



# Postoperative Functional and Cosmetic Satisfaction among Subjects Undergoing Open Versus Endonasal Septorhinoplasty: Five Years' Experience from an Open-label Study at a Tertiary Care Center in Oman

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## ABSTRACT

**Objectives:** We sought to compare functional and cosmetic satisfaction among male and female patients undergoing open and closed septorhinoplasty within sub-groups of indications for the surgery at a tertiary care hospital in Oman. **Methods:** We conducted a prospective study in the ear, nose, and throat surgery department at Sultan Qaboos University Hospital from 2010 to 2015. All patients aged above 17 years, without dysmorphic pathologies, and due to be operated through open or endonasal septorhinoplasty based on the appropriate indications (functional or cosmetic or functional and cosmetic), were included in the study. **Results:** Out of 215 patients who underwent septorhinoplasty, 30 were lost to follow-up. One-hundred and eighty-five patients (124 males and 61 females) available for postoperative assessment had been allocated to septorhinoplasty by the endonasal approach (n = 89; 59 males and 30 females) or open approach (n = 96; 65 males and 31 females) based on their indications for surgery: functional (n = 98; 64 males and 34 females); cosmetic (n = 39; 23 males and 16 females); and both functional and cosmetic (n = 48; 37 males and 11 females). Sex-wise distribution across different age groups for the specific surgical technique based on indication for surgery did not show any significant differences within any of the respective sub-groups. Both sexes reported no significant difference in satisfaction per their scores on the functional satisfaction scale post open or endonasal intervention. However, in their cosmetic satisfaction scale scores, a significantly higher proportion of males within the functional indication for surgery subgroup (90.9%) expressed satisfaction with the open surgical approach than the 71.0% males operated by the endonasal approach ( $p = 0.041$ ). **Conclusions:** Males undergoing septorhinoplasty for functional indications expressed significant satisfaction with the open surgical approach compared with the endonasal approach on the cosmetic satisfaction scale. This study could accrue only 185 patients during the five-year study period and hence was unable to generate any significant evidence to prove any differences in postoperative functional and cosmetic satisfaction outcomes within sub-groups based on other indications for surgery for males and females separately.

Septorhinoplasty is considered one of the most challenging surgeries in esthetic medicine due to variable nasal anatomy, deformity, and patient expectations.<sup>1</sup> Septorhinoplasty can be done by open or closed surgical approaches based on the surgeon's experience and the indications for surgery. The 'pros and cons' for open or closed

septorhinoplasty have been reviewed elsewhere,<sup>2</sup> and there is ample empirical evidence suggesting that both approaches have comparable efficacy.<sup>3,4</sup> However, there is a dearth of studies that have examined the outcome of these two approaches in terms of patient satisfaction separately for males and females and within their specific indications for surgery.

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In addition to changing the doctor-patient relationship, there is increasing evidence to suggest that ideas of esthetics and standards of 'beauty' tend to fluctuate in complex ways and often hinges on the eyes of the beholder.<sup>5</sup> It is not clear how body image begins to affect the outcome of septorhinoplasty. A study that sought to compare the outcomes of rhinoplasty among 132 patients and their surgeons suggests a clear point of concordance and discordance between the surgeon and the patients regarding the outcome of the rhinoplasty.<sup>6</sup> As a result of such perceived discrepancy, a concerted effort has been made to determine the characteristics of the candidates for septorhinoplasty who will be satisfied or otherwise.<sup>7</sup> There is strong evidence in the literature suggesting that dysmorphic pathology tends to hamper with meaningful improvement in psychosocial functioning and psychological wellbeing in the long run among patients who undergo septorhinoplasty.<sup>8</sup> Such a background has given rise to an interest in quantifying the perceived satisfaction of the clients who have undergone septorhinoplasty. In the age of a patient-centered approach, such an undertaking is often perceived to constitute best practice.<sup>9</sup>

