

The Changing Elective Surgery Profile During the COVID-19 Pandemic: Retrospective Comparative Cohort Analysis from an Otolaryngology Clinic

COVID-19 Pandemisinde Değişen Cerrahi Profili: Bir Otolaringoloji Kliniğinden Retrospektif Karşılaştırmalı Kohort Analizi

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ABSTRACT Objective: The study aims to investigate the change in the profile of elective otorhinolaryngologic surgeries performed during the pandemic. **Material and Methods:** Ear nose throat surgical procedures performed in Fatih Sultan Mehmet Training and Research Hospital-Department of Otorhinolaryngology between March-December 2019 and March-December 2020 were retrospectively reviewed. No statistical methods were used in the study. All data were reported as percentages, numbers and bar charts on tables. **Results:** It was observed that the number of elective surgeries performed on 875 patients in the pre-pandemic period decreased to 243. The most common elective surgery performed in both periods was septoplasty. Septoplasty operation was 30.4% of all elective surgeries before the pandemic and 36.21% during the pandemic period. The rate of transoral surgeries was 25.37% before the pandemic and 18.1% during the pandemic. Transnasal surgeries comprised 45.71% of elective surgeries before the pandemic and 48.14% during the pandemic. Ear surgeries were 16% of elective surgeries before the pandemic and 16.87% during the pandemic period. While mastoidectomy among ear surgeries comprised 1.6% of all elective surgeries, this rate was 4.93% during the pandemic period. Facial plastic surgery operations comprised 21.02% of elective surgeries before the pandemic and 22.63% during the pandemic period. **Conclusion:** The coronavirus disease-2019 pandemic caused changes in the number and profile of otorhinolaryngology surgeries. The rates of facial cosmetic procedures and chronic otitis surgeries with a tendency for complications have increased. The incidence of vestibulitis has increased in the postoperative period in transnasal operations.

Keywords: COVID-19; elective surgical procedures; otolaryngology

ÖZET Amaç: Çalışmanın amacı, pandemi esnasında gerçekleştirilen elektif kulak-burun-boğaz (KBB) ameliyatlarının profilindeki değişimi araştırmaktır. **Gereç ve Yöntemler:** Fatih Sultan Mehmet Eğitim ve Araştırma Hastanesi Kulak Burun Boğaz Kliniği'nde Mart 2020 ve Aralık 2020 tarihleri arasında sıkça uygulanan KBB cerrahi prosedürleri ile Mart 2019 ve Aralık 2019 tarihleri arasında gerçekleştirilen cerrahi prosedürler retrospektif olarak incelendi. Herhangi bir istatistiksel yöntem kullanılmadı. Tüm veriler, tablolarda yüzdelere, sayılara ve çubuk grafikler olarak rapor edildi. **Bulgular:** Pandemi öncesi dönemde 875 hastaya uygulanan elektif cerrahi sayısının 243'e düştüğü görüldü. Her 2 dönemde de uygulanan en sık elektif cerrahi septoplastiydi. Pandemi öncesinde tüm elektif cerrahilerin %30,4'ünü, pandemi döneminde ise %36,21'ini septoplasti operasyonu oluşturmaktaydı. Transoral cerrahilerin oranı pandemi öncesi %25,37; pandemi esnasında ise %18,1 idi. Transnasal cerrahiler, pandemi öncesi elektif cerrahilerin %45,71'ini, pandemi esnasında ise %48,14'ünü oluşturmaktaydı. Kulak cerrahileri, pandemi öncesi elektif cerrahilerin %16'sını, pandemi döneminde ise %16,87'sini oluşturmaktaydı. Kulak cerrahileri içerisinde mastoidektomi, tüm elektif cerrahilerin %1,6'sını oluştururken, bu oran pandemi döneminde %4,93 idi. Fasiyal plastik cerrahi operasyonları, pandemi öncesinde elektif cerrahilerin %21,02'sini, pandemi döneminde ise %22,63'ünü oluşturmaktaydı. **Sonuç:** Koronavirüs hastalığı-2019 pandemisi, KBB ameliyatlarının sayı ve profilinde değişime neden olmuştur. Komplikasyon eğilimi olan kronik otitlere uygulanan cerrahilerin ve fasiyal plastik cerrahilerin oranları artmıştır. Transnasal cerrahilerde, postoperatif dönemde vestibülit görülme sıklığında artış söz konusudur.

