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THE EFFICACY OF SURGICAL INTERVENTION IN ALLEVIATING RHINOGENIC CONTACT POINT HEADACHES: A PROSPECTIVE STUDY ON OUTCOME

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ABSTRACT

Introduction: Rhinogenic contact point headache (RCPH) is a frequently overlooked cause of chronic headache and facial pain, resulting from mucosal contact between intranasal anatomical structures. Patients often remain symptomatic despite prolonged medical therapy, making surgical intervention a potential definitive treatment.

Objective: To evaluate the efficacy of endoscopic surgical correction of intranasal contact points in alleviating headache symptoms and improving quality of life in patients with rhinogenic contact point headache.

Methods: This prospective cohort study included 30 patients diagnosed with RCPH who failed adequate medical management and underwent endoscopic nasal surgery over a period of 18 Months. Preoperative evaluation consisted of detailed clinical history, nasal endoscopy, computed tomography of the paranasal sinuses, headache diaries, Visual Analog Scale (VAS) scoring, and Short Form-36 (SF-36) quality-of-life assessment. Surgical procedures included septoplasty, turbinate reduction, concha bullosa correction, and removal of identified mucosal contact points. Patients were followed postoperatively at 1, 3, 6, and 12 months.

Results: The study population had a mean age of 42.15 ± 9.23 years, with female predominance (66.7%). At 12-month follow-up, 90% of patients demonstrated significant symptomatic improvement. Complete headache resolution was observed in 80% of patients, while 10% reported partial improvement. Headache frequency reduced from a mean of 15.6 days/month preoperatively to 3.2 days/month postoperatively, and mean VAS severity scores decreased from 6.8 to 2.5. SF-36 physical component scores improved from 43.2 to 54.5, indicating significant enhancement in quality of life.

Conclusion: Endoscopic surgical management of rhinogenic contact point headache is an effective and safe treatment modality, providing sustained relief from headache symptoms and significant improvement in quality of life in carefully selected patients refractory to medical therapy.

KEYWORDS: Rhinogenic contact point headache; Endoscopic nasal surgery; Mucosal contact points; Facial pain; Quality of life; SF-36

INTRODUCTION

Headache is one of the most prevalent neurological complaints in clinical practice and a significant cause of morbidity and poor quality of life. Though primary headache disorders such as migraine and tension-type headache comprise the majority of cases, secondary headaches originating from extracranial structures are mostly underdiagnosed. Rhinogenic contact point headache is a definite subtype of secondary headache caused by contact between opposing surfaces of intranasal mucosa in the absence of sinonasal inflammation. The contact is said to irritate the trigeminal nerve endings, thereby leading to referred pain to the frontal, periorbital, or facial regions[1–3].

The diagnostic challenge in RCPH depends on its symptoms' similarity to those of headache disorders and sinus pain. A precise diagnosis requires a high level of suspicion, accurate history, nasal endoscopy, and radiological evaluation to show mucosal contact points by excluding inflammatory diseases of the sinuses. New developments in nasal endoscopy and computed tomography imaging significantly enabled identifying these anatomic variations and allowed more appropriate and correct diagnosis and treatment[4,5].

Rhinogenic headaches have been described for over a century; however, they gained renewed attention only with the advent of modern endoscopic techniques. Intranasal mucosal contact points have been reported in approximately 4-10% of the general population, though not all individuals are symptomatic[6]. Deviated nasal septum with or without septal spur is the most commonly implicated anatomical variation, followed by concha bullosa, hypertrophied turbinates, and paradoxical middle turbinate[7,8]. The headache associated with RCPH typically presents as intermittent or persistent pain localized to the frontal, ethmoidal, or periorbital regions, with occipital involvement being relatively uncommon[9].

Various clinical and experimental studies have attempted to explain the relationship between intranasal contact points and headache. Abu-Bakra and Jones demonstrated that stimulation of the nasal mucosa could produce referred facial pain, supporting the neurogenic basis of RCPH[10]. Parsons and Batra reported significant symptomatic improvement

following endoscopic surgical correction of contact points, with surgery being a therapeutic modality in carefully selected patients[11].

