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RESEARCH ARTICLE
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Incidence and Management of Acute Otitis Externa in a UK Centre Before and During the COVID-19 Pandemic

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ABSTRACT

Objective: Patients with otitis externa (OE) are commonly referred to acute ENT services after failed treatment in community. This case series analyses the prevalence and management of OE in a UK ENT rapid access clinic (RAC) prior to and following the national lockdown imposed in March 2020.

Materials and Methods: Retrospective case review of all patients referred with OE to the RAC between January 2019 and March 2021 with comparison of the cohorts before and after 1st March 2020. Data anaylsed included demographics, treatment methods, rates of admission, microbiological swab and CT results and rates of necrotising otitis externa (NOE).

Results: There were 239 new referrals over the total study period. The rate of referral dropped from 12.1/month to 5.8/month following the March 2020 lockdown. There were no significant differences in rates of severe infection or NOE before and after the lockdown. The most common organisms grown were Pseudomonas aeruginosa, Candida, and Staphylococcus aureus.

Conclusions: There was a considerable reduction in acute referrals for OE to this centre in the year following the March 2020 lockdown. There was no significant change in disease severity or management trends.

Keywords: Otitis Externa, Referral and Consultation, COVID-19

INTRODUCTION

Otitis externa (OE) is the inflammation of the external ear canal. It is a common condition encountered in primary care and ENT settings. Symptoms and signs include otalgia, otorrhea, itchiness in the presence of canal oedema, erythema, debris and tragal tenderness (1, 2). OE has a multifactorial aetiology and disruption of the ear canal's natural barrier of cerumen is thought to be a possible causation. Cerumen inhibits infection by creating an acidic environment which can be disrupted by excessive cleaning or water exposure (3). Pseudomonas aeruginosa and Staphylococcus aureus are the most common pathogens involved in OE, but fungal involvement is also common in chronic otitis externa especially following extended topical antibacterial treatment. Ear swabs for culture and sensitivity can help determine the causative pathogens and determine any antimicrobial resistances (1, 4). Topical treatment is the mainstay of otitis externa treatment as oral antibiotics are not as effective against the common pathogens of otitis externa. Despite this, up to 40% of patients receive oral antibiotics (2). Patients with otitis externa in the UK usually present first to their primary care practitioner and secondary care referral is only sought when initial treatments have failed or if there is suspicion of more severe or spreading infection. OE has the potential to progress into necrotising otitis externa (NOE) with higher incidence in immunosuppressed, diabetic and elderly patients (5). NOE carries significant morbidity and can be potentially life threatening (1, 6). Symptoms and signs including unremitting pain, pyrexia, meningism, exposed bone or granulation tissue within ear canal should prompt investigation of NOE.

From March 2020, the UK saw major changes to society with lockdown and social distancing restrictions imposed due to

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the COVID-19 pandemic. Primary care practitioners adopted remote consultation methods (7) to mitigate risk of contagion and so patients with ear symptoms may not have been examined. This case series analysis was designed to analyse and compare the incidence of acute referrals of OE to the ENT service and compare the severity and management of the disease, including rates of NOE, before and after the national lockdown imposed due to the COVID-19 pandemic in the UK.

MATERIAL AND METHODS

A retrospective analysis of otitis externa referrals to our Rapid Access Clinic was undertaken for cases between 1st January 2019 and 1st March 2021. The pre lockdown cohort were defined as the cases seen at the RAC in the 14 month period prior to 1st March 2020. The post lockdown cohort were the cases seen at the RAC in the 12 month period from 1st March 2020. Only first-time referrals were included. Follow-up appointments were not counted. Data analysed included: gender, age, any treatments started in primary care prior to clinic attendance, need for microsuction, microbiology culture and sensitivity reports, treatment (topical drops, oral antibiotic and whether a pope wick was used), computed tomography (CT) temporal bone results and whether there were any complications encountered during follow-up. Formal ethical approval was not required for this retrospective study. The study was registered with the local quality improvement and assurance team.

