

THE ROLE OF POSTERIOR NASAL NERVE NEURECTOMY IN THE RELIEF OF INTRACTABLE ALLERGIC RHINITIS A RANDOMIZED CONTROL STUDY

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Introduction

Allergic rhinitis (AR) is a common chronic inflammatory disorder of the upper respiratory tract, mediated by IgE and triggered by allergens such as pollen, dust mites, and animal dander. Though not life-threatening, AR significantly affects quality of life by impairing sleep, concentration, and productivity. Classified by the ARIA guidelines into intermittent or persistent forms, AR is often associated with comorbidities like asthma and conjunctivitis, reflecting shared inflammatory pathways. While medical treatments such as antihistamines and corticosteroids offer relief for many, a subset of patients with intractable AR continue to suffer despite maximal therapy. Surgical Management and Rationale Vidian neurectomy was historically used for refractory AR but is associated with significant complications such as dry eye and palatal numbness. As a safer alternative, posterior nasal neurectomy (PNN) targets the posterior nasal nerve (a branch of the sphenopalatine nerve) and can be approached endoscopically. Techniques include cold steel dissection, bipolar cauterization, and submucosal coagulation within the inferior turbinate. Each method aims to reduce nasal hypersecretion and obstruction while minimizing risk to surrounding structures. However, there is a lack of high-quality comparative data on their outcomes and safety profiles. Study Objective This prospective randomized controlled trial aims to compare the efficacy and safety of three PNN techniques—cold steel resection, bipolar cauterization, and submucosal coagulation—in patients with intractable AR. Primary outcomes include symptom improvement, complication rates, and patient satisfaction, assessed using validated Arabic versions of the NOSE score, RSDI, and CSS. The study seeks to provide evidence-based guidance for optimizing surgical management of refractory allergic rhinitis.

Aim of the work

To compare the clinical effectiveness, patient outcomes, and safety profiles of three surgical techniques of targeting the posterior nasal nerve—cold steel resection, bipolar thermal coagulation, and submucosal coagulation within the posterior third of the inferior turbinate—in patients with refractory allergic rhinitis, using validated Arabic outcome tools (A-NOSE and A-RSDI) over a six-month follow-up period, with the goal of identifying the most effective and practical intervention for symptom relief and improved quality of life.

Patients and Methods

This prospective, randomized controlled trial was conducted over two years at the Otorhinolaryngology Department of Alexandria Main University Hospital. A total of 45 patients with refractory allergic rhinitis, unresponsive to at least three months of standard medical therapy,

were enrolled and randomly assigned into three equal groups (n=15 each). Group I underwent cold steel posterior nasal neurectomy, Group II received bipolar electrocautery of the posterior nasal nerve and sphenopalatine neurovascular bundle, and Group III received submucosal bipolar coagulation within the posterior third of the inferior turbinate. Preoperative assessments included A-NOSE, A-RSDI, and CSS scoring, nasal endoscopy, CT imaging, and laboratory investigations. All surgeries were performed under general anesthesia using a standardized endoscopic approach. Postoperatively, patients received antihistamines, intranasal corticosteroids, and saline irrigations, with monthly follow-up for six months including symptom scoring and endoscopic evaluation. Ethical approval was obtained, and informed consent was secured from all participants.

Table (1): A-NOSE score used in the study

* تملأ بعرفة المريض : من فضلك اجب على الاستبيان التالي لمعرفة تأثير انسداد التنفس علي حياتك اليومية. ما مدى تأثرك بهذه الاعراض في الشهر الماضي؟ من فضلك اختر الاجابة الادق					
لا يوجد مشكلة	مشكلة بسيطة	مشكلة متوسطة	مشكلة سيئة إلى حد ما	مشكلة شديدة	
0	1	2	3	4	احتقان أو تصلب بالأنف
0	1	2	3	4	انسداد بالأنف
0	1	2	3	4	صعوبة التنفس عن طريق الأنف
0	1	2	3	4	اضطرابات في النوم
0	1	2	3	4	عدم القدرة علي التنفس جيدا من الأنف أثناء بذل مجهود اضافي

Results

All three surgical techniques resulted in statistically significant improvements in nasal symptoms as measured by Arabic RSDI, CSS, and A-NOSE scores. Group II (bipolar electrocautery at the sphenopalatine foramen) showed the most substantial improvement with a 92.6% reduction in RSDI scores and 80.7% in A-NOSE, followed by Group I (cold steel dissection) at 62.1% and 74.2% respectively, and Group III (submucosal coagulation) at 50% and 69%. Post-hoc analysis showed a statistically significant difference between Group II and both Groups I and III (p<0.001), but not between Groups I and III. No major intraoperative or postoperative complications were reported, supporting the safety of all approaches.

