Frequency of acne vulgaris and its exacerbation in facial and periorbital area after septorhinoplasty☆,☆☆

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ABSTRACT

Background: High prevalence of rhinoplasty, controversies about its cutaneous complications and lack of structured studies about relationship between acne vulgaris and rhinoplasty, point out the necessity for performing this study.

Purpose: To determine the frequency of acne and its exacerbation after rhinoplasty.

Materials and methods: In a longitudinal controlled study at a tertiary referral university hospital, the degree of acne before and 1 and 3 months after surgery was measured in 110 patients (30 Male, 80 Female, Mean age: 26.3±6.8) with rhinoplasty and 80 patients (35 Male, 45 Female, Mean age: 24.5±4.6) with septoplasty, based on Global Acne Grading System (GAGS). The data were analyzed by SPSS 16 software.

Results: The frequency of acne exacerbation in first post-surgical visit was 27% in case and 3.5% in control subjects (P<0.007). In case group, 42.9% of those who had no acne before surgery, developed mild acne and 14.5% of those with mild acne, turned into moderate acne. In second post-surgical visit 91.7% of those who had moderate acne in first visit, turned into mild acne and 80% of those with severe acne in first post-surgical visit changed into moderate acne without any specific therapy (P<0.0001 and P<0.001, respectively).

Conclusions: Rhinoplasty has significant relationship with acne exacerbation. The severity of acne decreases gradually during 3 months after surgery. For determining the exact course and risk factors of this complication, further studies are needed.

Rhinoplasty is one of the most frequently performed facial plastic surgeries [1]. Many patients undergo this operation in order to look and function better. According to the American Society of Aesthetic Plastic Surgery, rhinoplasty was among top five common aesthetic surgical procedures in the United States and it was the most frequently performed surgical procedure for teenagers in 2009 [2]. However, similar to all surgical procedures, complications...
may occur after rhinoplasty. Usually, rhinoplasty techniques focus on alteration of the structural framework of the nose. However, the aesthetic outcome, is the product of the nasal skeleton contour and the overlying skin-soft tissue envelope [3]. The psychological aspects of rhinoplasty have profound impacts on the postoperative course [4].

Affecting an estimated 40 to 50 million people in the United States, acne vulgaris is most prevalent in adolescents and young adults. Left untreated, permanent scarring and psychological morbidity may occur [5]. It is disfiguring and can be psychologically devastating, as manifested by diminished self-esteem, social embarrassment, social withdrawal, and depression [6]. The economic burden of acne to the society is unknown, but it is postulated to be high [7]. In our experience, we saw many patients who suffered from acne exacerbation after septorhinoplasty. The importance of skin characteristics in rhinoplasty, and also, the high prevalence of minor complications after this commonly performed surgical procedure [8], there are not enough structured studies about acne and its course after rhinoplasty. The aim of this study was to determine frequency of acne vulgaris (or any acneiform lesions) and its exacerbation after rhinoplasty and septrhinoplasty.

1. Materials and methods

A longitudinal controlled study was performed on 110 patients (80 females and 30 males) admitted for septrhinoplasty and 80 patients (45 females, 35 males) admitted for septoplasty and/or turbinoplasty, in a tertiary referral university hospital from October 2009 to June 2010. The proposal of the research was reviewed and approved by the Guilan University of Medical Sciences Research Office Review Board and Ethics Committee. Patients who had any of these conditions were excluded from the study: Using drugs that were known to cause or aggravate acne e.g. oral and topical corticosteroids, comedogenic compounds, vitamin B; receiving any treatment for acne; acne needed to be treated; any cutaneous disease like systemic diseases e.g. systemic lupus erythematosus.

