Original Article

Comparison of Preoperative Anxiety, Bruxism, and Postoperative Pain Among Patients Undergoing Surgery for Septoplasty, Endoscopic Sinus Surgery, and Tympanoplasty

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Abstract

Background: Septoplasty, endoscopic sinus surgery, and tympanoplasty are the most commonly performed elective functional ear–nose–throat surgeries. **Aim:** This study investigated the relationship between preoperative anxiety, bruxism, and postoperative pain in inpatient groups undergoing three different functional otorhinolaryngologic surgeries. **Patients and Methods:** This study was conducted in a single center of a tertiary referral hospital. The patients (*n* = *90*) who had undergone septoplasty (group A), endoscopic sinus surgery (group B), and tympanoplasty (group C) were included. The State-Trait Anxiety Inventory (STAI) questionnaire and the Amsterdam Preoperative Anxiety Information Scale (APAIS) were administered. To evaluate bruxism, a self-questionnaire was administered, and for the evaluation of pain, the visual analogue scale (VAS) was administered. **Results:** In group C, preoperative STAI and APAIS and early and late pain values were higher than in the other groups. When patients were divided into two groups according to the presence of bruxism. A significant difference was found between the preoperative STAI and immediate and late VAS values ($P < 0.001$). A strong correlation was observed between APAIS and early and late VAS values in group C ($P < 0.001$). **Conclusion:** Patients who will undergo tympanoplasty should be aware of the preoperative anxiety level and pain follow-up. Bruxism can be considered a vital follow-up parameter that manifests due to high preoperative anxiety. It may also be useful to examine preoperative bruxism and take appropriate measures due to its pain-increasing effect in patients.

Keywords: *Anxiety, bruxism, endoscopic sinus surgery, pain, septoplasty, tympanoplasty*

Introduction

Patients may experience various degrees of anxiety due to direct or indirect concerns such as losing

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their jobs, staying away from loved ones and activities, impairment of quality of life, such as the mortality risk of surgery, the consequences, and complications of the surgery, the risk of general anesthesia, postoperative pain, and the cause of the hospital environment.[1-3] This anxiety and fear may depend on the type of surgery, the patient's previous experiences, personality traits, concerns about the anesthesia type, and the recovery process during the postoperative period.[2,3]

Triggering the anxiety stress mechanism may cause cardiopulmonary, hemodynamic, metabolic, and endocrine changes.[4] Many researchers cite anxiety as the cause of postoperative additional analgesic use and even pain that does not respond to analgesic therapy.[5-7] High pain levels are associated with an elevated risk of postoperative complications.[8]

Bruxism is the masticatory muscle activity characterized by involuntary clenching and grinding of teeth, and it is closely related to anxiety, work stress, smoking, and behavioral factors.[9] It has two phenotypes, sleep (SB) and wakefulness (AB). It has been reported to occur at rates varying between 8% and 31% in the adult population.[10] It is a parameter investigated in many anxiety studies due to its close relationship with anxiety and pain in the head and neck.[11-13] Self-reported assessment and clinical examination are the primary assessment tools for bruxism and provide a "probable" diagnosis. Instrumental methods such as electromyography and (gold standard) polysomnography can be used for a definitive diagnosis but are not widely used in practice due to cost and availability.[14]

Septoplasty (SP), endoscopic sinus surgery (ESS), and tympanoplasty (TP) are the most commonly performed elective functional surgeries in adults who undergo ear, nose, and throat (ENT) surgery. Fear of epistaxis, nasal-pack pain or nasal-pack removal for SP, blindness, cerebrospinal fluid (CSF) leak, epistaxis for ESS, facial paralysis, hearing loss, balance disturbance, and persistent tinnitus for TPs are the best-known reported anxiety issues that the patients question. As with all other surgeries, the common general problem is postoperative pain, and its severity may vary depending on the type of surgery.[5-7,9,15,16]

Although previous studies on the relationship between preoperative anxiety and postoperative pain have been conducted on SP and ESS alone or in combination, except for TPs, no study was found comparing ear and elective nasal surgeries in combination and investigating the relationship of bruxism.[5-7,16]

In this study, we analyzed anxiety, bruxism, and demographics and evaluated their relationship with postoperative pain among the three most common ENT elective functional surgeries in adults.

