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Araştırma Makalesi / Research Article

Evaluation of the Postoperative Cutaneous Findings in Rhinoplasty Patients

Rinoplasti Hastalarında Postoperatif Kutanöz Bulguların Değerlendirilmesi

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Aim: This study aimed to evaluate the post-operative presence, clinical severity and course of acne vulgaris and seborrheic dermatitis among rhinoplasty patients.

Material and Method: Fifty-six patients who were planned to have rhinoplasty were administered either pored or non-pored plaster cast for one week in the postoperative period. The patients in the rhinoplasty group were randomized into four groups according to the application of pored or non-pored plaster cast and adhesive strips for a further one-week. Forty patients that had undergone closed technique-septoplasty were included in the control group. The self-assessments of the patients in the rhinoplasty and septoplasty groups were recorded in terms of acne, seborrhea and erythema via visual analog scale (VAS). The clinical severity of acne vulgaris and seborrheic dermatitis were compared via Global Acne Grading Score (GAGS) and Seborrheic Dermatitis Area and Severity Index (SDASI) in both groups at postoperative months 1, 3 and 6.

Results*:* In the rhinoplasty group, the VAS acne, VAS seborrhea, VAS erythema, GAGS, and SDASI values increased significantly at postoperative month 1 and decreased significantly at postoperative month 6 compared to the pre-operative values. At all visits, the GAGS values of patients that had undergone rhinoplasty were found statistically significantly higher than those that had received septoplasty. At postoperative month 6, the GAGS values were significantly decreased in the group treated with non-pored plaster cast and adhesive strips for one more week. The SDASI values statistically significantly decreased only in the group treated with pored plaster cast. However, at all visits, the mean values of GAGS and SDASI were similar in the four rhinoplasty groups according to the different types of plaster cast duration of nasal bandages.

Conclusion: We concluded that in post-rhinoplasty patients, the plaster cast type and duration of nasal bandage application do not affect the severity of acne vulgaris and seborrheic dermatitis.

Keywords: ***Acne Vulgaris, Cast, Dermatitis, Rhinoplasty, Seborrhea***

Amaç: Bu çalışmada, rinoplasti hastalarında postoperatif dönemde akne vulgaris ve seboreik dermatit varlığı, klinik şiddetleri ve seyirlerinin değerlendirilmesi amaçlanmıştır.

Gereç ve yöntem: Rinoplasti planlanan 56 hastaya postoperatif dönemde bir hafta süreyle porlu veya porsuz alçı uygulandı. Rinoplasti grubundaki hastalar porlu veya porsuz alçı ve bir hafta süresince yapışkan bandaj uygulanmasına göre dört gruba rastgele dağıtıldı. Kapalı teknik septoplasti uygulanan 40 hasta ise kontrol grubuna alındı. Rinoplasti ve septoplasti gruplarındaki hastaların akne, sebore ve eritem bakımından kendi değerlendirmeleri görsel analog skala (VAS) ile kaydedildi. Her iki guptaki hastaların Global Akne Derecelendirme Ölçeği (GADÖ) ve Seboreik Dermatit Alan ve Şiddet İndeksi (SDASI) ile akne vulgaris ve seboreik dermatit klinik şiddeti postoperatif 1, 3 ve 6. aylarda karşılaştırıldı.

Bulgular: Rinoplasti grubunda VAS akne, VAS sebore, VAS eritem, GADÖ ve SDASI değerleri preoperatif döneme oranla postoperatif 1. ayda anlamlı oranda artmış, post-operatif 6. ayda anlamlı oranda azalmış idi. Tüm takiplerde rinoplasti geçiren hastaların GADÖ değerleri septoplasti olanlardan istatistiksel olarak anlamlı oranda daha yüksek bulundu. Postoperatif 6. ayda GADÖ değerleri porsuz alçı ve ek bir hafta süresince yapışkan bandaj ile tedavi edilen grupta anlamlı oranda azalmıştı. SDASI değerlerinin ise sadece porlu alçı ile tedavi edilen grupta anlamlı oranda azaldığı görüldü. Ancak, ortalama GADÖ ve SDASI değerleri farklı alçı tipleri ve burun bandaj sürelerine göre dört farklı rinoplasti grubunda da tüm takiplerde benzerdi.