The severity of acne was determined preoperatively for all patients by a dermatologist (JG) using Global Acne Grading System (GAGS). The GAGS is a clinical grading system for the clinical severity of acne that considers six locations on the face and chest/upper back, with a factor for each location based roughly on surface area, distribution, and density of pilosebaceous units [9]. The borders on the face are delineated by the hairline, jawline, and ears. No magnifying glass or skin stretching is allowed, and good lighting should be used. The chest and upper back have been included because their involvement is critical both in assessing the severity of acne and to decide upon treatment. Each of the six locations is graded separately on a 0 (No acne) to 4 (Nodules), scale, with the most severe lesion within that location determining the local score. The global score is a summation of all local scores (for more details see Table 1) [9].

After initial examination, the operations were performed by a single surgeon (Sh. N.), with a constant method in similar conditions under general anesthesia. Patients were discharged the morning after the surgery. All of the patients in case group had nasal cast for 5–7 days. Patients were allowed to wash their face 5 days after the cast removal. They had adhesive tape for 3 to 4 weeks after removing the cast. The adhesive tape covered very limited area from their nose to the nasofacial sulcus (from supratip to intercanthal line) and the tapes were changed every other day by the patients. The control subjects underwent septrhinoplasty and/or turbinoplasty in the same conditions, under general anesthesia with the same drugs and postoperative cares except that they had not any tape or cast on their nose after the surgery. All the cases and controls were visited one and three months after the surgery for determining the severity of acne by dermatologist according to GAGS. Acne exacerbation was defined as any level of increase in grade of acne based on GAGS; e.g. from mild to moderate, moderate to severe, or mild to severe form.

Statistical analysis was performed by use of SPSS software ver. 16 (SPSS, Inc., Chicago, IL). Cochran’s Q and Friedman’s tests were used for comparing related samples. Chi-square and McNemar’s test was used to compare different groups. The level of significance was determined to be 0.05.

2. Results

From 125 patients who entered in the case group, 110 patients (88%) including 30 male and 80 female attended both the first and second post-surgical visits. Eighty subjects who underwent septrhinoplasty and/or turbinoplasty enrolled in the control group. The mean age (± Standard Deviation) of the cases was 26.34±6.82 years whereas in the controls was 24.5±4.6.

2.1. Frequency of acne vulgaris

In pre-surgical visit, the frequency of any type of acneiform lesions based on the GAGS was 56.7% in males and 72.5% in females of case group, and 51.5% of males and 68% of females in control group (P>0.11). Also the frequency was 76.6% in <25 year old age group, 62.5% in 25–35 year old age group, and 57.1% in >35 year old age group.

In the first post-surgical visit, the frequency of acne vulgaris and other types of acneiform lesions was 70% in males and 86.2% in females of case group and 54% of males and 69.3% in females of control group (P>0.7). In the cases, the

<table>
<thead>
<tr>
<th>Location</th>
<th>Factor</th>
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<tbody>
<tr>
<td>Forehead</td>
<td>2</td>
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<tr>
<td>Right cheek</td>
<td>2</td>
</tr>
<tr>
<td>Left cheek</td>
<td>2</td>
</tr>
<tr>
<td>Nose</td>
<td>1</td>
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<td>Chin</td>
<td>1</td>
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<tr>
<td>Chest and upper back</td>
<td>3</td>
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Note: Each type of lesion is given a value depending on severity: no lesions=0, comedones=1, papules=2, pustules=3 and nodules=4. The score for each area (Local score) is calculated using the formula: Local score=Factor × Grade (0–4). The global score is the sum of local scores, and acne severity was graded using the global score. A score of 1–18 is considered mild; 19–30, moderate; 31–38, severe; and >39, very severe.
frequency was 85.9% in <25 year old age group, 78.1% in 25–35 year old age group and 71.4% in >35 year old age group (P=0.361). Thus the frequency of acneiform lesions in this visit among females was higher than males and that was statistically significant (P<0.005).

In the second post-surgical visit, the frequency of acne vulgaris and other types of acneiform lesions was 66.7% in males and 77.5% in females (P=0.249). The frequency was 81.2% in <25 year old age group, 65.6% in 25–35 year old age group and 64.3% in >35 year old age group (P=0.162). So in this visit there was no significant difference between different sex and age groups and the difference in frequency in different age groups had no relationship with the surgery. Also in the second visit, there was no significant difference in frequency of acneiform lesions in control group.