Patients and Methods

This study was conducted in a single center as a prospective analytical observational clinical study. Ethics committee approval was obtained from the tertiary referral hospital's ethics committee for the study (protocol no: 047). A total of 90 patients with nasal septal deviation (n = 30) (group A), chronic rhinosinusitis (n = 30) (group B), and chronic non-suppurative otitis media (n = 30) (group C) diagnosed in an ENT clinic and operated in the past 6 weeks were included in the study. At the start of the study, it was determined that a minimum of 30 participants would be needed for each group, with a 5% difference and 92% power (G*Power version. 3.1.9.7). Intellectual disability, malignancy, pregnancy, illiteracy, previous surgery under general anesthesia, a diagnosis of major psychiatric or neurological diseases, comorbid diseases, bleeding diathesis, and opioid use or drug use were exclusionary factors in this study. All patients provided written informed consent for participating in the study. Demographic information of the patients was noted.

All patients were hospitalized the day before the surgery. The operating team performed a complete ENT examination, explaining the possible risks associated with the surgery. An anesthesia consent form from the hospital was given with an informed consent form for all three types of surgery.

The State-Trait Anxiety Inventory (STAI) questionnaire was completed after reading and signing the operation consent. It is scored between 20 and 80 points, and ≥ 40 points in adults indicate the presence of clinical anxiety. The Amsterdam Preoperative Anxiety and Information Scale (APAIS) developed to measure preoperative anxiety was completed on the morning of the day of surgery. The APAIS is an ordinal scale comprising six questions scored from *none* to *severe*. The first four questions of the scale are about anxiety, questions 1 and 2 are about the surgical procedure, questions 4 and 5 are about fear of anesthesia, and questions 3 and 6 are about obtaining information about the surgery. It consists of two subgroups: anxiety score (AS) and information requirement (IR), which are the sum of surgical anxiety and anesthetic anxiety responses. In APAIS, the lowest total score is 6; the highest score is 30. High scores are evaluated in favor of anxiety.

The patients were asked if they complained of clenching or grinding at the time of diagnosis, the duration, and whether they were asleep or awake. Simultaneously, they were asked to note whether they had teeth clenching or

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gnashing during the day or night and how long they had slept with (or lived with) this issue before visiting the hospital for surgery. On the day of hospitalization, an ENT physician with experience with bruxism examined the patients who were blinded to the study, and findings in favor of bruxism were noted in the oral mucosa, tongue, gums, and teeth. Patients whose criteria were evaluated and those who met these criteria in terms of bruxism were accepted as "existent" and "absent." The "Diurnal Bruxism" part of the self-reported bruxism questionnaire was used to diagnose wakefulness.[15] The answer to the question in the section was "yes," "no," or "I don't know." American Sleep Medical Academy (AASM) 306.8 code-headed diagnostic criteria were used to diagnose SB. Under this title, there is a five-item scale for diagnosis. According to the AASM, at least one of the three sub-articles of the first and second items indicates the presence of SB.[14] In the same title, bruxism is classified as acute (≤7 days), subacute (7 days–1 month), and chronic (>1 month) according to the duration. The other physician recorded the patients' responses on the case forms.

The same surgical team performed all procedures during the morning hours. Half an hour before surgery, the patients' pain scores were evaluated with the visual analog scale (VAS; preoperative VAS). VAS consists of a horizontal 10 cm line between the phrases: "no pain at all" and "the worst pain I have ever felt" and requires patients to draw a mark on the line to indicate their current pain intensity.