Anahtar Kelimeler: COVID-19; elektif cerrahi işlemler; otolaringoloji

Coronavirus disease-2019 (COVID-19) is an acute respiratory disease caused by the newly described-CoV severe acute respiratory syndrome-CoV-2 (SARS-CoV-2). The COVID-19 pandemic

has been recognized as an international public health emergency by the World Health Organization.¹ COVID-19 spreads mainly through the respiratory tract by droplets, secretions, and direct contact.² Oto-

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laryngologists may be particularly at risk due to frequently performed otolaryngology-specific procedures that have a high viral load and aerosolization risk in the upper respiratory tract and digestive tract during COVID-19 pandemic. Therefore, there has been a widespread shift among otolaryngologists towards minimizing direct interaction with the patient, except in acute situations.^{3,4} Several otolaryngology departments have documented their subjective responses to this changing landscape, but so far few objective measurements of the impact of COVID-19 have been reported.^{5,6} These responses include measures for increasing personal protective equipment and minimizing contact with patients, postponing elective procedures other than urgent surgeries, using negative-pressure room with strict isolation precautions that include N95 mask and controlled air-purifying respirator during surgeries. Reducing the number and duration of visits, and not performing endoscopic examinations unless necessary, and conducting visits as telephone/telemedicine clinic visits are among the responses.⁷ All these measures have been implemented as a unique dynamic process in many countries during the pandemic. The realization of elective cases that are delayed according to the course of the pandemic, the initiation of outpatient services, increasing and decreasing their number have changed during the pandemic process.

It is expected that the number of elective cases will decrease during the pandemic. However, there are not enough reports in the literature regarding possible changes that may occur in the profile of elective surgeries during the pandemic period. The purpose of this study is to discuss the elective surgeries performed during the pandemic by comparing them with the elective surgeries performed in the same length period before the pandemic.

MATERIAL AND METHODS

PERIOD AND DATA

Health Sciences University Istanbul Fatih Sultan Mehmet Training and Research Hospital Clinical Research Ethics Committee (FSMEAH-KAEK 2021/11, 28.1.2021) approval was obtained at the beginning of the study. The study was made in accordance

with the principles of the Helsinki Declaration. The elective surgeries performed frequently in Fatih Sultan Mehmet Training and Research Hospital-Department of Otorhinolaryngology between March-December 2019 and March-December 2020 were retrospectively reviewed. Age, gender, surgical procedure performed and complications were recorded. The data obtained were expressed as numbers and percentages in tables and graphs. No statistical method was used.

Polymerase chain reaction (PCR) tests have been performed in every patient for COVID-19 before surgery. After the complication of meningitis and pulmonary thromboembolism developed in one of our patients, the COVID-19 PCR test was repeated and the result was negative.

RESULTS

While 868 patients underwent elective surgical procedures in the period of March-December 2019, it was seen that this number was 242 between March-December 2020. In the pre-pandemic period, 394 (45.03%) of the patients were female and 481 (54.97%) were male. During the pandemic period, 106 (43.6%) of the patients were female and 137 (56.4%) were male. While the mean age of the patients was 39.12 before the pandemic, it was 39.66 during the pandemic period. The most common type of elective surgery performed during and before the pandemic was septoplasty. The changes in elective surgeries performed in the same seasonal period during and before the pandemic are shown in Table 1 (Figure 1, Figure 2).

Epistaxis was the most common postoperative complication in the pre-pandemic period, and an increase in vestibulitis complication was observed during the pandemic period (Table 2, Table 3, Figure 3). The post-tonsillectomy hemorrhage rate was 1.16% in the pre-pandemic period, while it was 2.17% in the pandemic period.

During the pandemic period, postoperative meningitis and pulmonary thromboembolism were observed in one patient. These complications developed after mastoidectomy. Therefore, they were considered as surgical complications.

TABLE 1: Elective surgeries in pre-pandemic and pandemic era.

