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Research Article

The Relationship between Postoperative Pain and Analgesic Requirement and Preoperative Mental Symptoms in Septorhinoplasty Operations

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Abstract

Aim: We aimed to compare the effects of preoperative anxiety levels on the need for acute postoperative pain and analgesia in septorhinoplasty cases.

Material and Method: SCL-90-R mental symptom test has been undergone patients with septorhinoplasty before the operation. Age, sex, marital status, educational status, financial status, previous operation experience, alcohol and smoking status of the patients were recorded. Intravenous 50 mg Dexketoprofen Trometamol was used for postoperative pain treatment. Postoperative pain levels were evaluated with Numerical Rating Scale and additional analgesics were applied to patients whose score was above 4. Patients who received additional analgesics during the 24-hour observation period were accepted as the study group and patients without additional analgesia as the control group.

Result: When the SCL-90-R subscale groups were compared between the groups, a positive difference was observed in the sensitivity, interpersonal sensitivity, phobic symptom and GSI values were statistically significant in the study group. In the study group with more analgesic consumption, the number of women was higher than that of men.

Conclusion: In rhinoplasty operations, which are daily surgery, patients' preoperative mental status affect postoperative pain levels and analgesic needs.

Keywords: *Analgesia; Anxiety; Postoperative Pain; SCL-90-R; Septorhinoplasty*

Introduction

Pain is a personal and multidimensional emotional state that is influenced by personality traits consisting of sensory and emotional experiences [1]. The Joint Commission on Accreditation of Healthcare Organizations has accepted pain as the fifth vital symptom [2]. There is a relationship between postoperative inadequate pain control and clinical outcomes [3,4]. Pain can affect wound healing, cardiopulmonary and thromboembolic diseases. It may also have adverse effects on endocrine and immune functions [1,5]. Acute postoperative pain is associated with the development of chronic pain [6].

Effective control of anesthesia and postoperative pain is important. There are no standard criteria for predicting acute postoperative pain [3]. Identification of factors that increase postoperative pain will facilitate better pain management. Weak pain control can be improved by knowing preoperative factors that increase pain and using individualized therapies [7].

Surgical procedures applied for cosmetic purposes have been drawing an increasing trend in recent years [8]. It has been shown that depression, anxiety disorders, obsessive-compulsive and related diseases are seen in higher rates in patients with cosmetic rhinoplasty surgery [9]. The relationship between psychological factors such as depression and anxiety and increasing pain in undiagnosed and untreated patients has been reported in many studies [10].

Aim of the Study

The aim of this study was to investigate the effects of personality and psychological symptoms on postoperative analgesic consumption in septorhinoplasty cases.

Materials and Methods

The data used in this study were analyzed in accordance with the principles of Istanbul Yeni Yu zyıl University Health Sciences Research Ethics Committee (Date: 09.01.2018 No: 2018/1). Patients who underwent septorhinoplasty in our hospital between September 1, 2017 and December 31, 2017, were investigated retrospectively.

158 patients with ASA I - II and 16-55 years of age were included in the study. The mean operation time was 120 - 180 minutes. Patients with known psychiatric diseases, with complications that developed during the operation and with long-lasting operations were excluded. Symptom Check-List Revised (SCL90-R) is a commonly used psychological symptom screening test to assess an individual's psychopathological symptoms [11]. SCL-90-R was filled out before the operation.

All data were kept confidential and surveys were kept in a safe place. All completed questionnaires were included in the study because no one left more than 10% of the answers blank. The 90 items in the questionnaire were scored on the five-point Likert scale, which showed the occurrence of symptoms. Then the general symptom index (General Symptomatic Index) (GSI) was calculated. The SCL-90-R has nine sub-scales and one general symptom score.

Age, sex, marital status, educational status, financial status, previous operation experience, alcohol and smoking status of the patients were recorded.

In order to measure the postoperative pain level, 0-10 Numerical Rating Scale (NRS) was used that values ranging from 0 (painless) to 10 (worst imaginable pain) [12].