Sonuç: Bu çalışmada alçı tipi ve burun bandaj süresinin rinoplasti sonrası hastalarda akne vulgaris ve seboreik dermatit şiddetini etkilemediği sonucuna vardık.

Anahtar kelimeler: ***Akne Vulgaris, Alçı, Dermatit, Rinoplasti, Sebore***

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Open rhinoplasty is a cosmetic surgical procedure commonly preferred by plastic surgeons and increasingly accepted and requested by patients, particularly in recent years (1). The surgical success depends on not only the surgical ability and the nasal cartilage tissue but also the peripheral skin features; thus, many cutaneous effects may be seen after the surgery (2-4). This situation may create doubt and fear in addition to increased surgical stress in patients, resulting in elevated sebum secretion and acne severity before the operation (5). In recent years, many post-operative complications and outcomes have been reported after rhinoplasty; e.g., flare-up of acne vulgaris, nasal tip paresthesia, eye borrow loss, nasal incontinence, periorbital hyperpigmentation, and surgical scars (6). However, a case with a remarkable remission in the acneiform lesions after successful septorhinoplasty surgery has been also reported (6). In the literature, prospective, randomized and controlled studies about the cutaneous side effects after rhinoplasty are limited in number (6, 8-10). These adverse occasions are often thought to result from occlusive methods involving the use of post-operative plaster cast, adhesive plasters or sterile strips after surgery (10).

There are only a few clinical studies that indicated an increase in the frequency of skin problems after septorhinoplasty (6, 8-10). However, to date, possible methods to minimize postoperative adverse effects have not been studied. In this study, we aimed to identify the best treatment approach for acne vulgaris and seborrheic dermatitis by investigating, based on objective dermatological criteria, cutaneous effects after the application of sterile strips for varying durations and occlusion of the nasal area with different plaster casts.

Methods

One-hundred patients admitted to our Medical University Department of Ear, Nose and Throat with the complaints of abnormal nasal shape and difficulty in breathing were included in the study group and scheduled for either closed technique septoplasty or rhinoplasty for the diagnosis of nasal deformity and septum deviation following preliminary examination. Forty patients were included in the control group to undergo closed technique septoplasty without postoperative nasal bandage. The study was conducted between January 2015 and January 2017. The research proposal was reviewed and approved by our University Medical Faculty, Research Review Boards and Ethics Committee. The written informed consent was obtained from all the patients. The remaining patients included in the rhinoplasty group were randomized into four different subgroups: The first group underwent nasal occlusion with a pored (p) plaster cast for a week (P1w); the second group received the first occlusion with a pored plaster cast for a week and the second occlusion with sterile strips for one more week after removing the cast (P2w); the third group underwent nasal occlusion with a non-pored (NP) cast for a week (NP1w); and the last group had nasal occlusion with a non-pored plaster cast for a week followed by occlusion with sterile strips for one more week after removing the plaster cast (NP2w). The adhesive strips covered the patients' nose to the nasofacial sulcus. The plaster casts (Denver®) were of pored (thermal) or non-pored (synthetic) type supplied from Kent Medical company. The sterile strips used were 3M™ Steri-strip blend tone disposable skin closures.