Surgical procedure	Pre-pandemic		Pandemic	
	n	%	n	%
Transoral surgery	222	25.37	44	18.1
Tonsillectomy±adenoidectomy±tube insertion	86	9.82	23	9.46
Endolaryngeal microsurgery	30	3.42	8	3.29
Adenoidectomy	87	9.94	8	3.29
Direct laryngoscopy+biopsy	19	2.17	5	2.05
Transnasal surgery	400	45.71	117	48.14
Septoplasty	266	30.4	88	36.21
Rhinoplasty	87	9.9	19	7.81
Endoscopic sinus surgery	37	4.2	8	3.29
Nasal valve surgery	10	1.1	2	0.82
Otologic surgery	140	16	41	16.87
Timpanoplasty	65	7.4	13	5.34
Ventilation tube insertion	58	6.6	14	5.76
Timpanoplasty with mastoidectomy	14	1.6	12	4.93
Stapedectomy	3	0.3	2	0.82
Tumor surgery	35	4	10	4.11
Parotidectomy	9	1.02	4	1.64
Laryngectomy	7	0.8	1	0.41
Direct laryngoscopy+biopsy	19	2.17	5	2.05
Facial plastic surgery	184	21.02	55	22.63
Rhinoplasty	87	9.94	19	7.81
Blepharoplasty	88	10.05	31	12.75
Otoplasty	9	1.02	5	2.05

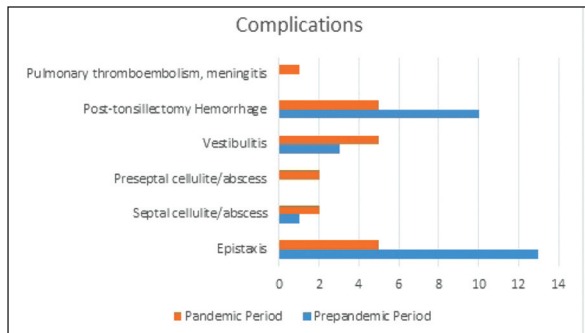


FIGURE 1: Number of surgeries in pre-pandemic and pandemic periods.

None of our elective surgery patients suffered from COVID-19 infection and related complications during the operation process.

DISCUSSION

The SARS-CoV-2 pandemic has placed significant strain on the entire world healthcare system, and therefore healthcare professionals have rapidly

changed their professional responsibilities to fulfill hospital needs. During this period, as a result of the dramatic decline in elective surgeries, the otolaryngologists, like other departments, witnessed the most dramatic change in their practice. The approach to the elective surgeries has also entered a dynamic process according to the instructions of the ministry officials

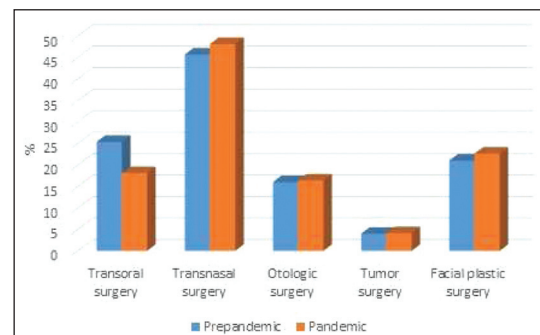


FIGURE 2: Distribution percentages of surgical procedures before and during the pandemic period.

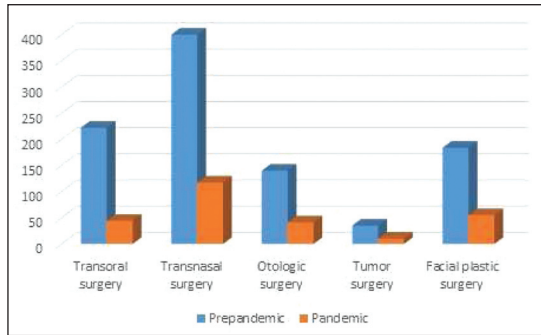


FIGURE 3: Complications in pre-pandemic and pandemic periods.

and hospital management, depending on the increase and decrease in the number of COVID-19 cases. In March 2020, when the pandemic started, all elective surgeries were stopped as a result of calls to postpone non-urgent services. Subsequently, countries, local

authorities, and professional organizations defined many guidelines and made recommendations for performing elective surgeries.⁸ In Turkey, it has eased the restrictions for elective surgery, along with the reduction of COVID-19 cases in May. In this period, there was a tendency to prioritize cancer surgeries that may progress and surgery for cholesteatoma that may cause complications.