Premedication was not performed before or after the test. All patients underwent general anesthesia with endotracheal intubation. All patients underwent local anesthesia with lidocaine and epinephrine by the surgeon.

The operation of all patients included in the study was performed by the same surgeon. Intravenous (IV) 50 mg dexketoprofen trometamol was used for postoperative pain treatment.

NRS scores were recorded at 1, 6, 12 and 24 hours postoperatively. Patients with an NRS score above 4 were given additional analgesics. Additional analgesic was IV 50 mg dexketoprofen trometamol and IV 30 - 50 mg meperidine. A total of 24 hours postoperative analgesic requirements were determined.

During the 24-hour observation period, patients who had to undergo additional analgesia with NRS scores above 4 were considered as the study group. Patients with an NRS score of less than 4 and no additional analgesic treatment were considered as the control group. SCL-90-R subscale scores and demographic data, NRS scores and additional analgesic requirements were evaluated between the two groups.

Statistics

SCL-90-R subscale scores, GSI and demographic data of the patients in the two groups were analyzed. It was examined whether there was a statistically significant difference in the data of those who needed additional analgesia compared to the control group. Statistical analysis of the data was performed using IBM SPSS for Windows 23.0 (USA) software and statistical significance were accepted as $p < 0.05$. Variables of qualitative data were expressed as numbers and percentages, while variables of quantitative data were expressed as mean or minimum-maximum ranges. Chi-square test and independent sample t-test were used to compare categorical variables. The degree of correlation between the variables was calculated using Spearman's correlation test.

Results and Discussion

158 patients were included in the study. 68 (43%) of these patients were male and 90 (57%) were female. The mean age of the patients was 28.72 ± 8.309 years. The mean age of the males was 27.46 ± 7.362 years. The mean age of the female was 29.67 ± 8.880 years. There were 83 patients in the control group. 43 (51.8%) of these patients were male and 40 (48.2%) were female. The mean age of the patients was 28.47 ± 7.817 years. The mean age of the males was 26.72 ± 7.162 years. The mean age of the female was 30.35 ± 8,138 (17-55) years. There were 75 patients in the study group.

25 (33.3%) of these patients were male and 50 (66.7%) were female. The mean age of the patients was 28.99 ± 8.866 years. The mean age of the males was 28.72 ± 7.673 years. The mean age of the female was 29.12 ± 9.477 years.

When the gender was compared between the two groups, the number of women was higher in the study group with more analgesic consumption than men ($p = 0.014$). Women's postoperative 1st, 6th, 12th, 24th-hour NRS scores were higher than men's. There was no statistically significant difference between the groups in terms of age, marital status, education level, financial status, alcohol use, smoking and history of operation ($p > 0.05$).

Demographic data, a group formed according to analgesic consumption status are given in table 1 in detail. When the SCL-90-R subscale groups were compared between the groups, a positive difference was found in the sensitivity, interpersonal sensitivity, phobic symptoms and GSI values in the study group and it was found to be statistically significant ($p < 0.05$).

When somatization, obsession, depression, psychotic symptoms, paranoid symptoms, anger and additional score symptoms were examined, no statistically significant difference was found ($p > 0.05$).

There was no difference between the two groups in terms of anesthesia and operation time, intraoperative heart rate, arterial blood pressure and oxygen saturation.

There was a positive correlation between SCL-90-R subscale scores and postoperative NRS scores additional analgesic use.

As seen in table 3, the additional analgesic consumption was increased as somatization, anxiety, interpersonal sensitivity, phobic anxiety and GSI scores increased.

Acute postoperative pain and analgesic consumption is affected by many factors. In this study, we examined the effects of postoperative pain and analgesic consumption and demographic characteristics and mental status of patients on analgesic consumption. Pain is a sensory and emotional experience. Research shows that pain is affected by physiological, sensory, emotional, cognitive, socio-cultural and behavioral factors [13,14].

Yang MM. In his meta-analysis, he identified nine preoperative predictors (young age, female gender, smoking, history of depressive symptoms, history of anxiety symptoms, difficulty in sleeping, high body mass index, preoperative pain use and preoperative analgesia use) [3].