The patients with severe cardiac disease, diabetes mellitus, thromboembolic diseases, or keloid history, those with unrealistic expectations, pregnant patients, excessive smokers, and intra-nasal drug (e.g., cocaine) users were excluded from the study. Other exclusion criteria were atopic or contact dermatitis, very severe nodulocystic acne vulgaris, use of topical or systemic anti-acne medications such as high dose of vitamin A or retinoic derivatives, connective tissue diseases including polycystic ovary disease, systemic lupus erythematosus, or immunity disorder, history of excessive smoking, cutaneous infections, previous septorhinoplasty operation. After the initial examination, all operations were performed by a single surgeon (E.S.) under general anesthesia using the same method under similar operating room conditions. A nasal cast was applied to all the patients in the study group and removed postoperative 7. day. In the P2w and NP2w groups, after the removal of the cast, adhesive sterile strips were used to cover the region from supratip to intercanthal line for a week. All the patients were prescribed amoxicillin 1 gr twice a day and paracetamol twice a day for seven days postoperatively. Self-assessment of acne, seborrhea (facial oiliness) and erythema (redness) were scored from 0-10 using the Visual Analog Scale (VAS) before the operation and postoperative months 1, 3 and 6. At each visit, the digital photographs of all of the patients were taken, and their Global Acne Grading Score (GAGS) and Seborrheic Dermatitis Area Severity Index (SDASI) were evaluated by the same dermatologist (PU) (11-13). According to GAGS, each facial localization was graded by a different score as follows; forehead and left and right cheek: 2, nose and chin: 1, chest and back: 3. The severity of the acne lesion was scored as 0 if no lesion, 1 if comedone, 2 if papule, 3 if pustule, and 4 if nodule (11). The total GAGS was calculated by the sum of the multiplication of the local area score and acne severity score for each facial area. Moreover, the most severe lesion in a particular region determined the applicable score for that location.

According to SDASI, a constant value for different anatomic regions was determined based on a score of 0.4 for scalp, 0.1 for the forehead, 0.1 for the eyebrows, 0.1 for the cheeks, 0.1 for the nasolabial folds, 0.1 for the ears, 0.1 for the post-auricular area, 0.2 for the pre-sternal area, and 0.2 for the back (13). Erythema and squamous lesions were separately graded between 0-3 (none: 0, mild: 1, moderate: 2, severe: 3) for each defined area. The areas of involvement were measured on a scale of 1 to 5 (1=<10%, 2=11%–30%, 3=31%–50%, 4=51%–70%, 5=70-89%, 6≥90%) (1-6). The total SDASI score was calculated as described by Baysal et al. (13) by the sum of the multiplication of the constant area values, the grades for erythema and squam and involvement scores of each area. The statistical differences in VAS acne, VAS seborrhoea, VAS erythema, GAGS and SDASI scores were assessed at the preoperative visit and at postoperative months 1, 3 and 6.

Statistical Analysis

The Number Cruncher Statistical System (NCSS) (Kaysville, Utah, USA, 2007) was used for statistical analysis. For the evaluation of the data, in addition to descriptive statistical methods (mean, standard deviation, median, frequency, ration, minimum, and maximum), a Mann Whitney U test was performed to analyze two or more follow-up data of the parameters showing an abnormal distribution. The Friedman test was conducted to analyze three or more follow-up data of the parameters showing an abnormal distribution. The Wilcoxon signed-rank test was undertaken for dichotomous comparisons. $p<0.05$ was accepted as statistically significant.

Results

The study was initially planned with 100 patients; however, four patients were excluded due to being uncooperative or unable to attend the follow-up visits. Thus, the study was completed with 96 patients (50% n=48 male and 50% n=48 female). The patients' age range was 18-46 (mean: 26.2±13.2). Rhinoplasty was performed on 58.3% of the patients (n=56) and septoplasty on 41.7% (n=40) (Table 1). Synthetic casters were used in 28 patients (50%). In the rhinoplasty group, the duration of occlusive bandage application was one week in 25 patients (44.6%) and two weeks in 31 patients (55.4%).

VAS acne

At the postoperative months 1 ($p=0.007$) and postoperative 3 ($p=0.020$), the VAS acne measurements of the patients who had undergone rhinoplasty were statistically significantly higher than septoplasty patients ($p<0.05$) (Table 2.). The paired comparisons showed a significant increase in the VAS acne measurements at postoperative month 1 ($p=0.001$) and a significant decrease at postoperative month 6 compared to the preoperative values ($p=0.026$) ($p<0.05$). In the septoplasty group, the changes of VAS acne measurements in the preoperative period and at postoperative months 1, 3 and 6 were found to be insignificant ($p=0.608$; $p>0.05$) (Table 2).