RESULTS

There were a total of 239 new referrals of OE to the ENT RAC during the study period. The characteristics of the study population are shown in Table 1. There was a higher rate of referral in the pre-lockdown cohort compared to the post-lockdown cohort (169 new cases= 12.1 referrals per month, versus 70 new cases= 5.8 referrals per month).

Table 1: Characteristics of study population

Gender	
Male	43% (n=102)
Female	57% (n=137)
Age	
Mean	48.7 years
Range	3 months to 93 years
Laterality	
Right	39% (n=93)
Left	37% (n=89)
Bilateral	23% (n=56)
Previous ear surgery	
Yes	13% (n=32)
No	87% (n=207)
Topical treatment in primary care	
Yes	47% (n=112)
No	53.1% (n=127)
Oral antibiotic or antifungal given in primary care	33% (n=79)

Microsuction of the ear canal was required in the majority of the cases both before (82%) and after (74%) lockdown. Topical antibiotic drops (with or without a steroid in the formulation) were started in 43% (n=103) of cases and topical antifungals in 9% (n=21) of cases. Topical dressings such as a Pope wick were used in 21% of cases in the pre-lockdown cohort and 14% in the post-lockdown cohort. Oral antibiotics were used in 18% of cases in the pre-lockdown cohort and 16% in the post-lockdown cohort.

Admission for intravenous antibiotics or pain management was required in 6.5% of cases pre-lockdown and 7% of cases post-lockdown. CT temporal bone scans were requested in 8% of cases, with the majority requested prior to lockdown (10% vs 3%), however, 41% of CT scans requested in the pre-lockdown cohort were for suspicion of cholesteatoma rather than otitis externa. One patient in the pre-lockdown cohort had radiological evidence of otitis externa.

A swab of the ear canal for culture and sensitivity was taken from 64% of patients prior to lockdown and 58% after. Breakdown of microbiological results are shown in Table 2 (some swabs revealed more than one organism, or different organisms in either ear for patients with bilateral OE). There was no significant difference in rates of organisms in the pre- and post-lockdown cohorts.

Table 2: Breakdown of ear swab microbiology cultures

Organism	Percentage (n=153)
Pseudomonas aeruginosa	30% (n=46)
Staphylococcus sp.	20% (n=31)
Streptococcuc sp.	7% (n=11)
Candida sp.	24% (n=36)
Aspergillus	9% (n=14)
No pathogenic organism identified	16% (n=24)

DISCUSSION

March 2020 brought national lockdown due to the COVID-19 pandemic in the UK. The data from this case series reveals a significant reduction in referrals for otitis externa from 12.1 acute referrals per month to 5.8 at the height of the COVID-19 pandemic. There are relatively few studies examining the effect of the COVID-19 pandemic on common referrals to ENT. One study reports a similar drop in the rate of referrals, but study numbers are smaller and the timeframe of analysis is less than two months (8).

Interestingly, based on this analysis there was no obvious increase in the rate of admission, requirement for pope wick, oral antibiotics or of NOE over the lockdown period. One may have expected a higher rate of more severe infections

or complications due to decreased access to primary care and altered health seeking behaviour (9, 10). Reasons for the apparent reduced incidence could include self-resolution of symptoms, improved e-health resources or management of OE in primary care during the lockdown, or reduction of water-based activities and hobbies such as swimming. The authors acknowledge that some cases of NOE may be missed in this analysis as patients could be admitted to the ENT department via an alternative route such as the Emergency Department. The majority, however, are admitted via the rapid access clinic and this was the data used in both parts of the analysis. The authors speculate that the slight reduction in microsuction requirement following lockdown (74% from 82%) could be due to hesitancy from some ENT doctors to use this technique when guidance on aerosol generating procedures was unclear, rather than a decreased requirement for the intervention (11). It is possible that Pope wicks were utilised less in the post-lockdown cohort in order to reduce the need for patients to return to the clinic for wick removal given the guidance on social distancing. One may also have expected a higher rate of oral antibiotic use in the post-lockdown cohort because of the expected later presentation of disease and the hypothetical tendency to over-treat in order to reduce the need for clinic re-attendance, however this was not seen.

