

비부 이물 육아종의 임상적 경험

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Clinical Experiences with Foreign Body Granuloma of the Nose: 7-Year Experience with 18 Patients

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Purpose: The injection of various materials, including medical fillers and unregulated products, is widespread, potentially causing the development of foreign body granulomas. Should this occur on the nose, the contour deformity and inflammatory signs that result from these granulomas are aesthetically undesirable to patients. The purpose of our study is to share our experiences using different surgical approaches, depending on the affected portion of the nose, to optimize management of this challenging problem and to evaluate patient's satisfaction using our in-house questionnaire along with degree of improvement by two independent plastic surgeons.

Methods: We treated 18 patients who underwent surgical excision of nasal foreign body granulomas via a perilesional approach to the lesion (n=12) or by transcolumellar incision (n=6) at our hospital over a period of seven years from March 2003 to October 2010. Nonparametric statistics were used and are presented as medians (25th-75th). Patient satisfaction was evaluated on a scale of 1 to 5 using an in-house questionnaire. All pre-and post-operative photographs were analyzed by two independent plastic surgeons. Post-operative outcomes were evaluated based on the surgeons' consensus ratings.

Results: All patients receiving the transcolumellar approach reported a high level of satisfaction with the results. All but two patients who received the perilesional

approach were satisfied with the outcome. No outcomes were rated as no change or worse by the consensus ratings.

Conclusion: For the upper two-thirds of the nose, perilesional surgical excision can lead to substantial patient satisfaction with modified contour deformity and infection control. The transcolumellar approach resulted in better outcomes and patient satisfaction for the lower one-third of the nose.

Key Words: Foreign body granuloma, PMMA filler, Hyaluronic acid filler, Paraffin

I. INTRODUCTION

Injections of various materials are commonly used to improve facial and body contours for cosmetic and reconstructive purposes. However, serious complications can occur following injections of soft-tissue fillers and unregulated products. The formation of foreign body granulomas is one of the complications that can arise from the injection of foreign material and treatment is quite challenging because the nose is located in the center of the face and patients require a good aesthetic result. The most commonly seen complications in the nasal region after filler injections are tissue necrosis, dyspigmentation and contour deformity.¹

Park et al. reported that perilesional surgical intervention for the purpose of treating a foreign body granuloma leads to good aesthetic and functional results.² However, in the case of nasal foreign body granuloma, using a transcolumellar incision may be an alternative option with the advantage of leaving an inconspicuous scar. In this paper, we present our experiences treating patients with nasal foreign body granulomas and make the recommendation that surgical approaches should be based on combined perilesional and transcolumellar approach, depending on the affected portion of the nose to optimize management of this challenging problem.

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II. MATERIALS AND METHODS

A. Patients

Medical records from 18 patients who underwent surgery for nasal foreign body granulomas from March 2003 to October 2010 were reviewed retrospectively. Patients with a contour deformity of the nose or sign of inflammation, both with and without tissue necrosis, after foreign material injection into the nose were included in our study. We reviewed each patient's symptoms, age, gender, the time interval between foreign material injections and surgery, type of practitioner, previous treatment

history, the type of material injected, anatomical location and the surgical approach used. Patients were followed after their final procedures, and their outcomes were evaluated according to overall satisfaction ratings on a scale from 1 (worse) to 5 (excellent) using a 10-item questionnaire, which was developed and has been used in our hospital since 2003 (Table I). Two plastic surgeons who were not involved in the surgeries assessed the surgical outcomes. Aesthetic improvement was identified based on comparisons between pre-operative and post-operative photographs taken at final follow-up. Outcomes were classified as worse,

Table I. Foreign Body Granuloma Evaluation and Satisfaction Questionnaire

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- 1) When did you first receive an injection of foreign materials, including medical filler or unregulated materials?
 - 2) What were the materials?
 1. I don't know what was injected
 2. Medical filler (_____)
 3. Paraffin
 4. Silicone oil
 5. Industrial oil
 6. Other illegal materials (_____)
 - 3) Check the area you got an injection
 - 4) Who was the practitioner?
 1. general physician
 2. dermatologist
 3. plastic surgeon
 4. unlicensed practitioner
 - 5) When did you first notice the problem?
() month (s)/year (s) after foreign material injection
 - 6) What was your main presentation?
 1. contour deformity
 2. foreign body sensation
 3. inflammation (discharge, discoloration, pruritus, heating sensation, swelling, tenderness, etc.)
 4. other (_____)
 - 7) Have you ever received treatment? Yes/No
(If yes) Did you receive surgical therapy and/or non-surgical therapy? How many times were you treated?
 1. surgical therapy __ time (s)
 Which method?
(face lift incision/intraoral incision/squeezing/incision and curettage/liposuction /other)
 2. injection therapy __ time (s)
 3. only medication