VAS Seborrhea

At postoperative months 1 ($p=0.003$) and 3 ($p=0.005$), the values of the patients that had undergone rhinoplasty were statistically higher than those of the septoplasty patients ($p<0.01$) (Table 2). According to the results of paired comparisons, in the rhinoplasty group, the VAS Seborrhea values significantly increased at postoperative month 1 ($p=0.001$) and significantly decreased at postoperative month 6 compared to the preoperative values ($p=0.001$) ($p<0.01$). Similarly, in the septoplasty group, the changes in the VAS Seborrhea values from the preoperative period to postoperative months 1, 3 and 6 were significant ($p=0.045$; $p<0.05$). The paired comparisons in this group demonstrated a significant decrease in the VAS Seborrhea values at postoperative month 6 compared to the preoperative values ($p=0.011$) ($p<0.05$) (Table 2).

VAS Erythema

The preoperative and postoperative months 1, 3 and 6 VAS erythema values were statistically similar ($p>0.05$). The postoperative month 1 value of the rhinoplasty group was remarkably higher than those of the septoplasty group (Table 2). According to the paired comparisons, compared to the preoperative VAS Erythema values, the increase at postoperative month 1 ($p=0.001$) and the decrease at postoperative month 6 ($p=0.003$) were statistically significant in the rhinoplasty group ($p<0.01$). On the other hand, in the septoplasty group, the changes in the VAS erythema values from the preoperative period to postoperative months 1, 3 and 6 were similar ($p=0.821$; $p>0.05$) (Table 2).

GAGS

The GAGS values at postoperative months 1 ($p=0.001$), 3 ($p=0.001$) and 6 ($p=0.047$) were statistically significantly higher in the rhinoplasty group than the septoplasty group ($p<0.05$) (Table 3) (Figure 1). According to the paired comparisons between preoperative and postoperative values in the rhinoplasty group, the increase in the GAGS values at postoperative month 1 ($p=0.001$) and the decrease at postoperative month 6 ($p=0.001$) were statistically significant ($p<0.01$). The changes in the GAGS values were similar in the septoplasty group at all visits ($p=0.142$; $p>0.05$) (Table 3).