The decision to postpone life-saving cancer surgeries during the COVID-19 pandemic requires a high level of care and attention. Delaying surgery for 6 weeks or more may affect the long-term results of these patients. Delays in cancer surgeries beyond 6 weeks can affect long-term outcomes for these patients. Most oncological surgeries are high priority and curative. Cancer surgery must remain “essential”

TABLE 2: Complications in pre-pandemic period.

Patient	Age	Gender	Operation	Complication day	Complication
1	35	M	Rhinoplasty	10	Septal abscess
2	40	M	Rhinoplasty	2	Epistaxis
3	34	M	Rhinoplasty	12	Epistaxis
4	20	F	Rhinoplasty	2	Epistaxis
5	34	M	Rhinoplasty	3	Epistaxis
6	36	F	Rhinoplasty	5	Vestibulitis
7	36	F	Rhinoplasty	4	Vestibulitis
8	49	M	Septoplasty	8	Epistaxis
9	23	F	Septoplasty	19	Vestibulitis
10	49	M	Septoplasty	10	Epistaxis
11	25	F	Septoplasty	3	Epistaxis
12	53	M	Septoplasty	10	Epistaxis
13	28	F	Septoplasty	2	Epistaxis
14	29	M	Septoplasty	2	Epistaxis
15	28	F	Septoplasty	5	Epistaxis
16	20	F	Septoplasti+medial maxillectomy	2	Epistaxis
17	19	F	Endoscopic sinus surgery	2	Epistaxis
18	19	F	Tonsillectomy	5	Hemorrhage
19	26	F	Tonsillectomy	8	Hemorrhage
20	20	M	Tonsillectomy	4	Hemorrhage
21	33	M	Tonsillectomy	3	Hemorrhage
22	26	M	Tonsillectomy	8	Hemorrhage
23	21	F	Tonsillectomy	6	Hemorrhage
24	33	M	Tonsillectomy	3	Hemorrhage
25	26	F	Tonsillectomy	5	Hemorrhage
26	26	F	Tonsillectomy	12	Hemorrhage
27	19	M	Tonsillectomy	7	Hemorrhage

TABLE 3: Complications in pandemic period.

Patient	Age	Gender	Operation	Complication day	Complication
1	21	F	Rhinoplasty	21	Vestibulitis
2	17	M	Septoplasty	6	Epistaxis
3	25	F	Septoplasty	7	Epistaxis
4	23	F	Septoplasty	23	Vestibulitis
5	51	M	Septoplasty	23	Vestibulitis
6	26	F	Septoplasty	11	Vestibulitis
7	29	F	Septoplasty	30	Epistaxis
8	27	F	Septoplasty	14	Vestibulitis
9	23	F	Septoplasty+endoscopic sinus surgery	3	Epistaxis
10	76	M	Chonchoplasty+endoscopic sinus surgery	10	Epistaxis
11	59	M	Endoscopic sinus surgery	30	Preseptal abscess
12	67	M	Endoscopic sinus surgery	120	Preseptal cellulite
13	34	F	Mastoidectomy	30	Pulmonary thromboembolism, meningitis
14	14	F	Tonsillectomy	9	Hemorrhage
15	31	F	Tonsillectomy	1	Hemorrhage
16	31	M	Tonsillectomy	7	Hemorrhage
17	24	M	Tonsillectomy	4	Hemorrhage
18	24	M	Tonsillectomy	8	Hemorrhage

and should be among the last type of surgeries to be delayed.⁹ It would be wise to transfer the patient to a less overwhelmed institution instead of delaying.¹⁰ If the postponement is necessary, it is recommended to use evidence-based guidelines in setting priorities while making decisions.¹¹ Whichever guideline is used, it is considered that some cancer patients require an urgent approach and some of them may wait for a while. Ethical principles and the capacity of the institution are also effective in deciding the priority of cancer patients.¹¹ In our clinic, no significant change was observed in the rate of surgical interventions for cancer patients during the pandemic period. The reason for this may be that depending on the capacity of our clinic, patients cannot be prioritized. Another reason is that there was no lack of personel and protective equipment in our institution during this period.