Since most of the data on satisfaction following cosmetic surgery have emanated from western populations, there is a dearth of such studies among the non-western counterparts. There is evidence to suggest that ideas of body image differ across societies. Compared to western societies where individualism appears to be highly endorsed, in a traditional society such as in Oman, selfhood is generally relegated to the peripheries. In a collective society, perceived adequate body image tends to be strongly influenced by the opinion of the other.<sup>10</sup> In psychological parlance, such culture patterning begins to suggest ideas of body image in collective societies are likely to prescribe to an 'external locus of control'.<sup>11</sup> In contrast to those societies with the mindset of the 'inner ideal' as an often integral part of individualistic society, communities outside the realm of western society tend to have a tendency for sociocultural pressure to achieve certain body image ideals.<sup>12</sup> In such societies, body image dissatisfaction has been suggested to be higher due to such pressure, and this, in turn, has the potential to trigger dissatisfaction after septorhinoplasty.<sup>13</sup> While issues pertinent to body image have been reported in different parts of the world, to our knowledge,

there have been no such studies from Arab-Islamic countries. Our open-label study sought to objectively assess gender-specific, postoperative, functional, and cosmetic satisfaction within sub-groups of indications for surgery among subjects undergoing open versus endonasal septorhinoplasty in Oman.

## METHODS

We conducted a prospective, open-label study between 2010 and 2015 in the ear, nose, and throat (ENT) division of the surgery department at Sultan Qaboos University Hospital, a tertiary care referral hospital in Oman.

All patients above the age of 17 who could read and write, who were to be operated by open or endonasal septorhinoplasty for either functional or cosmetic reasons or both, and were available for one-year follow-up were included for objective assessment for their functional and cosmetic satisfaction in the postoperative period. Those having dysmorphic pathologies, posted for revision septorhinoplasty, and having sinonasal pathology were excluded.

A total of 215 patients were posted for septorhinoplasty of which 30 patients were lost to follow-up. Hence, 185 patients (124 males and 61 females) were available for postoperative assessment.

All patients were evaluated pre-operatively by history and clinical examination. Each patient's main concern was identified as either functional (airway obstruction) or cosmetic (external nasal deformity) or both functional and cosmetic. All patients were screened for dysmorphic pathologies as identified by psychological technical screening detailed elsewhere<sup>14</sup> to exclude those having dysmorphic pathologies and thus have meaningful comparisons among those included. Rigid nasendoscopy was done to assess the nasal valve area, nasal septum, and rule out any polyposis. Computed tomography scan of the paranasal sinuses was done when sinonasal diseases were suspected as part of the exclusion criteria completion and further treatment. Clinical pictures were taken in frontal, lateral, basal, and three-quarter view and uploaded to the patient's electronic medical record file for documentation and postoperative assessment.

The patients were divided into two groups; group 1 would undergo the closed approach of septorhinoplasty, and group 2 the open approach. The allocation was based on the severity of the

**Table 1:** Functional and cosmetic satisfaction questionnaire.

Functional satisfaction scale	Cosmetic satisfaction scale
<b>Q1. Are you feeling better after the surgery?</b> Not at all A little Moderate Much Very much	<b>Q1. Are you feeling that the shape of your nose is changed?</b> Not at all A little Moderate Much Very much
<b>Q2. Does the surgery improve your health and feeling of wellbeing?</b> Not at all A little Moderate Much Very much	<b>Q2. Have you become more confident with yourself after the surgery?</b> Not at all A little Moderate Much Very much
<b>Q3. Do you feel that the surgical result met your expectations?</b> Not at all A little Moderate Much Very much	<b>Q3. Do you feel that this surgery makes a difference in your life?</b> Not at all A little Moderate Much Very much
<b>Q4. In comparison with time before the surgery how much is the difference?</b> Not at all A little Moderate Much Very much	<b>Q4. Do you feel that the surgical result met your expectations?</b> Not at all A little Moderate Much Very much
<b>Q5. Are you happy with the overall result?</b> Not at all A little Moderate Much	<b>Q5. Are you feeling happy with the overall results?</b> Not at all A little Moderate Much

Scores: < 10: very dissatisfied; 10–15: dissatisfied; 15–20: satisfied; > 20: very satisfied.

patient's external deformity and the experience of the surgeon in addressing the deformity by the particular approach. All patients were operated by the same surgeon. No patient was subjected to intervention for experimental purposes. Informed consent was obtained from each patient for the intervention they had been allocated. The 185 (124 males and 61 females) patients available for postoperative assessment were allocated to septorhinoplasty by the endonasal approach (n = 89; 59 males and 30 females) or open approach (n = 96; 65 males and 31 females) based on their indications for surgery: functional (n = 98; 64 males and 34 females); cosmetic (n = 39; 23 males and 16 females); and both functional and cosmetic (n = 48; 37 males and 11 females).