Long-term studies have further supported the durability of surgical outcomes. Welge-Luessen et al., in a 10-year follow-up study, observed sustained headache relief in a majority of patients undergoing endonasal surgery for contact point headaches[12]. More recent studies

emanating from India and other regions have re-echoed these findings, thus constituting improvement rates that range from 70% to 90% following the endoscopic correction of anatomical abnormalities[13]. Even with these encouraging observations, variations in diagnostic methods, patients enrolled, as well as measurement tools for outcome definitions have prevented a certain level of generalizability for current evidence available.

Surgical methods for rhinogenic contact point headache are promising, but underdiagnosis currently prevails, while quality prospective studies in developing nations have remained few. Patients are frequently placed on chronic medical treatment or are also presumed to have a diagnosis for various types of headache disorders when, in effect, their condition has substantially reduced their quality of life. Carefully validated outcome measures, such as VAS scoring, are rarely made within a prolonged clinical path.

This is a prospective study aimed at determining the effectiveness of endoscopic sinus surgery for RCH in patients with medically unresponsive disease based on the results for headache symptoms and quality-of-life outcomes at the end of 12 months. The authors propose this trial will contribute towards developing the evidence base relevant to the management of RCPH.

Aim

To evaluate the effectiveness of endoscopic surgical management in alleviating headache symptoms and improving quality of life in patients diagnosed with rhinogenic contact point headache who are refractory to medical therapy.

Objectives

1. To assess the change in headache frequency and severity before and after endoscopic surgical correction of intranasal mucosal contact points using the VisualAnalog Scale (VAS).
2. To evaluate the impact of surgical intervention on patients' quality of life usingthe Short Form-36 (SF-36) questionnaire during a 12-month follow-up period.

METHODOLOGY

- This was a prospective observational cohort study conducted in the Department of Otorhinolaryngology at a tertiary care teaching hospital over a period of 18 months. The study was designed to evaluate the clinical outcomes of endoscopic surgical management in patients diagnosed with rhinogenic contact point headache (RCPH) who were refractory to medical therapy.
- A total of 30 patients diagnosed with rhinogenic contact point headache were enrolled in the study. Patients aged between 18 and 60 years presenting with chronic headache or facial pain for a minimum duration of 12 months were screened for eligibility and Presence of identifiable intranasal mucosal contact points without evidence of active sinonasal inflammation along with Failure to respond to at least 3 months of adequate medical management, including topical nasal steroids,

decongestants, and analgesics. Patients with Evidence of acute or chronic rhinosinusitis on clinical or radiological evaluation, History of migraine, cluster headache, or other primary headache disorders ,Prior nasal or paranasal sinus surgery

,Nasal trauma, sinonasal tumors, or craniofacial anomalies were excluded from the study.

Preoperative Evaluation

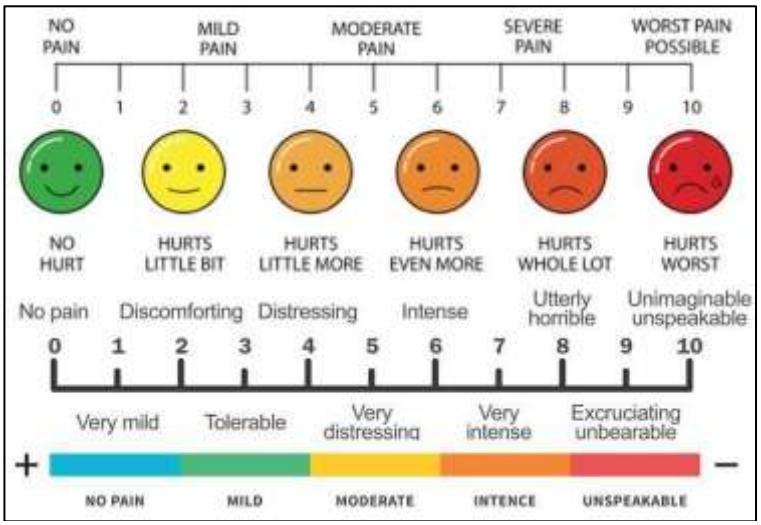
All patients underwent a comprehensive preoperative assessment including detailed headache history (duration, frequency, severity, location, and associated symptoms), general physical examination, and complete otorhinolaryngological evaluation. Diagnostic nasal endoscopy was performed using a rigid 0° and 30° endoscope to identify mucosal contact points such as deviated nasal septum, septal spur, concha bullosa, and turbinate hypertrophy.