Satisfaction Assessment

- 1) Which procedure did you receive at our clinic?
 1. surgical therapy
 2. injection therapy
 - 2) How satisfied or dissatisfied are you with your procedure?
 1. Worse
 2. No change
 3. Satisfied
 4. Very satisfied
 5. Excellent
 - 3) If you are content with the procedure, what has been the most satisfactory aspect?
If you are discontent with the procedure, what has been the most unsatisfactory aspect?
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no change, fair, good or excellent. By definition, the lower third of the nose is made up of the lobule, columella, nostril floors, vestibules, alar bases and side walls and contains the alar cartilages, accessory cartilages and fibrous fatty connective tissue.

B. Surgical technique (Fig. 1~3)

Six patients who had foreign body granulomas on the lower third of the nose were managed surgically



Fig. 1. Foreign body granuloma of the nasal tip: A 62-year-old female patient received an injection of paraffin at the nasal tip 40 years prior.

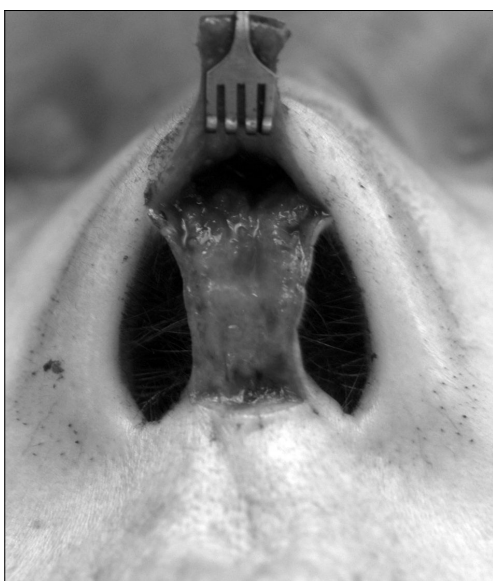


Fig. 2. Intraoperative view after removal of the foreign body granuloma.

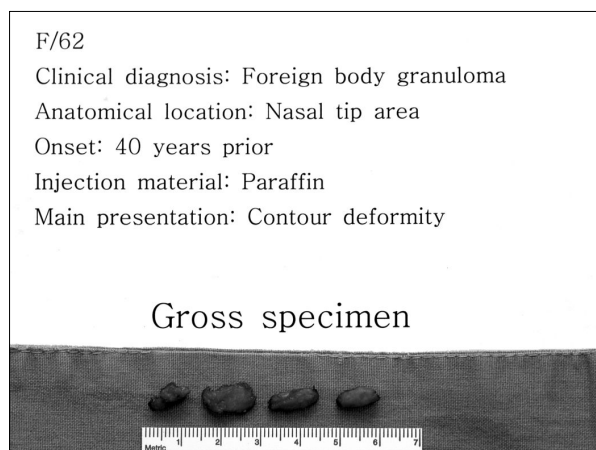


Fig. 3. Gross specimen of the nasal foreign body granuloma.

using an open rhinoplasty approach. All procedures were performed under local anesthesia. The procedure entailed making a transcolumellar incision at the junction of the middle and distal thirds of the columella, placed farther distally from the columella, if the foreign body granuloma extends toward the columellar base. Extended rim incisions were then made. We emphasized the need to stay close to the rim and minimize encroachment into the vestibular lining, because all skin anterior to the rim incision was resected along with the foreign body granuloma. The dissection proceeded immediately superficial to the alar cartilages, lifting the foreign body granuloma in continuity with the overlying skin. The subcutaneous component of the foreign body granuloma and adjacent fibrofatty tissue was then resected in a subdermal plane, extending the dissection between the medial crura so as to narrow the columella if they were widened by the foreign body granuloma. After the excision of the foreign body granuloma and fibrofatty tissue, transdomal sutures were placed to re-approximate the nasal dome. No other adjuvant procedures were used. Sutures are indispensable for shaping the tip cartilages, increasing tip projection and increasing definition of the nasal tip; all of which are easily accomplished with our approach.

For surgeries on the upper two-thirds of the nose, we palpated lesions and excised the involved skin and subcutaneous tissue as completely as possible considering the relaxed skin tension line. We closed the skin and the underlying subcutaneous tissue with appropriate approximation using nylon 5-0 (simple interrupted) sutures.

III. RESULTS

A. Age, gender and primary symptoms

Of the 18 patients, 17 (94.4%) were female, and the average age was 35 ± 10.6 years old (range: 21 to 62 years old). Eight patients (44.4%) presented with inflammatory sign, while ten patients (55.6%) sought treatment for contour deformities.

