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

Rashid Al Abri1, Wameedh Al Bassam1, Firyal Al-Balushi1, Omar Hlaiwah1, Sanjay Jaju2 and Samir Al-Adawi3*

1ENT division, Department of Surgery, Sultan Qaboos University Hospital, Muscat, Oman
2Epidemiology and Biostatistics Section, Department of Family Medicine and Public Health, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman
3Department of Behavioral Medicine, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman

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.

S eptorhinoplasty is considered one of the most challenging surgeries in esthetic medicine due to variable nasal anatomy, deformity, and patient expectations.1 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,2 and there is ample empirical evidence suggesting that both approaches have comparable efficacy.3,4 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.
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. 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. 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. 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. Such a background has given rise to an interest in quantifying the perceived satisfaction of the clients who have undergone septrhinoplasty. In the age of a patient-centered approach, such an undertaking is often perceived to constitute best practice.

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. 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’. 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. 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 septrhinoplasty. 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 septrhinoplasty 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 septrhinoplasty 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 septrhinoplasty, and having sinonasal pathology were excluded.

A total of 215 patients were posted for septrhinoplasty 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 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 septrhinoplasty, and group 2 the open approach. The allocation was based on the severity of the...
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$^{15–20}$ 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

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

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

| Gender | Age group, years | Indication for surgery | Surgical technique, n | Total | \(p\)-value |
|--------|-----------------|------------------------|-----------------------|-------|-------------|
|        |                 |                        | Endonasal | Open |             |
| Males  | 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| 17–25           | Functional             | 8         | 2     | 10          | 0.869     |
|        |                 | Cosmetic               | 5         | 1     | 6           | 16        |
|        |                 | Functional and cosmetic| -         | -     | -           |           |
|        | 26–40           | Functional             | 9         | 12    | 21          | 0.694     |
|        |                 | Cosmetic               | 3         | 7     | 10          | 41        |
|        |                 | Functional and cosmetic| 3         | 7     | 10          |           |
|        | > 40            | Functional             | 2         | 1     | 3           | 0.248     |
|        |                 | Cosmetic               | -         | -     | -           |           |
|        |                 | Functional and cosmetic| 0         | 1     | 1           | 4         |

**Table 2:** Gender-wise distribution across different age groups for surgical technique based on indication for surgery.
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 |                  |
| **Functional satisfaction score categories** |                      |               |
| Males                   | Dissatisfied | 4 | 3 | 7 | 0.625 |
|                         | Satisfied    | 27 | 30 | 57 |       |
| Females                 | Dissatisfied | 0 | 1 | 1 | 0.253 |
|                         | Satisfied    | 19 | 14 | 33 |       |
| **Cosmetic**            |                      |               |
| Males                   | Dissatisfied | 3 | 1 | 4 | 0.412 |
|                         | Satisfied    | 10 | 9 | 19 |       |
| Females                 | Dissatisfied | 1 | 0 | 1 | 0.107 |
|                         | Satisfied    | 2 | 7 | 9 |       |
| **Functional and cosmetic** |                      |               |
| Males                   | Dissatisfied | 5 | 3 | 8 | 0.153 |
|                         | Satisfied    | 10 | 19 | 29 |       |
| Females                 | Dissatisfied | 1 | 0 | 1 | 0.274 |
|                         | Satisfied    | 7 | 9 | 16 |       |
| **Cosmetic satisfaction score categories** |                      |               |
| Males                   | Dissatisfied | 9 | 3 | 12 | 0.041 |
|                         | Satisfied    | 22 | 30 | 52 |       |
| Females                 | Dissatisfied | 1 | 2 | 3 | 0.410 |
|                         | Satisfied    | 18 | 13 | 31 |       |
| **Cosmetic**            |                      |               |
| Males                   | Dissatisfied | 4 | 3 | 7 | 0.968 |
|                         | Satisfied    | 9 | 7 | 16 |       |
| Females                 | Dissatisfied | 2 | 1 | 3 | 0.098 |
|                         | Satisfied    | 1 | 6 | 7 |       |
| **Functional and cosmetic** |                      |               |
| Males                   | Dissatisfied | 7 | 5 | 12 | 0.127 |
|                         | Satisfied    | 8 | 17 | 25 |       |
| Females                 | Dissatisfied | 2 | 1 | 3 | 0.453 |
|                         | Satisfied    | 6 | 8 | 14 |       |

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

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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.  
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.  
In psychiatric parlance, this resonates with the concept of dysmorphic pathology. 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.  
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.  
With women being increasingly required to have the ‘perfect body’, often attributed to triggering the ‘epidemic’ of body dissatisfaction around the world including Oman, they would invariably be prone to be less satisfied with body alterations compared to their male counterparts.  
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.  
Our study finding differs from that of Honigman et al, 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. 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-
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.

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