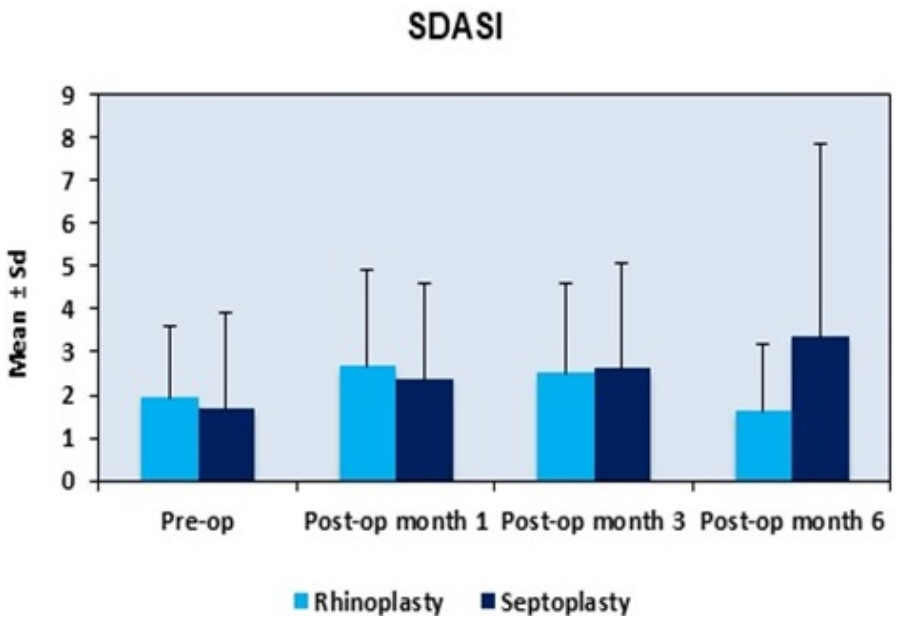
SDASI

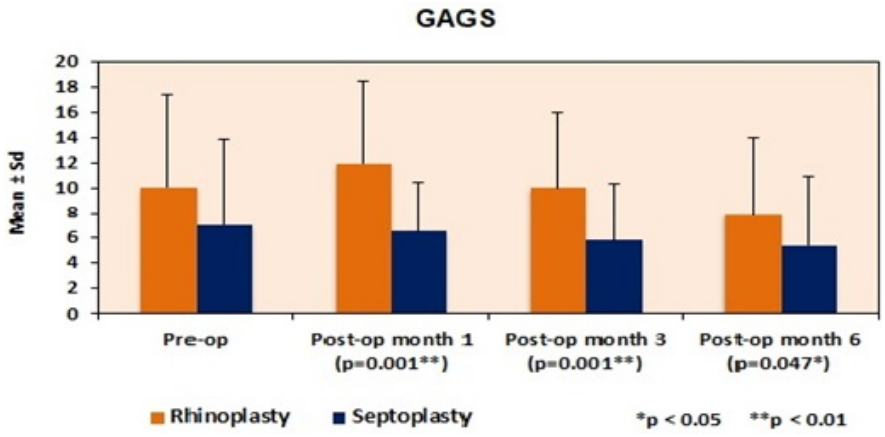
The preoperative SDASI values were similar in both groups (p=0.06). Moreover, the SDASI values were not statistically different in the two groups at all postoperative visits (p>0.05) (Table 3). The paired comparisons of the SDASI values in the rhinoplasty group showed a significant increase at postoperative months 1 (p=0.001) and 3 (p=0.019) compared to the preoperative values (p<0.05). In the septoplasty group, the increase in the SDASI values at postoperative months 3 (p=0.002) and 6 (p=0.013) compared to the preoperative values was also statistically significant (p<0.05) (Table 3) (Figure 2).

While there was a significant decrease in the SDASI values at postoperative month 6 compared to the preoperative values in the rhinoplasty group, a significant increase was recorded in the septoplasty group for the same period (p=0.013; p<0.05) (Table 3).

Comparison of GAGS and SDASI values between different plaster cast groups

The GAGS and SDASI values were all similar in the four rhinoplasty groups of NP1w, NP2w, P1w and P2w in the preoperative period and postoperative months 1, 3 and 6 (p>0. 05; p>0.05) (Table 4). At postoperative month 6 the GAGS values significantly decreased in the NP2w group (p=0.011) and the SDASI values significantly decreased in the P1w group (p=0.046) (Table 4). The follow-up photographs of a patient in the rhinoplasty group P1w with SDASI scores of 2.8, 3.2 and 2.9 respectively at postoperative month 1,3 and 6 are given in Figure 3. However, the mean values of GAGS and SDASI in four rhinoloplasty groups according to different plaster cast types (synthetic or thermal) and durations of occlusion (1 or 2 weeks) were all similar at all visits.





Discussion

Acne exacerbation (27%), increased yawning (31.8%), eyebrow loss (31.8%), periorbital hyperpigmentation (21.8%), and surgical site scar (7.2%) have been reported after rhinoplasty (6). The overall results of our study showed that rhinoplasty may cause temporary early exacerbation of acne vulgaris and septoplasty may worse n the severity of seborrheic dermatitis lately at postoperative month 6.