B. Time interval between foreign material injection and surgery and types of practitioners

The average time interval between foreign material injection and time of surgery at our hospital was approximately five years. The practitioners who performed the original injections included three (16.7%) plastic

surgeons, four (22.2%) dermatologists and 11 (61.1%) unlicensed practitioners.

C. Previous treatment history

Seven of the 18 patients had a history of treatment failure at other hospitals. Among these seven patients, five had a history of prior injection therapy (four with intralesional steroid injections and one with intralesional hyaluronidase injections) and two patients had a history of prior surgical therapy with incision and drainage.

D. Types of injected foreign material and anatomical locations

The types of injected foreign material, in order of frequency, were unregulated products (11 patients, 61.1%), PMMA filler (two patients, 11.1%), hyaluronic acid filler (two patients, 11.1%) and other medical fillers (three patients, 16.7%) (Table II). Eleven patients (61.1%) had granulomas in the upper two-thirds of the nose, while the remaining seven patients (38.9%) had granulomas in the lower one-third of the nose.

E. Satisfaction assessment

Results of the satisfaction ratings are summarized

Table II. Distribution of Injection Materials

Injection materials	No. (%)
Unregulated products	11 (61.1)
PMMA filler	2 (11.1)
Hyaluronic acid filler	2 (11.1)
Other medical fillers	3 (16.7)
Total	18 (100)

Table III. Post-operative Outcomes according to Patient Satisfaction

Outcomes	Transcolumellar approach		Perilesional approach	
	No.	%	No.	%
Excellent	1	16.7	1	8.3
Good	4	66.6	2	16.7
Fair	1	16.7	7	58.4
No change	0	0	1	8.3
Worse	0	0	1	8.3
Total	6	100	12	100

Table IV. Post-operative Outcomes according to Plastic Surgeon Satisfaction

Outcomes	Transcolumellar approach		Perilesional approach	
	No.	%	No.	%
Excellent	1	16.7	2	16.7
Good	2	33.3	4	33.3
Fair	2	33.3	6	50.0
No change	1	16.7	0	0
Worse	0	0	0	0
Total	6	100	12	100

in Tables III and IV. All patients (6/6, 100%) showed substantial increase in satisfaction scores after the transcolumellar approach, whereas all but two patients (10/12, 83.4%) were satisfied with the outcomes after the perilesional technique. Consensus ratings of the transcolumellar approach by the two independent plastic surgeons found that objective outcomes were equally divided between excellent, good and fair. No outcomes were rated as no change or worse. For the perilesional approach, consensus ratings found that outcomes were excellent in two patients, good in four patients and fair in six patients.

F. Two selected clinical cases

Case 1.

The first patient was a 52-year-old woman with a foreign body granuloma of the glabella and nasal tip after injection of putative paraffin 20 years prior. She had no history of treatment. She underwent foreign body removal via open rhinoplasty approach and her recovery was uneventful. She was very satisfied with the correction of her contour deformity (Fig. 4-6).

Case 2.

The second patient was a 40-year-old woman with inflammatory signs of the nose after injection of unknown materials about 10 years prior. She had a treatment history of squeezing with incision and curettage at other hospital. She complained of continuing purulent discharge with erythema. We treated her with two consecutive perilesional surgical excisions, and the patient was satisfied with the relief of inflammation (Fig. 7-9).

IV. DISCUSSION

Foreign body granulomas occur at different rates in

response to different materials. The postulated causes of foreign body granulomas include product-related factors, such as impurities in the agent and irregularities of the filler surface, as well as practitioner-related factors including large injection volumes, repeated injections and the injection plane.² We observed seven patients who had undergone filling procedures performed by plastic surgeons or dermatologists. The remaining 11 patients had undergone illegal procedures by unlicensed practitioners with unregulated materials. Ideally, practitioners should respect the technical principles of injection.

In addition, our experiences over several years

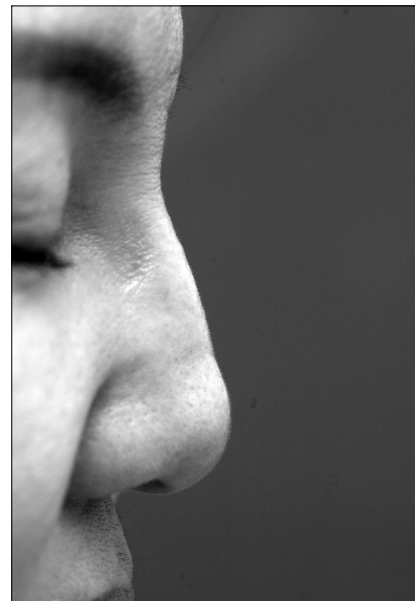


Fig. 4. Foreign body granuloma of the nasal tip: A 52-year-old female patient received an unregulated materials at entire nose and glabella 20 years prior.