All operations were performed under general anesthesia in all patients after applying local anesthesia (lidocaine) to the relevant operation area and waiting for 10 minutes. The anesthesia team was kept blind in the study. Closed-technique SP w/wo concha lateralization was labeled group A; ESS was group B (bilateral maxillary sinus antrostomy ± sphenoidofrontoethmoidectomy ± lateral laminectomy); in group C, myringoplasty (type-I TP) or TP type-II or III was performed by the retroauricular route. During all operations, bleeding control was done with an adrenaline pad and, if necessary, bipolar cautery. At the end of the operations, a silicone nasal splint with bilateral airway was applied to group A patients, NasoPore with a bilateral antibiotic cream was applied to group B patients, and antibiotic sponges were placed in the external auditory canal of group C patients; subsequently, the dressing was applied. Postoperative analgesic treatment included paracetamol (10 mg/kg) four times a day; no additional analgesics were given.

The pain scores of the patients were evaluated via VAS. Postoperative VAS data were arranged as early 2nd, 4th, 6th, 12th, and 24th hour periods. The early period was defined as the mean pain scores obtained at the 2nd, 4th, and 6th hours after surgery. The late period was defined as the mean VAS scores obtained at 12 and 24 hours. All patients were kept under observation at the hospital for at least one night due to their clinical procedures. However, each patient was discharged (on the day) when they were mobilized, and their general condition was stable.

Statistical analysis

Statistical analyses were performed using IBM SPSS software version 25.0. The variables were investigated using visual and analytical methods (Kolmogorov-Smirnov) to determine whether or not they are typically distributed. The sample t-test was used to compare parameters normally distributed between independent groups and the Mann–Whitney-U test, Kruskal–Wallis H test, and Wilcoxon signed rank test were used. The nominal data were compared using the chi square test among independent groups and the McNemar test in dependent groups. The ordinal data were compared by using the marginal homogeneity test in dependent groups. One-way analysis of variance (ANOVA) was used the compare the parameters among independent groups, and pairwise post-hoc tests were performed using Tukey's test. The correlation of values that are not normally distributed was evaluated by using Spearman's correlation test, and values that were normally distributed were evaluated by using Pearson's correlation test. $P < 0.05$ was considered to be statistically significant.

Results

A total of 46% ($n = 41$) of the patients were female, and 54% ($n = 49$) were male. The mean age (years) (±SD) (min-max) was 32.5 ± 6.1 (23–42) for women and 32.6 ± 9.3 (18–51) for men. There was no significant difference between the groups regarding STAI data obtained on the day the patients were diagnosed [Table 1]. The demographics are shown in Table 1. None of the patients had a condition or a minor or major complication that could be included in the exclusion criteria. The three most common subjective complaints reported by patients in group A were nasal obstruction, 100% ($n = 30$), postnasal drip, 33% ($n = 10$), and epistaxis, 10% ($n = 3$). In group B, the complaints were postnasal drip, 80% ($n = 24$), facial pressure/pressure feeling, 53% ($n = 16$), and nasal obstruction, 50% ($n = 15$). In group C, the complaints were hearing loss, 90% ($n = 27$), ear fullness, 57% ($n = 17$), and tinnitus, 37% ($n = 11$).

Preoperative VAS was found to be "0" in all patients. There was no significant difference between the

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Table 1: Demographic characteristics and STAI values of the groups at first visit