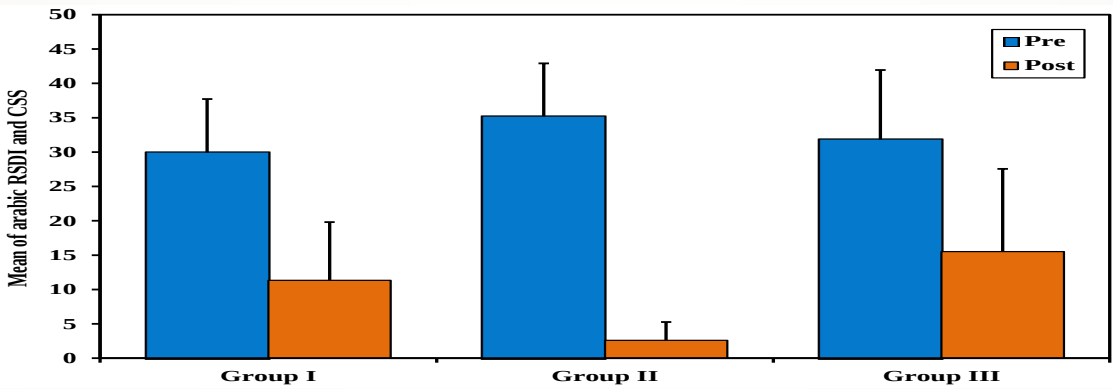


Fig. (1): Pre and Post operative Results of the three groups on A-RSDI and CSS score

Beyond overall symptom reduction, bipolar electrocautery (Group II) consistently outperformed other techniques in both functional and quality-of-life domains. The precision of targeting the neurovascular bundle at the sphenopalatine foramen likely contributes to more comprehensive denervation and symptom control. Although cold steel dissection (Group I) provided favorable results, it involved more invasive manipulation and potential risk to surrounding structures. Submucosal coagulation (Group III), while minimally invasive, showed more variable outcomes—likely due to anatomical differences in distal nerve distribution. These findings highlight not only the clinical effectiveness of each technique but also underscore the importance of anatomical precision in surgical planning.

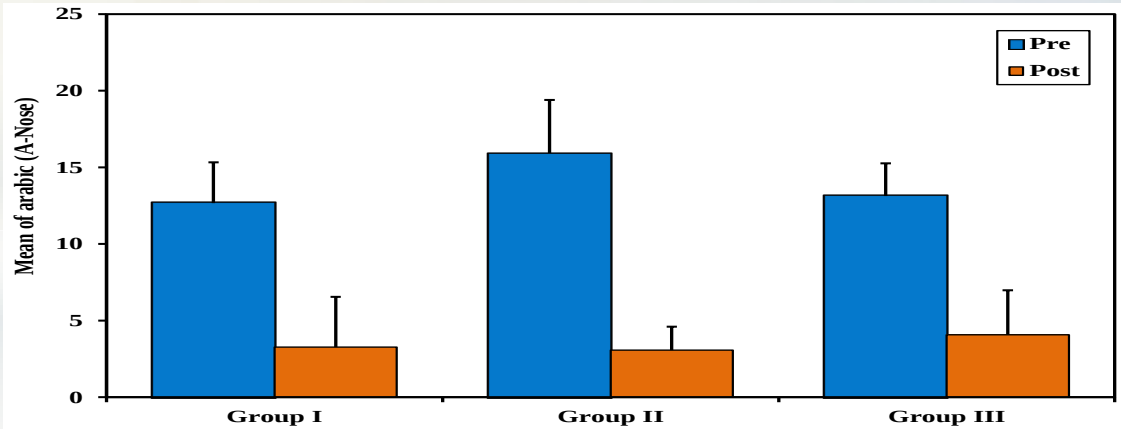


Fig. (2): Pre and Post operative results Of the three groups on A-NOSE score

Conclusion

Posterior nasal neurectomy proved to be an effective and safe intervention for patients with refractory allergic rhinitis across all three surgical techniques. While all approaches—cold steel dissection, bipolar electrocautery at the sphenopalatine foramen, and submucosal bipolar coagulation—resulted in statistically significant symptom improvement, bipolar electrocautery demonstrated the most marked enhancement in both subjective and functional outcomes. This technique provided precise neural targeting with minimal morbidity, establishing it as the most favorable method among those studied. No major intraoperative or postoperative complications were reported, confirming the overall safety and efficacy of these minimally invasive procedures.