Computed tomography (CT) of the paranasal sinuses was obtained in all patients to confirm anatomical variations and to exclude inflammatory sinus disease. Headache severity and frequency were documented using a headache diary and assessed using the Visual Analog Scale (VAS; 0–10)[14–16]. Quality of life was evaluated using the validated Short Form-36 (SF-36)[17] questionnaire.

VAS Score (0–10)	Severity of Nasal Obstruction	Patient Description
0	No obstruction	Breathing completely normal
1–2	Very mild	Barely noticeable blockage
3–4	Mild	Occasional awareness of blockage
5–6	Moderate	Persistent but tolerable obstruction
7–8	Severe	Marked difficulty breathing through the nose
9	Very severe	Almost complete nasal blockage

10	Worst possible	Complete obstruction, unable to breathe through nose
VAS Score (0–10)	**Severity of Post-Nasal Drip**	**Patient Description**
0	No post-nasal drip	No sensation of mucus in the throat
1–2	Very mild	Occasional awareness of mucus
3–4	Mild	Frequent sensation but not bothersome
5–6	Moderate	Persistent throat clearing needed
7–8	Severe	Constant mucus sensation, troublesome
9	Very severe	Almost continuous throat discomfort
10	Worst possible	Constant, distressing post-nasal drip

VAS Score (0–10)	Severity of Smell Loss	Patient Description
0	Normal smell	Sense of smell is completely normal
1–2	Very mild hyposmia	Slight reduction, hardly noticeable
3–4	Mild hyposmia	Reduced smell but can identify most odors
5–6	Moderate hyposmia	Difficulty identifying several common odors
7–8	Severe hyposmia	Can smell only strong odors
9	Near anosmia	Very minimal smell perception
10	Anosmia (complete loss)	No perception of smell at all



SF-36 Score Range	Physical Health Status	Clinical Interpretation
≥ 50	Above average	Better physical health than general population
40 – 49	Average to mildly reduced	Mild physical health limitation
30 – 39	Moderately reduced	Moderate physical impairment
20 – 29	Severely reduced	Significant physical disability
< 20	Very severely reduced	Profound physical impairment

Surgical Technique

All surgical procedures were performed under general anesthesia. The surgical approach was tailored according to the anatomical abnormality identified. Procedures included septoplasty for septal deviation or spur, endoscopic turbinate reduction for inferior turbinate hypertrophy, and concha bullosa reduction or excision where indicated. The primary aim was complete elimination of the identified mucosal contact points while preserving normal nasal physiology.

Postoperatively, nasal packing was applied for 24–48 hours as required. Patients received standard postoperative care including antibiotics, analgesics, and saline nasal irrigation. Follow-up evaluations were conducted at 1, 3, 6, and 12

months postoperatively. At each visit, patients were reassessed clinically, and headache frequency, severity (VAS), and quality of life (SF-36) scores were recorded[17].

The primary outcome measure was improvement in headache frequency and severity as assessed by headache diaries and VAS scores[18,19]. Secondary outcome measures included improvement in quality of life as measured by SF-36 scores and overall patient satisfaction. Surgical success was defined as complete or partial resolution of headache symptoms at the 12-month follow-up. Pre- and postoperative VAS and SF-36 scores were compared using paired t-tests. A p-value of <0.05 was considered statistically significant.

Results Study Population and Demographic Characteristics

A total of 30 patients diagnosed with rhinogenic contact point headache (RCPH) and refractory to medical therapy were included in the study. The age of the patients ranged from 25 to 58 years, with a mean age of 42.15 ± 9.23 years. There was a female predominance, with 20 females (66.7%) and 10 males (33.3%), yielding a female-to-male ratio of 2:1.

The duration of headache symptoms prior to surgery ranged from 12 to 36 months. All patients completed the planned surgical intervention and follow-up assessments up to 12 months.