Under normal circumstances, most surgeries for uncomplicated chronic otitis media may be done as a semielective procedure, or as an elective procedure, depending on a case-by case basis. Chronic otitis media can be classified in different ways in terms of the timing of surgery. Saadi et al. classified any otological procedure as optional (surgery planned to be performed within 6-12 months), semi-elective

(planned to be performed in 3-6 months), semi-urgent (surgery within 48 hours), and urgent (within 6-12 hours).¹² George et al. divided cholesteatomas into A and B categories according to their clinical and radiological findings.¹³ In Category A, patients with inactive disease (dry ear, conductive hearing loss, no significant bone erosion in the high-resolution computed tomography) were accepted as elective. Those with inactive disease and bone erosion were accepted as semi-elective and surgery was recommended earlier in case of progression and lateral canal and tegmen erosion. Another group in Category A is the patients with an active disease without bone erosion [no vertigo, no facial palsy, no lateral canal fistula, no cerebrospinal fluid (CSF) leak]. This group is also considered semi-elective. In this group, early surgery is recommended for patients with tegmen and lateral canal erosion. In Category B, those with active disease and significant bone erosion [lateral canal fistula with vertigo and sensorineural loss (in only hearing ear), meningocele with CSF leak, facial paresis or facial palsy, mastoid abscess, petrositis] are semi-urgent, patients with life-threatening complications (meningitis, lateral sinus thrombosis, intracranial abscess) are classified as urgent. One of the

cholesteatoma surgeries we performed during our pandemic period was in the emergency class due to lateral sinus thrombosis. Others were in the optional group.

The increase in mastoidectomy operations during the pandemic, most of which are optional, can be attributed to several reasons. The possibility of interruptions in the follow-up and medical treatment processes of chronic otitis media patients during this period may be one of these reasons. Another reason may be that surgeons consider ear operations to be relatively safer than transnasal and transoral surgeries in terms of virus exposure.

Transoral surgeries and rhinological procedures are considered high-risk interventions in terms of transmission due to high viral load. Otorhinolaryngologists performing such surgeries are at serious risk due to patients with false-negative test results. Since most of these surgeries are elective, their number can be expected to decrease during the pandemic period. The number of transoral operations has decreased. The main reason for this was the decrease in the number of patients in the pediatric age group who underwent adenoidectomy. Failure to perform PCR testing for COVID-19 in these patients may be a causative factor. In our data, it was observed that there was no significant change in the rate of surgeries performed via transoral and transnasal route.

According to the results of our study, there was no decrease in the rate of facial plastic surgery procedures including rhinoplasty, blepharoplasty and otoplasty during the pandemic period. Considering the decision not to perform aesthetic surgeries in our clinic for the first 4 months in the period when elective surgeries begin to be performed in a controlled manner, even an increase in the rate of aesthetic surgery can be mentioned. In this high stress period, wearing masks and using telemedicine together with the desire to improve self-image may have led to an increase in aesthetic concerns. In this period, the increased attention of patients to how they appear on the screen in video calls and meetings may have increased the demand for facial aesthetic operations. Another reason may be that patients want to spend the recovery period after facial plastic surgery in this time when social environments are avoided.

One of the results of our study is the increase in the rate of vestibulitis complication after nasal surgeries performed during the pandemic period. This can be attributed to the use of masks. The data supporting that the use of masks may cause this is that 2 of the 3 vestibulitis seen before the pandemic occur in the early period (4th and 5th day), and those in the pandemic period are seen approximately 3 weeks later.

CONCLUSION

In conclusion, a change was observed in the profile of elective surgeries performed in our clinic during the pandemic period. In this period, there is an increase in the rates of chronic otitis surgeries requiring mastoidectomy and facial plastic surgeries. No significant decrease was observed in the rate of transoral and transnasal surgeries with a relatively higher risk of virus transmission.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Seyit Mehmet Ceylan, İbrahim Palaoğlu; **Design:** Seyit Mehmet Ceylan, İbrahim Palaoğlu; **Control/Supervision:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün; **Data Collection and/or Processing:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün; **Analysis and/or Interpretation:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün; **Literature Review:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün; **Writing the Article:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün; **Critical Review:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün; **References and Fundings:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün; **Materials:** Seyit Mehmet Ceylan, İbrahim Palaoğlu, Tuğba Aslan Dündar, Vehip Beyazgün.

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