

# Rhinoplasty for Hypertrophied Transverse Nasalis Muscle: A Case Report

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**Summary:** Negatively impacting the aesthetics of the face, nasal deformities can be attributed to many congenital or acquired causes, of which muscular hypertrophy is uncustomary. In this article, we narrate a case of a 26-year-old woman with a prominently wide mid-vault, in addition to other abnormalities of the nose. It was thought to originate from soft tissue because it was thick and firm to palpation. Open rhinoplasty was done where hypertrophy of the paired transverse nasalis muscle was observed and resected. The patient enjoyed a safe postoperative period with excellent cosmetic results and minimal effect on the nasal function in terms of breathing and pronunciation. We recommend this approach to any patient with a similar disfigurement due to its simplicity and ability to correct other co-existing nasal disfigurements. (*Plast Reconstr Surg Glob Open* 2021;9:e3593; doi: 10.1097/GOX.0000000000003593; Published online 24 May 2021.)

## INTRODUCTION

Constituting a major aesthetic landmark of the facial mid-third, the nose is arguably one of the first features noticed by others. Henceforth, cosmetic imperfections could be distressful to many, driving them to be one of the 207,284 people who underwent nasal reshaping surgeries in 2019 according to the American Society of Plastic Surgeons.<sup>1</sup>

While patients' complaints about their noses may arise due to different anatomical abnormalities, a rare cause could be traced back to disfigurement of muscular origin. Ohtsuka reported a case of a child with a deformed columella due to hypertrophied depressor septi nasi, which was resected subcutaneously through a right nasal rim incision, achieving a satisfactory outcome.<sup>2</sup> Hamartoma of striated muscle was confirmed in 2 children who presented to Nakanishi et al, with a mass in the nostril.<sup>3</sup> They recommended thorough investigation because these lesions are associated with amniotic band syndrome and brain lipomas.<sup>3</sup> As a compensatory mechanism, dilator alar muscle hypertrophy occurs in athletes,<sup>4</sup> but it is not reported to be the drive behind a surgical intervention.

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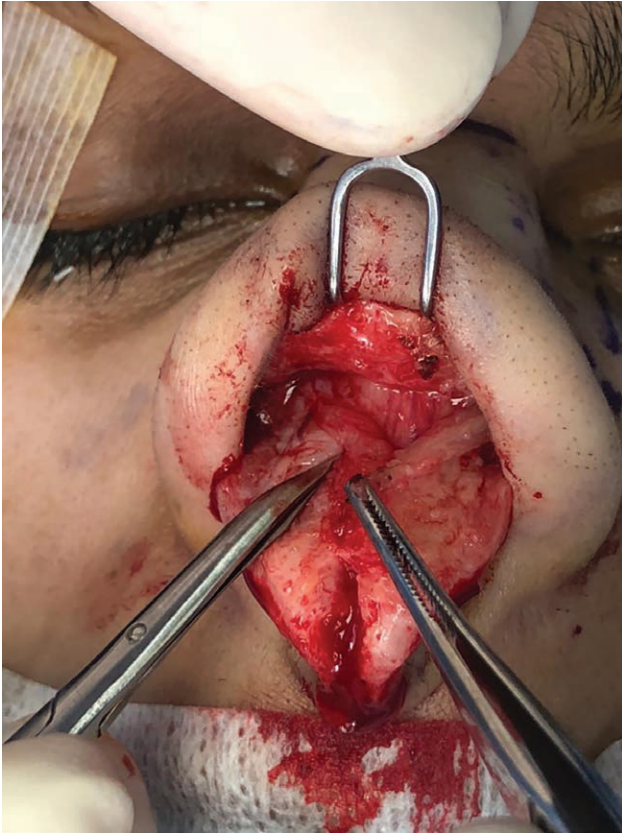
We aimed to describe a case of nasal deformity due to hypertrophied transverse nasalis muscle and its management. It is the first to be reported in the literature.

## CASE

A 26-year-old woman with no known medical conditions presented to the senior author's private practice complaining of nasal deformity, not attributed to trauma nor present in other family members. Upon examination, she had a thick nasal skin envelope, typical of Middle Eastern origin. On the nasal frontal profile, she had widely divergent dorsal aesthetic lines, with an abnormally wide middle vault, a wide alar base, and a bulbous tip; the alar rims and the columella were completely covered by the tip of the steeply drooping nasal tip. A slight dorsal hump with a downward projecting tip was documented on the lateral profile. Furthermore, narrow nasolabial and columellar-labial angles of approximately 30 and 25 degrees, respectively, were noted. Upon palpating the middle-vault, a thick, firm mass sitting over the middle-vault was perceived, indicating a deformity of fibrofatty or muscular in origin. No septal deviation was present. Following a mutual agreement with the patient and consenting for an open rhinoplasty, the patient was taken for the aforementioned procedure under general anesthesia. (See figure, Supplemental Digital Content 1, which shows the nasal deformity preoperatively. Please note the abnormally wide mid-vault. <http://links.lww.com/PRSGO/B659>.)

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**Fig. 1.** Intraoperative view of the hypertrophied transverse nasalis muscle.