During the postoperative follow-up visit in the third month, the patients completed a Likert-type questionnaire soliciting scores on indices of 'functional satisfaction' and 'cosmetic satisfaction'.

The existing literature had been surveyed for items pertinent to the patient's functional and cosmetic satisfaction<sup>15–20</sup> to design a 10-item functional (five items) and cosmetic (five items) satisfaction questionnaire. The identified items were translated into Arabic using the forward-backward translation method. The face and content validity were assessed by a panel consisting of a psychologist, ENT surgeons, a language expert, and service users. Internal consistency and item-scale correlations were evaluated to ensure the reliability of the Arabic version. Cronbach's alpha showed high internal

**Table 2:** Gender-wise distribution across different age groups for surgical technique based on indication for surgery.

Gender	Age group, years	Indication for surgery	Surgical technique, n		Total	p-value
			Endonasal	Open		
Males (n = 124)	17–25	Functional	11	8	19	0.585
		Cosmetic	2	3	5	
		Functional and cosmetic	4	6	10	
					34	
	26–40	Functional	15	22	37	0.827
		Cosmetic	7	7	14	
		Functional and cosmetic	8	10	18	
					69	
	> 40	Functional	5	3	8	0.075
Cosmetic		4	0	4		
Functional and cosmetic		3	6	9		
				21		
Females (n = 61)	17–25	Functional	8	2	10	0.869
		Cosmetic	5	1	6	
		Functional and cosmetic	-	-	-	
					16	
	26–40	Functional	9	12	21	0.694
		Cosmetic	3	7	10	
		Functional and cosmetic	3	7	10	
					41	
	> 40	Functional	2	1	3	0.248
Cosmetic		-	-	-		
Functional and cosmetic		0	1	1		
				4		

consistency (0.92). The questionnaire had a score of one to five for each question. For each domain of functional and cosmetic satisfaction, an overall score of < 10 was classified as 'very dissatisfied,' a score of 10–15 as 'dissatisfied,' 15–20 as 'satisfied,' and > 20 was considered 'very satisfied' [Table 1].

In addition, clinical pictures were re-taken during the same visit for comparison and documentation. The 'very dissatisfied' and 'dissatisfied' responses were later re-categorized as 'dissatisfied' and the 'very satisfied' and 'satisfied' re-categorized as 'satisfied'. The re-categorized functional and cosmetic satisfaction scores were analyzed within sub-groups of indications for surgery and surgical techniques for each gender separately by the chi-square test. The gender-wise distribution across different age groups for the surgical technique based on the indication for surgery was tabulated and analyzed by the chi-square test.

## RESULTS

Out of the total 215 patients posted for septorhinoplasty, 30 were lost to follow-up. The distribution of patients allocated to septorhinoplasty by the endonasal or open approach based on their indications for surgery are given in Table 2. The number of male versus female patients in the different age groups were as follow: age group 17–25 (34 vs. 16); 26–40 (69 vs. 41); and > 40 years (21 vs. 4). Gender-wise distribution across different age groups for the surgical technique based on indication for surgery did not show any significant differences within any of the respective sub-groups [Table 2].

The patients reported no significant difference in satisfaction in the functional satisfaction scale scores within any indication for surgery after both open or endonasal interventions. However, in the cosmetic satisfaction scale scores, a significantly higher proportion of males within the subgroup

**Table 3:** Functional and cosmetic satisfaction scores across indications of surgery and surgical techniques analyzed separately for each gender.