Variables	Group A	Group B	Group C	P
Gender *n* (%)				0.22[a]
Female	9 (30)	8 (27)	14 (47)	
Male	21 (70)	22 (73)	16 (53)	
Age (years) ± SD	30.5±8.1	34.4±9.2	32.7±7.2	0.19[b]
Education *n* (%)				0.37[a]
Primary school	8 (27)	6 (20)	3 (10)	
Secondary school	5 (17)	8 (27)	4 (13)	
High school	13 (43)	12 (40)	20 (67)	
University/College	4 (13)	4 (13)	3 (10)	
Professions *n* (%)				0.51[c]
Public sector-salary	3 (10)	3 (10)	1 (3)	
Private sector-salary	5 (17)	5 (17)	6 (20)	
Worker	7 (24)	9 (30)	5 (17)	
Artizan/Self employment	na	4 (13)	4 (13)	
Merchant	3 (10)	3 (10)	4 (13)	
Farmer	1 (3)	2 (7)	1 (3)	
Student	6 (20)	1 (3)	2 (7)	
Housewife	4 (13)	2 (7)	5 (17)	
Unemployment	1 (3)	1 (3)	3 (10)	
Monthly income *n* (%)				0.71[c]
No income	11 (37)	4 (13)	10 (33)	
≤1000$	10 (33)	14 (47)	10 (33)	
1000-2000	4 (13)	7 (24)	6 (21)	
2000-3000	1 (3)	3 (10)	2 (7)	
3000-5000	2 (7)	1 (3)	1 (3)	
≥5000$	2 (7)	1 (3)	1 (3)	
Marital status *n* (%)				0.25[c]
Single (never married)	7 (24)	2 (7)	6 (20)	
Married	22 (73)	24 (80)	23 (77)	
Widowed/Divorced	1 (3)	4 (13)	1 (3)	
Sleeping partner *n* (%)				0.97[c]
Bed partner	28 (94)	27 (90)	28 (94)	
Room partner	1 (3)	1 (3)	1 (3)	
Alone	1 (3)	2 (7)	1 (3)	
History of smoking *n* (%)				0.85[a]
Yes	9 (30)	8 (27)	10 (33)	
No	21 (70)	22 (73)	20 (67)	
Alcohol consumption *n* (%)				0.86[c]
Yes	2 (7)	2 (7)	3 (10)	
No	28 (93)	28 (93)	27 (90)	
STAI (fv) mean±SD	36.17±3.64	35.63±2.80	36.60±3.60	0.60[b]

STAI: State-Trait Anxiety Inventory, fv: first visit, SD: Standard deviation [a]χ^2 test, Student's *t*-test, [c]Fisher's exact test *P*<0.05

groups in terms of length of hospital stay. A significant difference was found between the first examination and preoperative STAI values (*P <.001*). There was a significant difference in preoperative anxiety and postoperative pain values between groups B and C. A significant difference was found between groups A and C in terms of anxiety and pain except for APAIS-IR. There was no significant difference in anxiety and pain values between groups A and B [Table 2].

The mean preoperative STAI scores were 44.93 ± 4.50 in women and 42.93 ± 3.92 in men, and a significant difference was found between genders (*P = 0.03*). There was no significant difference between genders in terms of APAIS-AS score, VAS-IPP, and VAS-LPP values and the presence of bruxism (*P = 0.11, P = 0.75, P = 0.22,* and *P = 0.51*, respectively).

Bruxism was detected in 17% (*n = 14*) of the patients at the first examination upon indication, and in 29% (*n = 26*) of the patients during the preoperative examination, a significant difference was found in terms of change (*P = 0.002*). In the distribution between groups, there was no significant difference in both evaluations (*P = 0.34* and *P = 0.87*, respectively). However, the number of cases with chronic bruxism in groups A and B showed a significant difference compared to group C. Whereas a significant difference was observed in group C in terms of bruxism diagnosis and time distributions between the two examinations, no significant difference was observed in the other groups [Table 3]. When patients with bruxism (*n = 26*) and those without (*n = 64*) were compared, the preoperative STAI mean scores were 45.7 ± 3.9 and 40.9 ± 2.8, respectively, and displayed a significant difference (*P < 0.001*). The VAS-IPP values were 4.1 ± 0.8 and 2.9 ± 0.9 (*P < 0.001*), respectively, and the VAS-LPP values were 3.4 ± 0.9 and 2.4 ± 0.7 (*P < 0.001*).

A significant difference was also found between APAIS-AS and APAIS-IR subscale values (*P < .001*) [Figure 1].

A weak negative correlation was found between age and STAI. A moderate positive correlation was found between the length of hospital stay and APAIS-AS and APAIS-IR. Additionally, a weak positive correlation between VAS-IPP and VAS-LPP and preoperative STAI was found. A strong positive correlation was found between preoperative STAI and APAIS-AS, a moderate correlation between APAIS-IR and VAS-LPP, and a weak positive correlation between VAS-IPP [Table 4].

A moderate positive correlation was found between VAS-LPP and only APAIS-AS in all groups. When group C and all groups were evaluated entirely, a positive correlation was found between preoperative anxiety scores and early and late VAS results [Table 5].