Table 1. Demographic Characteristics of the Study Population

Variable	Value
Number of patients	30
Age range (years)	25–58
Mean age (years)	42.15 ± 9.23
Gender (Female)	20 (66.7%)
Gender (Male)	10 (33.3%)
Duration of symptoms	≥12 months

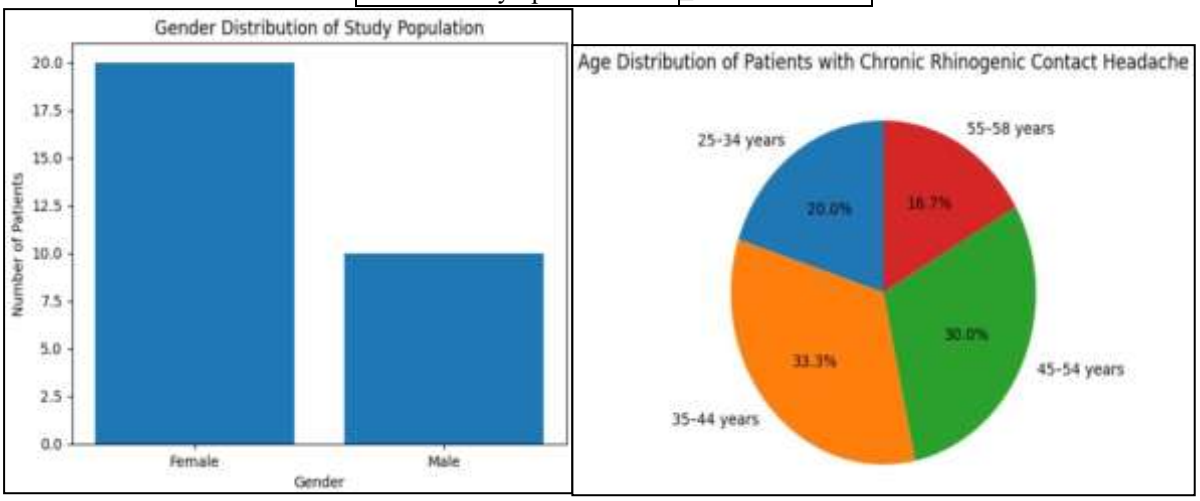


Figure 1. Gender and age distribution of patients with rhinogenic contact point headache.

Anatomical Variations and Mucosal Contact Points

Diagnostic nasal endoscopy and CT imaging revealed multiple intranasal anatomical variations responsible for mucosal contact points. Deviated nasal septum with or without septal spur was the most common finding, followed by concha bullosa and inferior turbinate hypertrophy. Several patients exhibited more than one anatomical abnormality.

Table 2. Distribution of Anatomical Variations Causing Contact Points

Anatomical variation	Number of patients (%)
Deviated nasal septum ± spur	18 (60.0%)
Concha bullosa	7 (23.3%)
Inferior turbinate hypertrophy	5 (16.7%)

Surgical Procedures Performed

All patients underwent endoscopic surgical correction tailored to the identified anatomical abnormality. Septoplasty was the most frequently performed procedure, followed by turbinate reduction and concha bullosa excision. No major intraoperative complications were recorded.

Table 3. Surgical Procedures Performed

Procedure	Number of patients (%)
Septoplasty	18 (60.0%)
Inferior turbinate reduction	5 (16.7%)
Concha bullosa reduction	7 (23.3%)

Headache Outcome Following Surgery

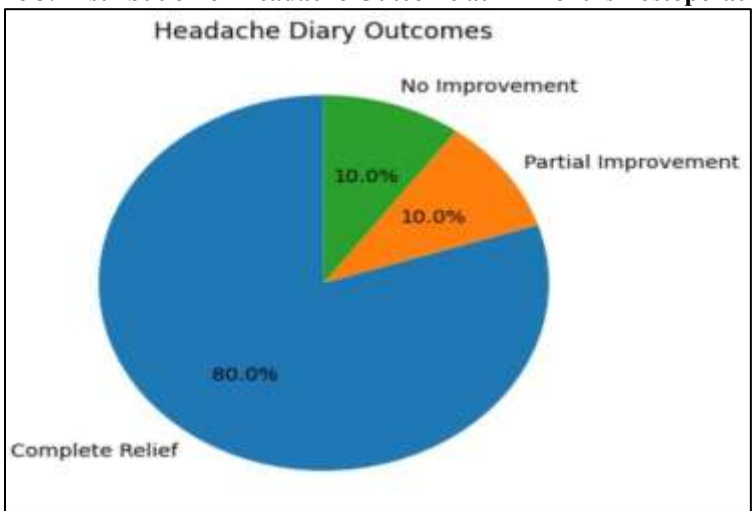
Significant improvement in headache symptoms was observed following surgical intervention. At 12 months postoperatively, 24 patients (80%) experienced complete resolution of headache, while 3 patients (10%) reported partial improvement with more than 50% reduction in headache frequency. Three patients (10%) showed no significant improvement.