Indications for surgery		Surgical technique		Total	p-value
		Endonasal	Open		
<b>Functional satisfaction score categories</b>					
<b>Functional</b>					
Males	Dissatisfied	4	3	7	0.625
	Satisfied	27	30	57	
Females	Dissatisfied	0	1	1	0.253
	Satisfied	19	14	33	
<b>Cosmetic</b>					
Males	Dissatisfied	3	1	4	0.412
	Satisfied	10	9	19	
Females	Dissatisfied	1	0	1	0.107
	Satisfied	2	7	9	
<b>Functional and cosmetic</b>					
Males	Dissatisfied	5	3	8	0.153
	Satisfied	10	19	29	
Females	Dissatisfied	1	0	1	0.274
	Satisfied	7	9	16	
<b>Cosmetic satisfaction score categories</b>					
<b>Functional</b>					
Males	Dissatisfied	9	3	12	0.041
	Satisfied	22	30	52	
Females	Dissatisfied	1	2	3	0.410
	Satisfied	18	13	31	
<b>Cosmetic</b>					
Males	Dissatisfied	4	3	7	0.968
	Satisfied	9	7	16	
Females	Dissatisfied	2	1	3	0.098
	Satisfied	1	6	7	
<b>Functional and cosmetic</b>					
Males	Dissatisfied	7	5	12	0.127
	Satisfied	8	17	25	
Females	Dissatisfied	2	1	3	0.453
	Satisfied	6	8	14	

of functional indication for surgery, expressed satisfaction with the open surgical approach (90.9%) than the 71.0% males operated by endonasal approach ( $p = 0.041$ ) [Table 3].

## DISCUSSION

Septorhinoplasty is one of the most challenging surgeries due to the dependence of its outcomes on whether it met satisfactorily on functional as well as cosmetic/esthetic aspects of the nose.<sup>21,22</sup> It is well known that while the functional aspect is easy to quantify, the subjective or esthetic aspect

is more difficult to measure, echoing the proverb 'beauty lies in the eyes of the beholder'. It has been widely recognized that a significant number of patients subjected to body alterations tend to have poor satisfaction with the alteration.<sup>23</sup> In psychiatric parlance, this resonates with the concept of dysmorphic pathology.<sup>24</sup> Patients seeking ENT intervention should be examined for the presence of dysmorphic pathology so that 'genuine' satisfaction of the intervention could be gauged. This would circumvent the confounder effect of the body dysmorphic disorder or culture-specific odium of distress.<sup>25</sup> Our study ruled out the presence of body dysmorphic disorder, thus having a major advantage in that the postoperative functional and cosmetic satisfaction was not confounded with body dysmorphic disorder. Another important feature of this study is that the outcomes within the sub-groups of indications for surgery were analyzed separately for males and females.

Salehahmadi and Rafie explored the subjective satisfaction of surgical outcomes and reported that age, gender, and personality are strong predictors of satisfaction.<sup>26</sup> With women being increasingly required to have the 'perfect body', often attributed to triggering the 'epidemic' of body dissatisfaction around the world including Oman,<sup>12</sup> they would invariably be prone to be less satisfied with body alterations compared to their male counterparts.<sup>25</sup> Our study showed a 'gender gap' on the indices of cosmetic satisfaction within the functional indications for surgery, with males expressing significant satisfaction with the open surgical approach compared with the endonasal approach. Females have been documented to show less satisfaction with their bodies and are more likely to be dissatisfied with the outcome of ENT surgeries.<sup>27</sup> Our study finding differs from that of Honigman et al,<sup>28</sup> who reported that young males tend to report poor satisfaction.

The open approach has been reported better functional and esthetic outcomes in comparison with other techniques of septorhinoplasty, attributing that to the severity of the deformity of which open approach was chosen.<sup>29</sup> We note similar outcomes as, proportion-wise, we found more satisfaction expressed for open surgery by both genders within different sub-groups of indications [Table 3]. However, since this study could not accrue an adequate number of patients within the five-



year study period, we were unable to generate any significant evidence to prove differences in outcomes, if any. It is difficult to comment on whether the 30 patients who were lost to follow-up could have made any difference in our study findings. Also, in our study, selection bias cannot be ruled out as the same surgeon allocated the subjects to a particular intervention based on his expertise in managing the particular indication for surgery.