Discussion

This study is the first prospective clinical study comparing preoperative anxiety and bruxism with

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Table 2: Comparison of values of the STAI, APAIS-AS, APAIS-IR, SB, hospital stay, VAS-IPP, and VAS-LPP between all groups

Variables	Group A	Group B	Group C	*P*
STAI mean±SD	42.1±3.5	41.7±2.7	47.0±4.2	<0.001[d]
APAIS-AS median (IQR) [min-max]	8.0 (4.0) [4.0-16.0]	7.0 (2.25) [4.0-13.0]	10.5 (5.0) [4.0-20.0]	0.003[e]
APAIS-IR median (IQR) [min-max]	3.0 (2.25) [2.0-7.0]	3.0 (2.0) [2.0-6.0]	4.0 (3.25) [2.0-10.0]	0.081[e]
Hospital stay (day)	1.0 (0.0) [1.0-2.0]	1.0 (0.0) [1.0-2.0]	1.0 (0.0) [1.0-2.0]	0.23[e]
VAS-IPP median (IQR) [min-max]	4.0 (1.17) [2.0-5.33]	3.0 (2.0) [2.0-6.0]	4.0 (1.17) [1.0-6.0]	0.047[e]
VAS-LPP median (IQR) [min-max]	2.75 (1.0) [2.0-4.5]	3.0 (1.0) [1.5-5.0]	3.5 (1.6) [1.0-5.9]	0.032[e]

Variables	*P*		
	Group A-Group B	Group A-Group C	Group B-Group C
STAI	0.88[b]	<0.001[b]	<0.001[b]
APAIS-AS	0.14[f]	0.045[f]	0.001[f]
APAIS-IR	0.23[f]	0.24[f]	0.029[f]
Hospital stay	0.30[f]	0.45[f]	0.088[f]
VAS-IPP	0.34[f]	0.025[f]	0.013[f]
VAS-LPP	0.81[f]	0.020[f]	0.026[f]

STAI: State-Trait Anxiety Inventory, SD: standard deviation, APAIS: Amsterdam preoperative anxiety and information scale, AS: anxiety subscale, IR: information requirement subscale, IQR: interquartile range, VAS: visual analogue scale, IP: P intermediate postoperative pain, LPP: late postoperative pain, [d]ANOVA test, [e]Kruskal-Wallis test, [b]Student's *t*-test, [f]Mann-Whitney-U test $P<0.05$

Table 3: Distribution and comparison of bruxism findings between all groups

Variables	Group A			Group B			Group C		
	FV	BS	*P*	FV	BS	*P*	FV	BS	*P*
Bruxism diurnal phenotypes									
Total *n* (%)	7 (24)	9 (31)	0.50[g]	6 (20)	9 (31)	0.25[g]	2 (7)	8 (27)	0.031[g]
AB *n*	1	1		2	2		1	2	
SB *n*	6	8		4	7		1	6	
Duration			0.16[h]			0.102[h]			0.018[h]
Acute (<7 days)	0	2		0	2		0	2	
Subacute (7-30 days)	0	0		0	1		0	4	
Chronic (>30 days)	7	7		6	6		2	2	

FV: first visit, BS: before surgery, AB: awake bruxism, SB: sleep bruxism, [g]McNemar test, [h]Wilcoxon signed rank test $P<0.05$

Table 4: Correlations between preoperative anxiety and postoperative pain variables

Variables	Age		Hospital Stay		STAI	
	r	*P*	*r*	*P*	*r*	*P*
STAI	−0.224	−0.034	0.387	<0.001	na	na
APAIS-AS	−0.062	0.56	0.491	<0.001	0.711	<0.001
APAIS-IR	−0.111	0.29	0.416	<0.001	0.520	<0.001
VAS-IPP	−0.33	0.76	0.489	<0.001	0.384	<0.001
VAS-LPP	−0.46	0.67	0.500	<0.001	0.484	<0.001

STAI: State-Trait Anxiety Inventory, APAIS: Amsterdam preoperative anxiety and information scale, AS: anxiety subscale, IR: information requirement subscale, VAS: visual analogue scale, IPP: intermediate postoperative pain, LPP: late postoperative pain, r: Spearman's rank correlation coefficient $P<0.05$