In the literature, there are only four reports that focus on the co-presence of acne vulgaris and rhinoplasty (6, 8-10). In a case-control study with a total of 120 patients without acne or any specific skin condition (60 who had undergone rhinoplasty and 60 control group patients) were examined with respect to acne formation (9). Similar to our study, the incidence of acne formation after open rhinoplasty surgery was reported to be significantly higher than in the control group. Twelve patients, all in the open rhinoplasty group, developed postsurgical acne (9). Age, gender, family history of acne and recent medication use prior to surgery showed no significant correlation with acne formation (9). In another case-control study evaluating 30 septorhinoplasty patients and 20 septoplasty patients for postoperative skin conditions the mean preoperative GAGS, SDASI and VAS (acne, seborrhea, and ecchymosis) were found to be significantly higher in the septorhinoplasty group than in the septoplasty group (8). In our study, the subjective patient's assessment of acne was remarkably correlated with the clinician's assessment of GAGS. Similarly, in another study with 110 patients that had undergone rhinoplasty, the severity of acne vulgaris was temporarily increased (10). In the same study, the patients were reported to be more prone to developing acne vulgaris at the first postsurgical visit. At the first visit,

Table 1. Distribution of the demographic data

Demographic data		n (%)
Sex	**Male**	48 (50.0)
	Female	48 (50.0)
Operation	**Rhinoplasty**	56 (58.3)
	Septoplasty	40 (41.7)
Duration of nasal bandage (n=56)	**One week**	25 (44.6)
	Two weeks	31 (55.4)
Plaster cast type used in rhinoplasty (n=56)	**Synthetic (NP)**	28 (50.0)
	Thermal (P)	28 (50.0)

P: Pored
NP: Non-pored

Table 2: The assessment of mean VAS acne, seborrhea and erythema measurements in different groups

		Rhinoplasty Mean±Sd	Septoplasty Mean±Sd	[a]p
Acne VAS	**Pre-op**	3. 18±2. 39	2. 58±2. 11	***0. 247***
	Post-op M1	3. 79±2. 50	2. 33±2. 10	***0. 007****
	Post-op M3	3. 39±2. 33	2. 28±2. 34	***0. 020****
	Post-op M6	2. 89±2. 25	2. 33±2. 19	***0. 226***
	[b]p	***0. 001****	***0. 608***	
	Pre-op to Post-op M1	*[c]0. 001**	*[c]0. 216*	
	Pre-op to Post-op M3	*[c]0. 115*	*[c]0. 188*	
	Pre-op to Post-op M6	*[c]0. 026**	*[c]0. 521*	
Seborrhea VAS	**Pre-op**	4. 21±2. 48	3. 80±2. 68	***0. 366***
	Post-op M1	5. 29±2. 45	3. 73±2. 34	***0. 003****
	Post-op M3	4. 48±2. 21	3. 25±2. 37	***0. 005****
	Post-op M6	3. 46±2. 31	2. 58±2. 10	***0. 090***
	[b]p	***0. 001****	***0. 045****	
	Pre-op to Post-op M1	*[c]0. 001**	*[c]0. 584*	
	Pre-op to Post-op M3	*[c]0. 145*	*[c]0. 098*	
	Pre-op to Post-op M6	*[c]0. 001**	*[c]0. 011**	
Erythema VAS	**Pre-op**	2. 38±2. 55	2. 33±2. 42	***0. 930***
	Post-op M1	3. 29±2. 45	2. 55±3. 06	***0. 095***
	Post-op M3	2. 75±2. 07	2. 48±2. 58	***0. 458***
	Post-op M6	1. 75±1. 90	2. 35±2. 64	***0. 454***
	[b]p	***0. 001****	***0. 821***	
	Pre-op to Post-op M1	*[c]0. 001**	*[c]0. 334*	
	Pre-op to Post-op M3	*[c]0. 204*	*[c]0. 569*	
	Pre-op to Post-op M6	*[c]0. 003**	*[c]0. 951*	

[a]The Mann-Whitney U Test *[b]The Friedman Test* *[c]The Wilcoxon Signed-Rank Test*
M: Month
**p<0. 05* ***p<0. 01*