Otitis externa is largely managed by primary care and patients seen by tertiary care would usually have received treatment from primary care prior to referral. NICE guidelines recommend topical antibiotic drops and suggest that oral antibiotics be given only rarely, in severe cases, as 65% to 90% of cases will resolve with antibiotic drops (1). While topical corticosteroids are often prescribed alongside topical antibiotics, a Cochrane meta-analysis did not find a significant difference in outcomes when comparing different topical antibiotics with or without corticosteroids (6). The most common topical agent used in our practice was ciprofloxacin with dexamethasone drops. This is generally considered effective against Pseudomonas aeruginosa, which was confirmed to be the most common pathogen found in ear swabs in this case series. Other studies also quote Pseudomonas aeruginosa as a most likely causative organism along with Staphylococcus aureus (1, 8). Only 47% of patients had received topical antibiotics or antifungals prior to referral but a considerable proportion, 33%, had been started on oral antibiotics. Oral antibiotics have not shown to be beneficial when compared to topical antibiotics. Inappropriate use of systemic antibiotics may cause antibiotic resistance, hence should only be used in appropriate circumstances such as immunosuppression or suspected malignant otitis externa where intravenous antibiotics should also be considered (1, 12). In situations such as recurrent or chronic otitis externa, treatment failure or suspected necrotising otitis externa, ear swabs are useful in determining the optimal antimicrobial therapy (1). However, cultures and sensitivities from swabs may include contaminant rather than pathogenic organisms and sensitivities may not factor in higher concentrations achieved from topical versus systemic antibiotics (13).

CONCLUSION

This case series demonstrates a >50% reduction in acute referrals of OE in the 12 months following the national lockdown imposed in March 2020. There was no difference in apparent severity of disease or incidence of complications such as NOE following the lockdown. More research should be done to study the effects of lockdown restrictions, health seeking behaviour and the role of primary care in managing OE successfully.

Ethics Committee Approval: Formal ethical approval was not required for this retrospective study.

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RESEARCH ARTICLE
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Tracheotomy During Pandemic COVID-19 Outbreak. Experience At University Clinical Center Tuzla

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ABSTRACT

Objective: The aim of the study was to present experience of performed tracheotomies during the Covid19 pandemic and to outline the adjustments made to the procedure for security reasons.
Materials and Methods: In the retrospective study for the period March 2020 to April 2022 we analyzed the disease history data and surgical findings from all patients in UCC Tuzla who underwent surgical tracheotomy during the COVID-19 pandemic.
Results: 52 patients who underwent open surgical tracheotomy after an invasive mechanical ventilation were analyzed in our study. Group A were 32 COVID-19 consecutive patients (22 male, mean age±13.54 years, range 23-76). The tracheotomy was performed approximately on day 12.4 of the intubation (range 4-28). Group B consisted of 22 patients who had not suffered from COVID-19, and their PCR test was negative for SARS-Cov-2 (12 male, mean age 59.4±20.40 years, range 19-87). The tracheotomy was performed approximately on day 10.1 of the intubation (range 2-20). There was a statistically significant difference in mortalities when both groups were compared. The most common complication was diffuse bleeding from soft tissue of the neck in the early post tracheotomy period and local infection in the later period. The most common comorbidities were arterial hypertension and diabetes mellitus.
Conclusion: According to our study results, COVID-19 elderly patients who are on Invasive Mechanical Ventilation (IMV) have an uncertain prognosis. Correct timing of the tracheotomy is necessary so as not to further traumatize the patients.

Keywords: Tracheotomy, COVID-19, Complications, Comorbidity

INTRODUCTION

Tracheotomy is the oldest and most common surgical procedure performed on patients in an intensive care unit (ICU), and it is conducted on between 10% and 24% of patients on invasive mechanical ventilation (IMV) (1). The novel coronavirus (COVID-19) global pandemic was characterized by rapid respiratory decompensation and subsequent need for endotracheal intubation and mechanical ventilation in severe cases. Approximately 3% to 17% of hospitalized patients required invasive mechanical ventilation (2-8), and a tracheotomy was chosen due to the need for prolonged mechanical ventilation. Therefore, tracheotomy was the most common surgical intervention that was performed during the period of the SARS-CoV-2 pandemic (9). Tracheotomy is an aerosol-generating procedure (10), and it is high risk due to possible infection transmission on healthcare workers.