Variable	Control group (n = 83)	Study group (n = 75)	P value
Age (year)	28.47 ± 7.817	28.99 ± 8.866	0.698
Gender			0.014
Female (n)	40 (48.19%)	50 (66.67%)	
Male (n)	43 (51.81%)	25 (33.33%)	
Marital status			0.067
Single	52 (62.65%)	43 (57.33%)	
Married	30 (36.14%)	25 (33.33%)	
Divorced	1 (1.20%)	7 (9.33%)	
Education Level			0.510
Elementary	12 (14.46%)	7 (9.33%)	
Secondary	14 (16.87%)	13 (17.33%)	
High School	27 (32.53%)	26 (34.67%)	
Associate Degree	17 (20.48%)	14 (18.67%)	
License	7 (8.43%)	12 (16.00%)	
Master's Degree	6 (7.23%)	3 (4.00%)	
Financial Condition			0.286
Good	17 (20.48%)	13 (17.33%)	
Intermediate	64 (77.11%)	61 (81.33%)	
Bad	2 (2.40%)	1 (1.33%)	
Alcohol Use			0.237
Yes	10 (12.05%)	13 (17.33%)	
No	73 (87.95%)	62 (82.67%)	
Smoking			0.363
Yes	42 (50.60%)	41(54.67%)	
No	41 (49.40%)	34 (45.33%)	
Operation History			0.296
Yes	52 (62.65%)	51 (68.00%)	
No	31 (37.35%)	24 (32.00%)	

Table 1: *Demographic and characteristic data in the study and control groups.*

	Group	Mean (SD)	t-test	df	p-value	Effect size
Somatization	Control	0.40 (0.45)	-2.302	156	0.023	0.37
	Study	0.57 (0.49)				
Anxiety	Control	0.30 (0.39)	-2.688	156	0.008	0.43
	Study	0.50 (0.52)				
Obsessive-Compulsive	Control	0.56 (0.63)	-1.551	156	0.123	0.25
	Study	0.72 (0.63)				
Depression	Control	0.51 (0.75)	-0.990	156	0.324	0.16
	Study	0.63 (0.70)				
Interpersonal Sensitivity	Control	0.47 (0.67)	-2.186	156	0.030	0.35
	Study	0.71 (0.74)				
Psychoticism	Control	0.20 (0.46)	-1.569	156	0.119	0.25
	Study	0.32 (0.45)				
Paranoid	Control	0.42 (0.63)	-1.752	156	0.082	0.28
	Study	0.60 (0.65)				
Hostility	Control	0.47 (0.74)	-1.210	156	0.228	0.19
	Study	0.61 (0.74)				
Phobic	Control	0.11 (0.25)	-2.574	156	0.011	0.40
	Study	0.25 (0.44)				
Added Items	Control	0.46 (0.56)	-1.177	156	0.241	0.19
	Study	0.57 (0.59)				
General Symptom Index	Control	0.39 (0.49)	-2.130	156	0.035	0.34
	Study	0.56 (0.51)				

Table 2: *SCL-90-R subscale scores and descriptive information in the study and control groups.*

Subscale	Pearson Coefficient
Somatization	.181*
Anxiety	.210**
Obsessive-Compulsive	.123
Depression	.079
Interpersonal sensitivity	.172*
Psychoticism	.125
Paranoid	.139
Hostility	.096
Phobic Anxiety	.202*
Added Items	.094
General Symptom Index	.168*

Table 3: *Correlation between SCL-90-R subscale scores and the use of additional analgesia.*

** Correlation is significant at the 0.01 level (2-tailed). ** Correlation is significant at the 0.05 level (2-tailed).*

It is known that preoperative anesthesia and surgery-related concerns cause anxiety [15]. Anxiety and some personality traits may cause stress in the human body and strengthen the pain [16]. In many studies, anxiety levels were associated with pain levels after surgery [14,17-19]. In 1985, it was shown that relieving patients with pre-operative psychoeducation in spine surgery cases decreased postoperative pain medication use and hospital stay [20]. In 2005, Menigaux., *et al.* demonstrated that gabapentin, which was proven to be anxiolytic in previous years, decreased preoperative anxiety, postoperative VAS scores and hence morphine requirements in patients undergoing knee surgery [21]. Cohen L showed that preoperative psychosocial factors were directly related to postoperative pain and morphine consumption [22]. It has been argued that anxiety decreases the pain threshold and is a factor in the activation of pain formation in the brain cortex [23,24].

