximum	45(90%)
Minimum	5(10%)

## DISCUSSION

Post operative bleeding and crusting are the important elements affecting the morbidity in every surgical technique performed for turbinate reduction<sup>16</sup>. Other elements are post operative pain and surgical outcome. Many studies have been done

to compare the results of turbinectomies done by different techniques. The above two elements have considered in our turbinate patients. According to the results of our study, 10% patients developed post operative crusting and one patient developed mild self limiting epistaxis. These complications were noticed in first week. None of the patients developed any major complication. All patients felt that anaesthesia was adequate. This is compared to other international studies by Moulton-Barrett R et al, here the maximum no of patient developed post operative crusting and 10% patient developed epistaxis<sup>17</sup>. Regarding surgical outcome 90% patients have shown maximum improvement in their nasal obstruction, 10% patients shown minimal improvement in these symptoms. The improvement in nasal obstruction was maximum at 4-6 weeks. This is again comparable to other methods of turbinectomies. Ferdes M et al, where he had shown improvement in nasal obstruction in 65% patients by submucosal diathermy under general anaesthesia<sup>8</sup>. The importance of our study is that it has less morbidity, saves the patient and operation theater staff time. The patient is free to go home within 10 minutes time because it is safest of procedures to reduce nasal obstruction, so improving the quality of life.

## CONCLUSION

From the results of our study, it is concluded that turbinate reduction by infrared coagulation has significantly reduced post operative bleeding and crusting, as compared to other conventional methods of turbinate reduction. It has reduced the morbidity, complication rate with better surgical outcome, however there is always room for further improvement in the technique.

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