Some of the most apparent limitations of this study are pointed out here. Firstly, this is an open-label study. It might be essential to conduct a blind randomized trial to strengthen our findings. Secondly, conceptually one would assume that patients with more severe deformity better appreciate the difference after surgery. Such counter-intuitive findings might arise as the severity of the patient's external deformity was not taken into consideration during the allocation of participants. Randomized allocation would have given a much more unbiased picture. Thirdly, future studies could employ a more comprehensive strategy, including objective tests for functional assessment (e.g., rhinomanometry) to add more value to the pragmatic applicability of results.

## CONCLUSION

Our findings of males within the subgroup of functional indications expressing significant satisfaction with the open surgical approach compared with the endonasal approach on the cosmetic satisfaction scale are in line with previous literature. Due to our limited sample size, no significant evidence could be generated to prove any differences in postoperative functional and cosmetic satisfaction outcomes, and our results should be interpreted with caution.

### Disclosure

The authors declared no conflicts of interest. No funding was received for this study.

### REFERENCES

1. Park SS. Fundamental principles in aesthetic rhinoplasty. *Clin Exp Otorhinolaryngol* 2011 Jun;4(2):55-66.
2. Adamson PA, Galli SK. Rhinoplasty approaches: current state of the art. *Arch Facial Plast Surg* 2005 Jan-Feb;7(1):32-37.
3. Konstantinidis I, Malliari H, Metaxas S. Nasal trauma: Primary reconstruction with open rhinoplasty. *Can J Plast Surg* 2011 Sep;19(3):108-110.
4. Kopacheva-Barsova G, Nikolovski N. Justification for rhinoseptoplasty in children - our 10 years overview. *Open Access Maced J Med Sci* 2016 Sep;4(3):397-403.
5. Xiao H, Zhao Y, Liu L, Xiao M, Qiu W, Liu Y. Functional/aesthetic measures of patient satisfaction after rhinoplasty: a review. *Aesthet Surg J* 2019 Sep;39(10):1057-1062.
6. Shipchandler TZ, Sultan B, Ishii L, Boahene KD, Capone RB, Kontis TC, et al. Aesthetic analysis in rhinoplasty: surgeon vs. patient perspectives: a prospective, blinded study. *Am J Otolaryngol* 2013 Mar-Apr;34(2):93-98.
7. Hellings PW, Nolst Trenité GJ. Long-term patient satisfaction after revision rhinoplasty. *Laryngoscope* 2007 Jun;117(6):985-989.
8. Morselli PG, Micai A, Boriani F. Eumorphic plastic surgery: expectation versus satisfaction in body dysmorphic disorder. *Aesthetic Plast Surg* 2016 Aug;40(4):592-601.
9. Samizadeh S. The ideals of facial beauty among Chinese aesthetic practitioners: results from a large national survey. *Aesthetic Plast Surg* 2019 Feb;43(1):102-114.
10. Zayed K, Jeyaseelan L, Al-Adawi S, Al-Haddabi B, Al-Busafi M, Al Tauqi M, et al. Differences among self-esteem in a nationally representative sample of 15-17-year-old Omani adolescents. *Psychol Res* 2019 Apr;9(4):178-188.
11. Sharif F, Anooshehpour B, Mani A, Zarshenas L, Zare N, Haghghatian A. Comparison of the temperament and character of patients referred to cosmetic nasal surgeon in Shiraz hospitals, 2015. *Int J Community Based Nurs Midwifery* 2016 Apr;4(2):137-147.
12. Al-Adawi S, Jaju SS, Al-Zakwani I, Dorvlo AS. Culture to culture fatphobia and somatization. In: Preedy VR, Watson RR, Martin CR, editors. *International handbook of behavior, diet, and nutrition*. New York: Springer; 2011. pp. 1457-1473.
13. Maezono J, Hamada S, Sillanmäki L, Kaneko H, Ogura M, Lempinen L, et al. Cross-cultural, population-based study on adolescent body image and eating distress in Japan and Finland. *Scand J Psychol* 2019 Feb;60(1):67-76.
14. Dufresne RG, Phillips KA, Vittorio CC, Wilkel CS. A screening questionnaire for body dysmorphic disorder in a cosmetic dermatologic surgery practice. *Dermatol Surg* 2001 May;27(5):457-462.
15. Jagsi R, Li Y, Morrow M, Janz N, Alderman A, Graff J, et al. Patient-reported quality of life and satisfaction with cosmetic outcomes after breast conservation and mastectomy with and without reconstruction: results of a survey of breast cancer survivors. *Ann Surg* 2015 Jun;261(6):1198-1206.
16. McGhee CN, Craig JP, Sachdev N, Weed KH, Brown AD. Functional, psychological, and satisfaction outcomes of laser in situ keratomileusis for high myopia. *J Cataract Refract Surg* 2000 Apr;26(4):497-509.
17. McKiernan DC, Banfield G, Kumar R, Hinton AE. Patient benefit from functional and cosmetic rhinoplasty. *Clin Otolaryngol Allied Sci* 2001 Feb;26(1):50-52.
18. Sinko K, Jagsch R, Prechtel V, Watzinger F, Hollmann K, Baumann A. Evaluation of esthetic, functional, and quality-of-life outcome in adult cleft lip and palate patients. *Cleft Palate Craniofac J* 2005 Jul;42(4):355-361.
19. Hendry J, Chin A, Swan IR, Akeroyd MA, Browning G. The glasgow benefit inventory: a systematic review of the use and value of an otorhinolaryngological generic patient-recorded outcome measure. *Cataract Refract Surg*. 2016 Apr;41(3):259-275.
20. Robinson K, Gatehouse S, Browning GG. Measuring patient benefit from otorhinolaryngological surgery and therapy. *Ann Otol Rhinol Laryngol* 1996 Jun;105(6):415-422.
21. Hasan JS. Psychological issues in cosmetic surgery: a functional overview. *Ann Plast Surg* 2000 Jan;44(1):89-96.
22. Cook SA, Rosser R, Salmon P. Is cosmetic surgery an effective psychotherapeutic intervention? A systematic review of the evidence. *J Plast Reconstr Aesthet Surg* 2006;59(11):1133-1151.
23. Alavi M, Kalafi Y, Dehbozorgi GR, Javadpour A. Body dysmorphic disorder and other psychiatric morbidity in