At the beginning of the COVID-19 pandemic, physicians in intensive care units faced some dilemmas concerning

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tracheotomies. The questions asked were: "Why perform tracheotomies? When and by which method should tracheotomies be performed? Where should tracheotomies be carried out? What is the preferred method of tracheal incision?

The recommendations in the beginning were based on the experiences of the SARS-CoV-1 epidemic and Middle East respiratory syndrome which had a higher rate of infection transmission, and they relied on the expert opinion of surgeons and epidemiologists (11). A greater understanding of the virus developed with continuous research effort. The new literature has helped us to understand different aspects of COVID-19, including the patients' outcomes and risks to healthcare workers.

There were a few protocols issued for the tracheotomy, tracheobronchoscopy, and laryngoscopy management, representing a modification of standard procedure, and the aim was to decrease intraoperative exposure to aerosols and to protect the healthcare workers (12-15). The protocols refer to the methodology of procedure, the minimization of the staff and instrument presence during the procedure, the recommendation for Personal Protective Equipment (PPE) and for the covering of the patient, and providing for the removal of aerosols during the procedure.

Aims of the study: To show the complications, comorbidities, tracheostoma and tracheal aspirate swab microbiological samples, to present the outcome of open surgical tracheotomy on COVID-19 and "non COVID-19" patients, and to outline the methodology of performing tracheotomy under COVID-19 conditions at UCC Tuzla.

MATERIALS AND METHODS

A retrospective study on 52 patients was conducted at the ENT Clinic and Clinic for anesthesiology, UCC Tuzla, Bosnia and Hercegovina, from March 2020 to April 2022. The patients were divided into two groups. Group A consisted of 32 COVID-19 consecutive patients which were tracheotomized after prolonged intubation on IMV. All of them had pneumonia leading to acute respiratory distress syndrome. Group B consisted of 22 patients who had not suffered from COVID-19 and whose PCR test had been SARS-Cov-2 negative, but who underwent surgical tracheotomy for prolonged intubation. The medical charts of the patients and surgeon's reports were analyzed in patients which were tracheotomized after prolonged intubation on IMV. The patients who had been exposed to radiation in the neck region or who underwent neck region surgeries were not included in the study.

In group A all tracheotomies were performed at the bedside (without negative pressure rooms). Preoperative antibiotic prophylaxis and low molecular weight heparin (LMWH) was administered in all cases. The surgical team always included one surgeon (ENT) and one nurse. The whole staff wore protective clothing "PPE": water-resistant disposable gown, cap, shoe covers, double gloves, mask (FFP3/FFP2-N95), goggles and face mask. After pre-oxygenation with 100% oxygen for 3 minutes, apnea was allowed to reduce aerosol generation during the tracheal incision and tracheostomy tube insertion. The trachea was then incised between rings II-III according to Bjork (16), and the orotracheal tube was removed after which a tracheal cannula was inserted leading to ventilation. We modified the Bjork flap procedure. Unlike the tracheotomy procedure described by Bjork, a vertical incision on skin was made, and after the trachea incision, the tracheal ring and the "flap" were additionally sutured laterally in order to prevent bleeding because all the patients were on high LMWH doses.

The tracheotomies on group B patients were in most cases performed using the identical procedure as the tracheotomies for group A patients. The difference in tracheotomy methodology in both groups was in the type of protective clothes for the staff.

Statistical analysis

Categorical variables were presented as percentages. Continuous variables were summarized as mean±standard deviation or mean and range. Comparisons between the groups were performed by Pearson's chi-squared test or Fischer's exact test for categorical variables.

The Point-biserial correlation coefficient was calculated to determine the relationship between the categorical and the continuous variable. Statistical significance was presented as *p*-value, with observed differences considered statistically significant at a $p \leq 0.05$.