After packing, soaking with xylometazoline, and local anaesthetic application, composed of 1% lidocaine mixed with epinephrine, stair-step and infra-cartilaginous incisions were made to create the sub-musculoaponeurotic dissection plane. Defatting of the fibrofatty tissue harbored on the lower lateral cartilages was done. As shown in **Figure 1**, a striking observation was the presence of an abnormally hypertrophied transverse nasalis muscle with a thickness of 4.5 mm just above the upper lateral cartilage. As it was speculated to be the origin of the swollen middle-vault, it was resected bilaterally using a Colorado tip needle. After that, cephalic trimming of the lower lateral cartilages along with the caudal end of the cartilaginous septum trimming was done; followed by transdomal, interdomal, and intercolumnellar sutures with polydioxane 5-0 sutures. A small portion of the dorsal cartilaginous septum was harvested to create a columellar strut, which was anchored between the medial crura of the lower lateral cartilages with a polydioxane 5-0 suture. Then, lateral osteotomy was done bilaterally, followed by bilateral Weir excision. Finally, packing was removed, all incisions were closed with the traditional suturing material and wound closure strips, and an external nasal splint was applied.

Five days later, the splint and sutures were removed in a follow-up visit, with no signs of any local or systemic complications. Significant cosmetic improvement was noticed 3 months and 20 days postoperatively whereby the nose achieved an appealing contour, the projection and the

alar base were optimized, and perhaps more importantly, the patient was happy. (See **figure, Supplemental Digital Content 2**, which shows the condition of the patient after the successful operation at 3 months and 20 days. <http://links.lww.com/PRSGO/B660>.)

## DISCUSSION

Composed of 2 parts, the paired nasalis is the largest muscle of the nose. Its transverse part is known to compress the nostrils, an action that antagonises its alar part that dilates them.<sup>5,6</sup> The former part originates from the maxillary incisive fossa, ascends upward and medially, and transitions with the opposite side in the midline to form C-shaped muscle fibers.<sup>5</sup>

The patient in this report presented with an abnormal nose, mainly due to mid-vault nasal enlargement. The differential diagnosis includes nasal subcutaneous hamartomas, dermoid cysts, dorsum gliomas, and encephaloceles.<sup>7</sup> Because the deformity was not isolated to the widened mid-vault, rhinoplasty was chosen to correct the tip projection, mild dorsal hump, and the wide alar base as well.

A theoretical complication of total removal of the muscle is the negative impact on pronouncing the letters (B) and (P), and whistling, as the transverse nasalis aids in occluding the posterior nasal vestibule and closure of the oral cavity in a synchronous manner with the orbicularis oris.<sup>8,9</sup> However, such an abnormality was not noticed in our patient during follow-up. Furthermore, loss of its compression on the nostrils is supposed to lead to flaring nostrils; we believe that this was counteracted by the bilateral Weir excision.<sup>10</sup> Finally, we recommend open rhinoplasty and resection of the muscle in managing such a condition because the scars are hidden, there is no impact on the function, and other deformities can be corrected depending on the patient.

## CONCLUSIONS

Abnormal nasal contour and deformity may affect people's psychosocial well-being and self-esteem. Our patient presented with an abnormally wide nasal mid-vault, among other abnormalities, and the cause was found to be hypertrophy of the paired transverse nasalis muscle on open rhinoplasty. Following total resection, the patient enjoyed satisfactory cosmetic and functional outcomes during the 3-month follow-up period. This rare case highlights the appealing cosmetic results of this procedure on the nasal morphology without any defect on its physiology.

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*This case report conforms to the Declaration of Helsinki.*

#### PATIENT CONSENT

*The patient provided written consent for the use of her image.*

#### REFERENCES

1. American Society of Plastic Surgeons. 2019 Plastic Surgery Statistics Report. 2019. Available at <https://www.plasticsurgery.org/documents/News/Statistics/2019/plastic-surgery-statistics-full-report-2019.pdf>. Accessed February 1, 2021.
2. Ohtsuka H. Hypertrophy of the depressor septi nasi muscle. *Plast Reconstr Surg*. 2005;116:1817.
3. Nakanishi H, Hashimoto I, Takiwaki H, et al. Striated muscle hamartoma of the nostril. *J Dermatol*. 1995;22:504–507.
4. Galli JJ, Zavalla CA, Vivas DG, et al. New surgical concepts: Nasal tip function. *Aesthetic Plast Surg*. 1997;21:240–242.
5. Hur MS, Hu KS, Park JT, et al. New anatomical insight of the levator labii superioris alaeque nasi and the transverse part of the nasalis. *Surg Radiol Anat*. 2010;32:753–756.
6. Park J, Suhk J, Nguyen AH. Nasal analysis and anatomy: Anthropometric proportional assessment in Asians—aesthetic balance from forehead to chin, part II. *Semin Plast Surg*. 2015;29:226–231.
7. Verkerk M, Powell J, Wilson J. A lump on the nose. *BMJ Case Rep*. 2015;2015:bcr2015211806.
8. Breitsprecher L, Fanghänel J, Metelmann HR, et al. The influence of the muscles of facial expression on the development of the midface and the nose in cleft lip and palate patients. A reflection of functional anatomy, facial esthetics and physiology of the nose. *Ann Anat*. 1999;181:19–25.
9. Clark MP, Greenfield B, Hunt N, et al. Function of the nasal muscles in normal subjects assessed by dynamic MRI and EMG: Its relevance to rhinoplasty surgery. *Plast Reconstr Surg*. 1998;101:1945–1955.
10. Gandolfi S, Laloze J, Chaput B, et al. Nostril surgery: Indications, surgical procedures and outcomes—A systematic review of published cases. *Aesthetic Plast Surg*. 2020;44:2219–2229.