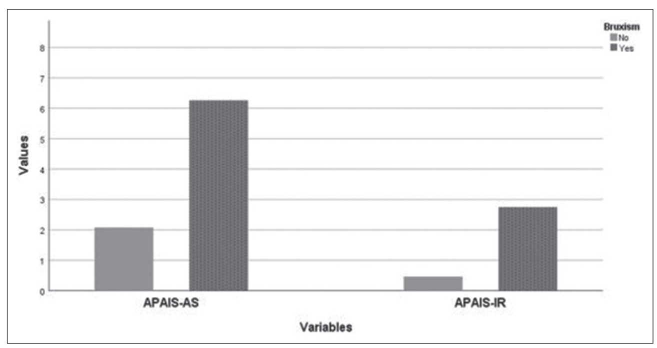

Figure 1: Comparing the values of the APAIS-AS and APAIS-IR between those with and without bruxism. APAIS: Amsterdam preoperative anxiety and information scale, AS: anxiety subscale, IR: information requirement subscale

postoperative pain among three elective ENT surgeries, including cases with TP surgery.

It has been shown in previous studies that surgical interventions performed under general anesthesia cause anxiety in patients. Most patients have varying degrees of anxiety before surgery.[1-7] The current study's findings suggest that during the first examination, there was no significant difference between the STAI values. It was below the cutoff reported in favor of anxiety. Still, the preoperative STAI averages were found to be above this cutoff, and significantly higher anxiety was obtained in tympanoplasty patients compared to other groups.

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Table 5: Correlations between preoperative anxiety and postoperative pain in all groups

Groups	VAS	Sign of value	Preoperative scores		
			STAI	APAIS-AS	APAIS-IR
Group A	IPP	*r*	0.172	0.582	0.542
		P	0.36	0.001	0.002
	LPP	*R*	0.247	0.466	0.381
		P	0.19	0.009	0.038
Group B	IPP	*R*	0.485	0.515	0.430
		P	0.007	0.004	0.018
	LPP	*R*	0.259	0.402	0.315
		P	0.16	0.028	0.090
Group C	IPP	*r*	0.541	0.722	0.655
		P	0.002	<0.001	<0.001
	LPP	*R*	0.549	0.712	0.618
		P	0.002	<0.001	<0.001
Total	IPP	*r*	0.384	0.582	0.530
		P	<0.001	<0.001	<0.001
	LPP	*r*	0.484	0.600	0.518
		P	<0.001	<0.001	<0.001

STAI: state and trait anxiety inventory, APAIS: Amsterdam preoperative anxiety and information scale, AS: anxiety subscale, IR: information requirement subscale, VAS: visual analogue scale, IPP: intermediate postoperative pain, LPP: late postoperative pain, *r*: Spearman's rank correlation coefficient $P<0.05$

Although questionnaires such as STAI show the level of anxiety, they may be insufficient to establish the causes of anxiety because complaints of chronic disease or other environmental factors may affect the results.[2,3] APAIS specific to surgery-related anxiety was used as the second questionnaire before surgery. According to the results of this survey, a significant difference was obtained in group C compared to the other groups. Previous studies have also shown the presence of preoperative anxiety in SP and ESS cases. Still, our study is remarkable in showing a significant level of anxiety in cases undergoing TPs.[7,15] We think that this difference reflects the perception of the patients by the nature of the ear disease, the operation process, and its aftermath.

The current study findings suggest a significant relationship between preoperative anxiety and postoperative pain, and this relationship varies according to the operated area and the type of surgery. We see this situation especially in the data of TP patients. Moreover, the fact that the mean postoperative pain was significantly higher in group C compared to the other two groups suggests that preoperative anxiety and the need for information before TP should not be ignored. Another point to be noted here is the significant increase in the number of patients with acute and subacute bruxism seen in group C after the indication was given. In addition to this increase, it was observed that the anxiety and IR scores were higher in patients with bruxism in the study. Castrillon and Exposto[17] reported that conditions that cause stress and anxiety increase masticatory muscle activity and cause facial, head, neck, and temporomandibular joint pain. Perhaps we can also think that anxiety may have affected postoperative pain not just a psychologically based hypothesis but also somatic related to bruxism. However, the rate of bruxism of 29% of all cases prevents us from reaching a meaningful conclusion for such a hypothesis.