This study was approved by the institutional ethics committee 17.11.2021. No.: 02-09/2-83-2/21.

RESULTS

The research included 52 patients who underwent a tracheotomy. There were 33 (63.5%) male, and 19 (36.5%) female patients. The youngest patient was 19, and the oldest was 87 years old. The average age of the subjects was 59.8±16.5. The demographic characteristics of the patients and the comorbidities are presented in Table 1. After the statistical analysis, there were no significant differences in variables between the two subject groups determined.

After the analysis of tracheostoma or aspirate swab samples from trachea, it was determined that bacteria were present in 37.5% of the patients in group A, and the most common was Klebsiella pneumoniae (in 12.5% of the patients). In group B, the bacteria were isolated in 55% of the patients, and the most common was Acinetobacter species (in 35.0% of the patients). χ^2 test did not determine a statistically significant difference in the number of infected patients between the two groups of patients on the level of statistical importance $p<0.05$ (Table 2).

Table 3 presents the complications in tracheotomy that occurred during the surgery, both in the early (up to 24 hours) and late postoperative period.

Table 1: Demographic characteristics and comorbidity of patients

Clinical summary	All pts (52)	Group A (32)	Group B (22)	p value
Demographics				
Age (mean, range)	59.8 (19-87)	60.0 (23-76)	59.4 (19-87)	0.91*
Sex (male/female ratio)	1.7	1.9	1.5	0.91**
Comorbidity (%)				
Arterial hypertension	51.9	62.5	35.0	0.10**
Diabetes mellitus	17.3	15.6	20.0	0.72***
Obesity BMI > 25	11.5	18.8	0.0	-
Other	32.7	31.3	35.0	0.97**
With comorbidity	75.0	81.3	65.0	0.32**
Without comorbidity	25.0	18.7	35.0	
Comorbidity=1	48.1	75.6	61.1	0.73***
Comorbidity≥2	26.9	24.4	38.9	

*Mann-Whitney U test. **Pearson χ2 test; ***Fisher exact test

Table 2: Pathogens identified from peristomal swabs or tracheal aspiration

Pathogens	All patients	Group A	Group B
Candida al.	1/52 (1.9)	1/32 (3.2)	0/20 (0.0)
Stenotrophomonas mal.	1/52 (1.9)	1/32 (3.2)	0/20 (0.0)
Acinetobacter bau,	3/52 (5.8)	3/32 (9.4)	0/20 (0.0)
Klebsiella pn.	6/52 (11.5)	4/32 (12.5)	2/20 (10.0)
Proteus mir.	3/52 (5.8)	3/32 (9.4)	0/20 (0.0)
Pseudomonas ae.	4/52 (7.7)	3/32 (9.4)	1/20 (5.0)
Staphylococcus au.	1/52 (1.9)	1/32 (3.2)	0/20 (0.0)
Acinetobacter sp.	7/52 (13.5)	0/32 (0.0)	7/20 (35.0)
Providentiaa sp.	1/52 (1.9)	0/32 (0.0)	1/20 (5.0)
Identified with pathogens	23/52 (44.2)	12/32 (37.5)	11/20 (55.0)
Without infection by pathogens	29/52 (55.8)	20/32 (62.5)	9/20 (45.0)
p=0.34*			

Values are: number of patients (percentage). *Pearson χ^2 test

Table 3: Postoperative complications

	Group A (32) n (%)	Group B (20) n (%)	All patients (52) n (%)	p
Complications				
Tracheostomal Infection	8 (25.0)	3 (15.0)	11 (21.2)	0.50***
Hemorrhage	7 (21.9)	2 (10.0)	9 (17.3)	0.45***
Subcutaneous emphysema	2 (3.9)	0 (0.0)	2 (3.9)	-
Death	26 (81.3)	10 (50.0)	36 (69.3)	0.04**
Day of death after tracheotomy (mean, range)	8.1 (0-46)	5.0 (0-14)	6.9 (0-46)	0.52*
The duration of intubation before tracheotomy (mean, range)	12.4 (4-28)	8.1 (0-46)	11.5 (4-28)	0.08*

*Mann-Whitney U test. **Pearson χ^2 test; ***Fisher exact test

There was a significant death prevalence in group A (81.25%) compared to group B (50%). χ^2 test showed that there was a significant difference in the distribution of data on death prevalence of patients in group A compared to group B *(χ^2=4.07; df=1;* p=0.04). Fi correlation coefficient showed that, according to Koen criterium, it was a moderate correlation (p=0.33).