Headache frequency decreased markedly from a preoperative mean of 15.6 days per month to 3.2 days per month at 12 months postoperatively. Mean headache severity, assessed using the Visual Analog Scale (VAS), reduced from 6.8 ± 1.2 preoperatively to 2.5 ± 0.9 postoperatively.

Table 4. Headache Outcome at 12 Months Postoperatively

Outcome	Number of patients (%)
Complete resolution	24 (80.0%)
Partial improvement	3 (10.0%)
No improvement	3 (10.0%)

Figure 3. Distribution of Headache Outcome at 12 Months Postoperatively



Quality of Life Assessment

Quality of life assessment using the SF-36 questionnaire demonstrated significant postoperative improvement. The mean SF-36 physical component score increased from 43.2 ± 5.8 preoperatively to 54.5 ± 6.1 at 12 months postoperatively, indicating substantial improvement in physical health status and daily functioning.

Table 5. Comparison of Preoperative and Postoperative Outcome Measures

Parameter	Preoperative	Postoperative (12 months)	p-value
Headache frequency (days/month)	15.6 ± 4.2	3.2 ± 1.5	<0.001
VAS headache severity	6.8 ± 1.2	2.5 ± 0.9	<0.001
SF-36 physical score	43.2 ± 5.8	54.5 ± 6.1	<0.001

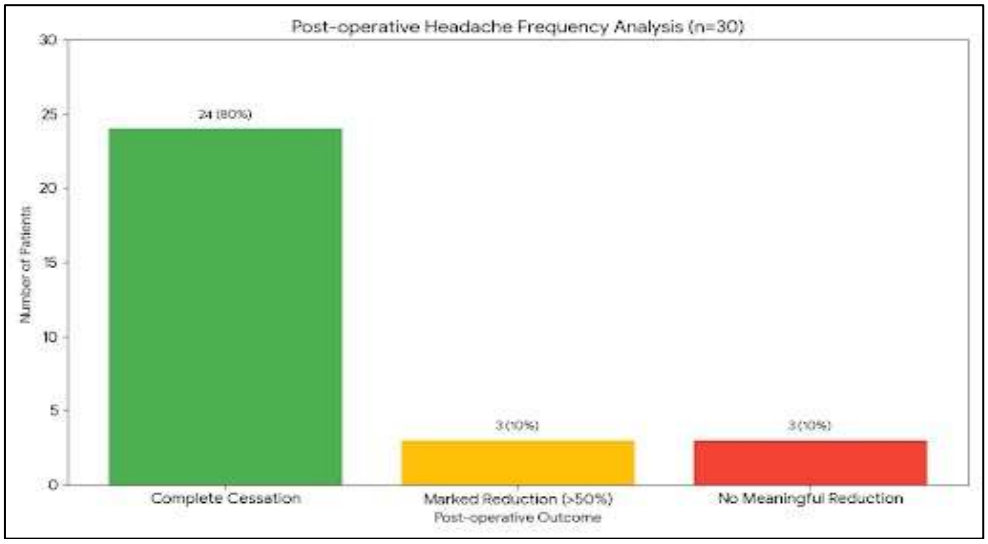


Figure: 4 Postoperative VAS headache severity scores. Patient Satisfaction and Overall Outcome

At the end of the 12-month follow-up period, 93% of patients reported significant subjective improvement in headache symptoms and overall satisfaction with the surgical outcome. No major postoperative complications were encountered during the study period.

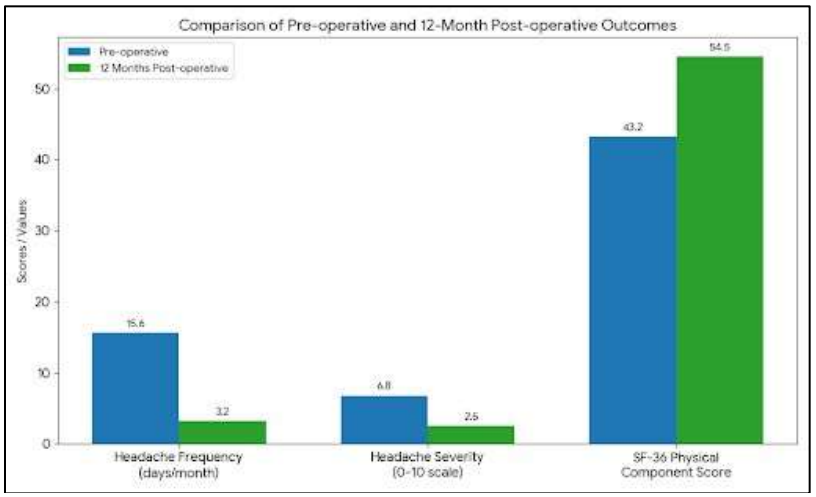


Figure 5. Comparison of mean preoperative and postoperative VAS headache severity scores.