Table 3. The assessment of mean GAGS and SDASI values according to the groups

		Rhinoplasty Mean±Sd	Septoplasty Mean±Sd	[a]p
GAGS	**Pre-op**	10.04±7.31	7.98±6.88	***0.057***
	Post-op M1	11.91±6.47	7.45±4.01	***0.001****
	Post-op M3	10.00±5.91	5.73±4.59	***0.001****
	Post-op M6	7.91±6.05	5.34±5.61	***0.047****
	[b]p	***0.001****	***0.142***	
	Pre-op to Post-op M1	*[c]0.001**	*[c]0.621*	
	Pre-op to Post-op M3	*[c]0.954*	*[c]0.156*	
	Pre-op to Post-op M6	*[c]0.001**	*[c]0.075*	
SDASI	**Pre-op**	1.92±1.68	1.77±1.24	***0.06***
	Post-op M1	2.65±2.24	2.37±2.23	***0.328***
	Post-op M3	2.51±2.07	2.59±2.48	***0.795***
	Post-op M6	1.60±1.57	3.35±4.48	***0.176***
	[b]p	***0.001****	***0.002****	
	Pre-op to Post-op M1	*[c]0.001**	*[c]0.360*	
	Pre-op to Post-op M3	*[c]0.019**	*[c]0.002**	
	Pre-op to Post-op M6	*[c]0.057*	*[c]0.013**	

[a] The Mann-Whitney U Test *[b] The Friedman Test* *[c] The Wilcoxon Signed-Rank Test*
**p<0.05* ***p<0.01* *M: Month*

Table 4. The assessment of the mean values of GAGS and SDASI in four rhinoloplasty groups according to different plaster cast types (synthetic or thermal) and durations of occlusion (1 or 2 weeks)

		Treatment (n=56)				
		One-week synthetic (NP1) (n=11)	One-week thermal (P1) (n=14)	Two-week synthetic (NP2) (n=17)	Two-week thermal (P2) (n=14)	[a]p
GAGS						
Pre-op	*Mean±Sd*	9.45±6.85	9.14±5.43	13.71±8.67	6.93±6.23	***0.138***
Post-op M1	*Mean±Sd*	11.45±5.65	11.21±6.00	14.84±7.45	9.43±5.46	***0.123***
Post-op M3	*Mean±Sd*	9.45±6.80	8.71±5.20	12.94±5.53	8.14±5.53	***0.095***
Post-op M6	*Mean±Sd*	9.09±7.01	6.64±6.17	9.94±5.87	5.79±4.82	***0.239***
	[b]p	***0.201***	***0.001*****	***0.001*****	***0.042****	
	Pre –Post-op M6	***[c]0.465***	***[c]0.058***	***[c]0.011****	***[c]0.206***	
SDASI						
Pre-op	*Mean±Sd*	2.50±1.55	1.95±1.59	1.69±2.04	1.70±1.41	***0.351***
Post-op M1	*Mean±Sd*	3.65±2.92	2.32±2.06	2.36±2.21	2.56±1.83	***0.507***
Post-op M3	*Mean±Sd*	3.15±2.48	1.91±1.69	2.33±1.93	2.81±2.27	***0.502***
Post-op M6	*Mean±Sd*	2.18±1.97	1.43±1.50	1.33±1.21	1.66±1.72	***0.666***
	[b]p	***0.344***	***0.016****	***0.038*****	***0.007*****	
	Pre -Post M6	***[c]0.593***	***[c]0.046****	***[c]0.374***	***[c]0.463***	

[a] The Mann-Whitney U Test *[b]The Friedman Test* *[c] The Wilcoxon Signed-Rank Test*
**p<0.05* ***p<0.01*
M: Month

42.9% of the patients with no previous acne vulgaris h ad developed acne vulgaris, and the previous mild acne of 14.5% was found to have progressed to the moderate form (10). In the same study, similar to ours, at the second postsurgical visit, the previous moderate a cne of 91.7% of the patients had turned into mild acne, and the previous severe acne of 80% patients changed into moderate acne without any specific therapy (10). In previous reports, the decrease in acne symptoms has been also considered to indicate surgical success of rhinoplasty due to a remarkable reduction in psychological stress hormones and a decrease in anxiety and neuroticism (7). Although the frequency of acneiform lesions was reported to be significantly higher among females (86.2%) than males (70%) at the first postsurgical visit, there was no significant difference between the sex groups at the second post-surgical visit (10). The reason for this sex-related difference was not clear but may have been due to the oversolicitude of female patients. In the same study, the frequency of complications after rhinoplasty was highest for the under-25-year-old group which included most of the rhinoplasty patients (10). However, the patients in this age group having acne vulgaris might also have treatment-resistant adult acne vulgaris.