Table 3 represents the basic statistical parameters and testing results for the differences in data for the variables of intubation duration both before tracheotomy and on the day of death after the tracheotomy. The average value was higher in group A patients for both variables. Mann-Witney U test did not identify statistically significant differences in the results on the level of statistical difference p<0.05.

DISCUSSION

In our study, we analyzed the data from 52 performed elective surgical tracheotomies at UCC Tuzla during the COVID-19 pandemic The patients were divided into two groups depending on their COVID-19 status. The indications for the procedure were the prolonged intubations in the patients on invasive mechanical ventilations. During the COVID-19 pandemic, each of the performed tracheotomies presented a new cognition and experience to make the procedure easier and more secure. The decision to conduct the tracheotomy procedure was made after consultation with the anesthesiologist and ear, nose and throat specialist, on the basis of the clinical status of the patient and the need to improve the tracheobronchial toilet and oxygenation of the patient as well. The surgical team consisted of one ENT doctor and one nurse. An anesthesiologist and respiratory nurse were also present during the procedure. After the incision of the trachea between rings II-III on our patients, we formed the tracheostoma according to Bjork (16). The procedure of Bjork flap forming was modified, such that tracheal ring and “flap” were additionally sutured on the skin in order to prevent bleeding in the tracheostoma area (because all patients were on high doses LMWH). A Bjork flap can prevent post-tracheostomy tracheal stenosis in patients undergoing elective tracheostomy. A Bjork flap is recommended to avoid false passage in the event of accidental decannulation. Shifrer et al. (17) recommend forming an opening in the trachea in the shape of a Middle Ages shield, with the removal of a part of the tracheal wall. All tracheotomies in our patients were performed at the bedside, in an intensive care unit (ICU). In the available guidelines it was suggested that ICU and surgical teams check the optimum location for tracheotomy. Special attention was paid to the use of diametric, due to the high oxygen concentration in the infirmaries and the possibility of causing explosion and fire. In the period between May 2020 and May 2021, there were 38 non-surgical oxygen-related fires on the premises where COVID-19 patients were being treated with numerous victims noted (as reported or suspected) as found in media reports, scientific articles and other publications. A catastrophic fire in an Iraqi hospital took the lives of 82 people. Since the outbreak of the pandemic in March 2020, the incidents of hospital fire related to oxygen in different countries around the world caused more than 200 deaths, of which most of them were critical COVID-19 patients (18, 19).

It is recommended that tracheotomy on non - COVID-19 patients in intensive care units is performed up to seven days after intubation. The advantages of tracheotomy within the seven day period include a shorter stay in the intensive care unit, shorter time on mechanical ventilation, lower risk from subglottic stenosis development and the improvement of tracheobronchial toilet (20-23).