- aesthetic rhinoplasty candidates. *J Plast Reconstr Aesthet Surg* 2011 Jun;64(6):738-741.
24. Al-Adawi S, Martin R, al-Naamani A, Obeid Y, al-Hussaini A. Body dysmorphic disorder in Oman: cultural and neuropsychological findings. *East Mediterr Health J* 2001 May;7(3):562-567.
  25. Pecorari G, Gramaglia C, Garzaro M, Abbate-Daga G, Cavallo GP, Giordano C, et al. Self-esteem and personality in subjects with and without body dysmorphic disorder traits undergoing cosmetic rhinoplasty: preliminary data. *J Plast Reconstr Aesthet Surg* 2010 Mar;63(3):493-498.
  26. Salehahmadi Z, Rafie SR. Factors affecting patients undergoing cosmetic surgery in Bushehr, southern Iran. *World J Plast Surg* 2012 Jul;1(2):99-106.
  27. Veale D, Gledhill LJ, Christodoulou P, Hodsoll J. Body dysmorphic disorder in different settings: a systematic review and estimated weighted prevalence. *Body Image* 2016 Sep; 18:168-186.
  28. Honigman RJ, Phillips KA, Castle DJ. A review of psychosocial outcomes for patients seeking cosmetic surgery. *Plast Reconstr Surg* 2004 Apr;113(4):1229-1237.
  29. Hosseini SM, Sadeghi M, Saedi B, Safavi A, Hedayati GR. Aesthetic and functional outcomes of open versus closed septorhinoplasty in deviated nose deformity. *Int J Otolaryngol Head Amp Neck Surg* 2012 Aug;01(02):7-13.