Studies have reported that obstructive sleep apnea (OSA), rhinosinusitis, and nasal obstruction are associated with bruxism.[10,18] Consistent with the literature, it was observed that the frequency of bruxism was higher in nasal surgery patients in whom nasal obstruction (groups A and B) or snoring (group A) complaints were expected at the beginning of our study compared to group C in whom these complaints were not expected. However, whereas there was a limited increase in groups A and B during the operation process, there was a significant increase in bruxism frequency only in group C. These results suggest that bruxism may have a relationship with nasal obstruction. However, it is a detectable anxiety parameter that increases in parallel with surgery anxiety.

Consistent with the literature, it was shown that the preoperative anxiety rate in women was higher than that in men and that anxiety was inversely proportional to age, albeit low.[5,19] It may be helpful to consider basic demographics such as age and gender as criteria for reducing preoperative anxiety.

Preoperative anxiety is associated with increased postoperative pain, increased analgesic requirement, and prolonged hospital stay.[5] The fact that our patients did not have severe pain requiring additional painkillers and had prolonged hospitalization did not allow us to test this hypothesis. According to Lobel and Gilat,[20] moderately anxious patients are at higher risk of postoperative pain. Patients with low anxiety levels are more advantageous in coping with their pain. However, some studies could not establish a relationship between anxiety and postoperative pain.[21] The differences between the questionnaire forms, the types of operations applied, and the sample sizes can explain the inconsistency between the results. The current study found a correlation between APAIS and pain in all groups, while a correlation was observed with STAI in those other than group A.

It has been shown that informing patients during the preoperative period reduces anxiety and analgesic need and increases satisfaction.[22] Additionally, it was observed that the anxiety levels of the patients decreased when they were informed about the procedure and why it was performed at each stage.[23] However, it has been reported that the postoperative outcomes of patients who were

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trained during the preoperative period, such as hospital stay, sedative use, recovery, and complications, were better than those who were not trained.[24] In the present study, the need to inform all groups about preoperative surgery was moderately correlated with postoperative early and late pain. The fact that the groups show different correlation values indicates that meticulous planning should be done for the preparation, presentation, and timing of the information for each type of surgery.

Limitations

The study was carried out on the three most frequently performed operations in our clinic, and this frequency may differ in each clinic. Therefore, different results may occur in each clinic, which is one of this study's limitations. Although patients with major psychiatric disorders were excluded from the study, it was impossible to differentiate between patients with undiagnosed or minor psychiatric disorders. This is another limitation, as it is unknown how much this group constitutes the total number of patients.

Conclusion

The results showed that all patients had anxiety at different levels before surgery. Patients' lack of sufficient information about the surgical intervention to be performed is also an essential source of stress. Therefore, preoperative information should be programmed after the indication is placed. This study motivates more attention to the psychological conditions of patients undergoing functional nasal surgery and especially tympanoplasty. Acute and subacute bruxism can be considered a vital follow-up parameter that manifests itself in high preoperative anxiety. It may be helpful to examine preoperative bruxism and take appropriate measures due to its pain-increasing effect in patients.

Ethics

This study was approved by the University of Health Sciences Bakirköy Dr. Sadi Konuk Training and Research Hospital Ethics Committee (protocol no.: 047)

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Main points

- The first study comparing preoperative anxiety and bruxism with pain among elective ear, nose, and throat (ENT) surgeries.
- In tympanoplasties, anxiety and pain values may be seen as higher than in septoplasty and sinus surgeries.
- Acute bruxism may be seen in tympanoplasty patients after the indication was given.
- Bruxism can be considered a follow-up parameter that manifests itself in high preoperative anxiety.

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Conflicts of interest

There are no conflicts of interest.

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