There are a few etiopathogenetic hypotheses that have addressed acne exacerbation in early postoperative periods and remission after postoperative month 1 (8, 10). Psychological stress of open technique rhinoplasty, not being able to wash the face due to pain, and plaster casts are some of the factors that have been mentioned (5, 14, 15). The early flare-up of acne vulgaris at postoperative month 1 is probable due to an increase in stress hormones secreted after surgical fear about the cosmetic results of the operation. The stress factor is more predominant in rhinoplasty patients than the septoplasty group patients that have undergone closed technique operation. We think that as the time passes and the patients' postoperative fear is reduced, acne severity probably decreases due to decreased stress hormones at postoperative months 3 and 6. Facial cleaning twice a day is commonly recommended for patients with acne vulgaris (15). The inability to wash the face in the early postoperative periods may cause pilosebaceous occlusion that triggers acne vulgaris (10). However, in the following visits at months 3 and 6 after the removal of this prohibition

about facial wash, acne shows remission. This paradoxical result for acne vulgaris results from the controversy that postoperative nasal occlusion over a long time may induce acne vulgaris via follicular occlusion (15). Although, the exact pathogenesis of acne vulgaris remains unknown, the presence of excessive reactive oxygen species has been implicated in acne vulgaris previously (16). Acne exacerbation has also been associated with the use of plaster cast and adhesive sterile strips (10). As the nasal plaster cast and strips were used only at postoperative month 1 for one or two weeks, their occlusive effect was a causative factor in acne exacerbation only in the early periods rather than postoperative month 6. This acne exacerbation was probably due to this follicular occlusion seen as a form of temporary acne mechanica (17). In contrast, Nemati et al. (10) reported the occurrence of acneiform lesions on the chest, trunk and upper back in the control septoplasty group. We believe that the significant early increase in SDASI at postoperative months 1 and 3 in the rhinoplasty patients may have been due to the comparatively much more elevated stress and fear factors seen after the rhinoplasty. The relatively lower SDASI scores in the rhinoplasty group at postoperative month 6 may have resulted from a positive psychological effect of a successful surgery or a more dramatic change in view seen especially after rhinoplasty. The rhinoplasty patients' self-assessment concerning seborrhea also showed that they might have felt seborrhea had decreased by ignoring some of their subjective symptoms and paying more attention to the expected cosmetic outcomes of the operation. Some minor complications after surgery may be overlooked or elude observation as the issue that the patients are mostly concerned with is the results concerning the nasal overall shape. We also noticed a significant increase in erythema at postoperative month 1 and a decrease at postoperative month 6 in the rhinoplasty group, which may also be as a result of the improvement of seborrheic dermatitis.

So, we believe that the use of a non-pored plaster cast followed by the adhesive strips for 1 week might have prevented the free radical oxidation reaction of closed comedones that results with open comedones or even inflammatory acne in this group. Based on this assessment, it may be recommended to use synthetic (non-pored) plaster cast for acne vulgaris, and thermal (pored) plaster cast for seborrheic dermatitis. But the similarity in the mean values of GAGS and SDASI in four rhinoplasty groups according to different plaster cast types (synthetic or thermal) and durations of occlusion (1 or 2 weeks) was also remarkable at all visits.

In conclusion, this study showed that both acne vulgaris and seborrheic dermatitis are temporary, short-term possible complications seen in rhinoplasty patients during postoperative 6 months.

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