Fig. 5. Gross specimen of the foreign body granuloma.



Fig. 6. Postoperative 18 months.



Fig. 7. Preoperative view.

indicate that detour approaches to facial foreign body granuloma are inadequate due to poor operative views and insufficient excision.^{2,3} We believe that perilesional surgical excision can lead to substantial improvements in patient satisfaction by modifying contour deformities and controlling infection. In our experience, foreign body removal from the upper two-thirds of the nose via a transcolumellar incision was nearly impossible due to the poor operative field of view and diffuse bleeding that resulted from the pronounced immunological reactions to a granuloma or an intraoperative

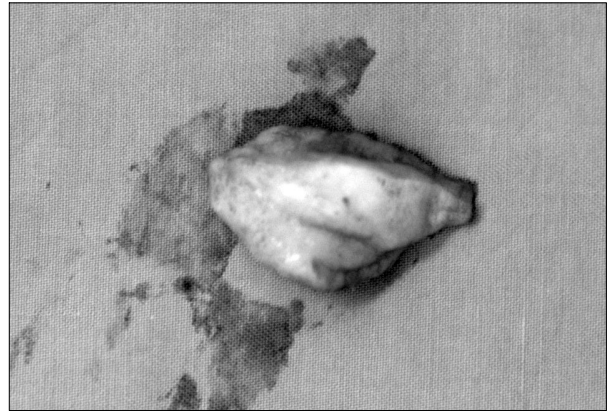


Fig. 8. Gross specimen of the foreign body granuloma.



Fig. 9. Postoperative 18 months.

vessel injury. Even with minimal bleeding, patients experienced unsatisfactory outcomes. Contour deformity due to relatively large volumes of injected materials into the thin and pliable skin of the upper nasal area can partially explain the poor outcomes that have resulted from the detour approach. Therefore, we posited that foreign body granulomas in this area can be successfully treated using the perilesional approach.

In contrast, most patients with granulomas in the lower-third of the nose present with inflammatory sign or, rarely, with tissue necrosis, possibly due to vascular compression by the foreign body granuloma. Since it was relatively easy to identify these granulomas and to control bleeding, we treated cases in the lower-third of the nose with a transcolumellar incision.

In our experience, the transcolumellar open rhinoplasty approach has proven to be a safe and desirable approach for surgical correction of foreign body granulomas of the lower-third of the nose. Not only is there minimal visible external scarring, but surgical exposure is excellent. Perilesional surgical excision often results in permanent scarring that is difficult to conceal, whereas transcolumellar incisions reduce visible scarring. In addition, when a foreign body granuloma is insinuated into the skin and underlying soft tissue, it is inevitable that the inflamed skin will be excised, which usually causes the skin anterior to the rim incision to be resected. Most nasal foreign body granuloma patients have histories of procedures on the nose, including augmentation rhinoplasty and filler injections. Even though it is rare, potential vascular compromise can occur in these patients. Defatting of the subcutaneous tissue during open rhinoplasty can cause tissue necrosis resulting in disastrous complications. In this respect, we believe that our conservative rim incision technique is superior to the more frequently performed marginal incision approach. Satisfaction with outcomes was primarily affected by the resultant scarring of the upper-third of the nose.

V. CONCLUSION

We report 18 cases of nasal foreign body granuloma removal with either perilesional or transcolumellar incisions. We achieved improved outcomes and increased patient satisfaction using differing approaches that considered the location of the granuloma. Our experience should be valuable to other plastic surgeons as they seek to develop the optimal treatment outcome when presented with a foreign body granuloma in the nose. We also stress the importance of using caution with medical filler injections, even by well-trained surgeons, and educating the public about the potentially disastrous consequences of unregulated product injections by unlicensed practitioners.¹

REFERENCES

1. Park TH, Seo SW, Kim JK, Chang CH: Clinical experience with Hyaluronic acid-filler complications. *J Plast Reconstr Aesthet Surg* 64: 892, 2011
2. Park TH, Seo SW, Kim JK, Chang CH: 120 cases of facial foreign body granuloma. *J Korean Soc Plast Reconstr Surg* 37: 233, 2010
3. Kang HK, Seo HS, Kang MG, Chang CH: Self induced foreign body injection patient: a case report. *J Korean Soc Plast Reconstr Surg* 35: 622, 2008