DISCUSSION

In this prospective study, endoscopic surgical correction of intranasal mucosal contact points in patients with RCPH significantly improves headache frequency and severity and quality of life at 12 months of follow-up. These findings are in large part consistent with the results of previous studies that support the role of targeted endoscopic surgery in carefully selected patients who have failed adequate medical management.

Our results showed a significant reduction in mean headache frequency from 15.6 days/month to 3.2 days/month and a significant reduction in mean VAS severity scores from

6.8 to 2.5 one year after surgery. This finding is in agreement with many previous studies. In the study by Bektas et al., surgical resection of contact points significantly reduced the VAS pain scores when compared to the preoperative values, and surgical intervention was considered to be effective for RCPH[20]. Similarly, a systematic review and meta-analysis including 978 patients with RCPH demonstrated that endoscopic surgery significantly reduced VAS scores (from 7.3 ± 1.5 to 2.7 ± 1.8; $p < 0.001$); thus, showing consistent benefits across the wide range of surgical studies[21].

In agreement with our high rate of complete symptom resolution of 80%, one study reported that the majority of patients had a statistically significant reduction in pain intensity following endoscopic contact point removal, with more than half having complete relief[22]. Similar reports of long-term surgical outcomes have also demonstrated that the relief of mucosal contact points can effectively reduce headache intensity and frequency. For instance, FES for contact point headaches resulted in greater than 85% reductions in symptom intensity and frequency at a mean follow-up of almost 14 months[11].

Our study also demonstrated significant improvements in quality of life as evidenced by increased SF-36 physical component scores postoperatively. While not all prior RCPH studies have reported on health-related quality of life outcomes in a structured way, improvements in functional status and patient satisfaction have clinically been noted in

many surgical series. The broad systematic review cited earlier noted that surgical treatment had superior outcomes compared with medical therapy across short-, medium-, and long-term follow-up which likely reflects improved daily functioning associated with headache reduction.

Although the overall results are encouraging, there is some heterogeneity regarding the outcomes for different anatomical subtypes and surgical techniques. For example, in the paper by Bektas et al. [22], it was underlined that specific nasal anatomical variations, such as concha bullosa, may lead to less favorable postoperative pain scores when compared with the correction of septal deviation or spurs. This indicates the importance of thorough preoperative assessment, which should also include high-resolution CT, to optimize patient selection and tailor surgical approaches to individual needs.

Moreover, various retrospective analyses and other cohort studies have observed the temporary nature of pain relief and that exactitude in surgical technique plays an important role. One review of endoscopic septoturbinal surgeries reported significant postoperative improvements in VAS scores, with some attenuation of effect in the following months, indicating long-term variability and a need for continuing follow-up[23].

Our findings, in conjunction with evidence from prior controlled and observational studies, support the clinical utility of endoscopic surgical management for RCPH in patients who do not respond to medical therapy. The consistent reduction in headache severity and improvements in quality of life strengthen the argument for considering surgical correction of intranasal contact points as a viable therapeutic option in this patient population.

CONCLUSION

This prospective study demonstrates that endoscopic surgical correction of intranasal mucosal contact points is an effective and safe treatment modality for patients with rhinogenic contact point headache refractory to medical therapy. Surgical intervention resulted in significant and sustained reductions in headache frequency and severity, along with marked improvement in quality-of-life measures over a 12-month follow-up period. The high rates of complete or partial symptom resolution and excellent patient satisfaction demonstrated in this series emphasize the importance of accurate diagnosis, careful patient selection, and comprehensive endoscopic evaluation in achieving favorable outcomes. These findings support the role of endoscopic nasal surgery as a definite therapeutic option for rhinogenic contact point headache and underscore the need for greater clinical awareness of this frequently underdiagnosed condition.

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