2.2. Severity of acne

The frequency of exacerbation was 27% in first post-surgical visit in the cases. In comparison between pre-surgical and first post-surgical visits, the severity of acne increased significantly. In the cases, in first post-surgical visit 42.9% of those who had no acne before surgery, developed mild acne and 14.5% of those who had mild acne, turned into moderate form (P=0.0001). Frequency of exacerbation was 4% in the controls (P>0.21) (Chart 1).

Conversely, there was no significant relationship between the severity of acne in pre-surgical and second post-surgical visit both in cases and controls (P=0.115).

In the case group the severity of acne decreased between two post-surgical visits. Of those who had moderate acne in first visit, 91.7% turned into mild acne and 80% of those who had severe acne in first post-surgical visit changed into moderate acne without any specific therapy (P=0.001) (Chart 2). Also through comparison between all three visits, there was significant difference in the severity of acne (Friedman Chi-Square=28.79, P-value<0.001).

3. Discussion and conclusions

Rhinoplasty is one of the most commonly performed facial plastic surgeries in the developed world [2]. It’s also a commonly performed surgery for patients in their early adulthood or later teenage years, the same ages in which acne vulgaris has its highest prevalence [10]. Acne vulgaris is the most common major dermatologic disorder which can cause psychological impacts and considerable morbidity. [11] On the other hand, there is an unignorable lack of structured studies about frequency of acne vulgaris and acneiform lesions and their exacerbation in facial and periorbital area after rhinoplasty.

We saw a significant increase in acne severity after septorhinoplasty in our study (27%). This increase in severity happened through the first month after the surgery and after that, the severity decreased between the first and third months after the procedure. These two sets of changes in the severity were statistically significant (P=0.0001 and P=0.001 respectively).

Coban YK in 2007 postulated that decreasing in acne symptoms could be used as a sign of surgical success after rhinoplasty [12]. He believed that decrease in anxiety and neuroticism after cosmetic rhinoplasty in patients who were satisfied with the surgical result was an important factor for decreasing acne symptoms.

An increase in severity of acne can be related to some factors such as psychological stress caused by surgical procedure, not washing the face efficiently because of pain...
or fear of spoiling the surgical result. As some studies suggest that washing the face twice daily with a mild cleanser may help reducing acne lesions [13] and stress caused by surgical procedure can be an exacerbating factor for acne vulgaris. Scientific research indicates that increased acne severity is significantly associated with increased stress levels [14]. A study of adolescents in Singapore observed a statistically significant positive correlation between stress levels and severity of acne [15]; but in our study, the incidence of acne exacerbation in post-surgical period was not significant in control group and this means that the role of surgical stress may be ignorable, although the quality and level of the stress might not be the same in the case and control group.

As one of the other possible reasons, one can name probable skin reactions to adhesive tapes and cast. As the control group of our study had no casts and tapes, skin taping and occlusion of pilosebaceous units may be the reason for exacerbation of acne in the cases. Also alleviating the severity and frequency of the acne in second and third post-surgical months in which taping the nose was less frequent may be another evidence supporting this hypothesis. One reason against this hypothesis might be the appearance and/or flaring of the acne in other parts and subunits of the face and even in other areas of the body such as chest and upper back. In general, although we had a control group that matched many confounding factors such as age, sex, surgical stress under general anesthesia, post operation drugs and so on, we must be cautious in linking causality of the rhinoplasty to acne exacerbation because of variety of factors that can cause or exacerbate acne vulgaris.

In conclusion we can say, in this study acne vulgaris exacerbation was related to rhinoplasty however it’s not obvious whether the cast or reaction to adhesive tapes are causative, because the control group didn’t wear a cast or adhesive tape. For clarification of this issue, especially in pathophysiological issues and risk factors and for the purpose of understanding how many patients will return to their baseline severity of acne, further studies with extended follow-up periods are needed.

Acknowledgment

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