In our study, SCL-90-R GSI scores were 0.39 ± 0.49 in the control group and 0.56 ± 0.51 in the study group ($p < 0.05$). Anxiety, interpersonal sensitivity, phobic symptom subscale and GSI scores were found to be significantly higher in the study group consisting of patients with more painkillers ($p = 0.008$, $p = 0.030$, $p = 0.011$, $p = 0.035$ respectively). Anxiety symptoms were significantly higher in the study group with additional analgesia.

When all patients were evaluated together, there was a positive correlation between somatization, anxiety, interpersonal sensitivity, phobic anxiety and GSI and the amount of additional analgesia use.

As the anxiety scores of the patients increased, additional analgesic consumption also increased. There are conflicting findings between gender and postoperative analgesic consumption. Cepeda MS and De Cosmo G in their study postoperative analgesic consumption were higher in women showed [25,26] Chia YY showed a negative correlation between female gender and postoperative analgesic consumption [27]. Aubrun F reports that women require an average of 11% higher doses of morphine than men to provide adequate postoperative analgesia [28]. Ip., *et al*. Stated that they did not find gender as a consistent predictor in their meta-analysis [29]. Kosar CM reported that preoperative depressive symptoms were more common in women and single people and the mean pain in the first 7 days postoperatively was higher in these patients than in other patients [30].

In our study, the rate of female patients in the study group was higher than male patients. Postoperative NRS scores and analgesic consumption were significantly higher in women than in male patients ($p < 0.05$). Aubrun F., in the same study, states that young age is a significant determinant for postoperative poor pain control [28]. Caumo W stated that young patients have a higher risk of postoperative pain [14]. Perry F reported that postoperative pain was less common with increased age and this was attributed to the reduction of peripheral nociceptive function [31].

In our study, we found that there was no correlation between postoperative pain and age and the mean age of the patients with septorhinoplasty included in our study was close to each other and the mean age was low. HL Chiang reported that smoking is a prognostic factor for postoperative pain and increases the use of opioid analgesia [32]. Ip., *et al.* Stated that pre-existing pain, anxiety, age and type of surgery are effective factors in the formation of acute postoperative pain [1].

In our study, gender and mental symptoms were associated with acute postoperative pain. Patients with anxiety, high interpersonal sensitivity and phobic symptoms and female had a higher risk of acute postoperative pain. No significant relationship was found between the other parameters examined and pain. The strength of our study is that there is no homogeneity in the surgical type and case mix of many studies in the literature; our study compared the need for postoperative analgesia of single surgical type cases. One limitation of the present study was that the detection of mental symptom status was limited to the sub- dimensions of the applied SCL-90-R test. The second limitation is the small sample size for the detection of preoperative variables for better postoperative analgesia management.

Undiagnosed psychological symptoms are seen at a higher rate in patients with septorhinoplasty and for better postoperative analgesia management, the mental status of patients may need to be investigated using various psychometric tools and questionnaires.

Conclusion

In septorhinoplasty operations, which are daily surgery, preoperative patients affect their mental status, postoperative pain levels and analgesic needs. In the preoperative short questionnaires in septorhinoplasty procedures, identification of psychological disorders that are not in the diagnosis stage and applying psychoeducation to the patients will provide better postoperative analgesia.

Further research on the effect of changing risk factors in preoperative and perioperative periods is needed to improve postoperative pain outcomes.

Conflict of Interest

There is no financial interest or any conflict of interest.

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