In group A, the average day on which a tracheotomy was performed was 12.4 of endotracheal intubation (range 4-28), while in group B it was on day 10.1 of intubation (range 2-20). The most controversial decision is to determine the term for tracheotomy in COVID-19 patients. In numerous publications the determination of the term for tracheotomy is based on the duration of SARS CoV-2 positivity or the duration of endotracheal intubation. At the beginning of the COVID-19 pandemic, before the vaccination had been initiated, the duration of prolonged intubation for tracheotomy had been longer compared to the period when the healthcare workers had received immunization. McGrath et al. (18). suggest postponing the tracheotomy at least up to 10 days of mechanical ventilation and it should be taken into consideration only when the patients show signs of clinical improvement. Van Kampen et al. (24) suggest that the best time to perform tracheotomy in COVID-19 patients is on the 21st day from the beginning of Sars Cov-2 positivity. This term for tracheotomy is safe from two aspects. First, the patient is not contagious anymore, and the second, the possibility for laryngotracheal stenosis up to 14 days of prolonged intubation is small, if the cuff is not overblown. Tiffany et al. (25) suggest that a tracheotomy can be taken into consideration with prolonged periods of intubation, defined as longer than 21 days, and that such cases do not have significant comorbidities, the expectation being that they will have a good prognosis if recovery is achieved. Tracheotomy should not be performed before 21 days in COVID-19 patients since the existing literature shows that there is a high risk of transmission and a bad prognosis for patients who need intubation and ventilation . If the patient is COVID-19 positive and fewer than 20 days have passed since the first symptoms occurred or the first positive RT-PCR was determined, we recommend that tracheotomy should not be performed in this group of patients who are potentially still infected (26-30), except if it is urgent due to inadequate airways.

In our study there was a dominance of males (63.5%), which is in keeping with the published data in numerous studies where it is within the range 51-82% (31-34).

We analyzed the bleeding, an occurrence of subcutaneous emphysema and infection in patients after tracheotomy. In our study there was no statistically significant difference in variables of complications between the subject groups. There was a significantly important correlation of the presence of pathogenic microorganisms and tracheostoma infection (p=0.00) determined for the whole sample, and after a

subsequent testing, it was determined that this correlation results from statistically significant correlation of the presence of pathogenic microorganisms and the infection of tracheostoma only in group A patients. The rate of individual complications in our study was between 3.9% to 25% which does not differ significantly from the published figures in the literature ranging from 5.6% to 27.2% (35-40). The incidence of overall tracheotomy complications in COVID-19 patients is higher than in the general population. Percutaneous dilatory tracheotomy and open surgical tracheotomy are characterized with the same post operative rates of complications in severe patients with COVID-19 (41), but there are contrary figures in the literature on the risks and complications of these two methods of tracheotomy (42-45).

Open surgical tracheotomy is related to higher incidence of early wound infections and forms larger scars on the neck.

Bleeding in the tracheostoma area in group A was noticed in 21.9% of the patients, out of which in 15.6% cases bleeding was noted during the surgery, 9.4% in the early postoperative period and 3.1% in the later period. Two patients had bleeding in all three periods. 10% of the patients in group B had bleeding that occurred during the surgery and in early the postoperative period (up to 24 hours).

The statistically significant difference in the death of the patients in the two subject groups after tracheotomy is related to the condition of COVID-19 patients with ARDS, who are on IMV, and who have a higher death rate in general. In our study, we determined a statistically significant correlation of patients' age and death rate with tracheotomy (r_{pb}=0.41, p=0.00). We think that a higher death rate in group A is related to the critical condition of the patients infected with COVID-19 and that it is not associated with tracheotomy.

Comorbidities, including hypertension, diabetes, cardiovascular diseases, cerebrovascular diseases, COPD, and malignoma significantly affect the seriousness and prognosis of the disease in patients suffering from COVID-19 (46).

In our study, we analyzed the comorbidities that were present in 75% of cases, where the most common were arterial hypertension (51.3%), diabetes mellitus (17.35%), obesity (11.5%). The patients suffering from COVID-19 with diabetes mellitus were more susceptible to overactive inflammation and non-balanced immune responses, which is the key element in the deterioration of patients suffering from COVID-19 (47, 48).

In group A, which consisted of patients with critical COVID-19, 18.7% of the cases were without comorbidities, which is not in accordance with the published figures by Perez et al. The authors published that arterial hypertension was present in 40% of cases, and that there were 38% of subject patients without comorbidities (49).

In the study, there was neither a statistically significant difference in comorbidity variables between the subject groups, nor was there a confirmed correlation between the comorbidities and complications of tracheotomy. There was no correlation between the comorbidity and death rate either.

After the analysis of tracheostoma or aspirate swab samples from trachea, it was determined that the bacteria were isolated in 37.5% of the patients in group A, and the most common was Klebsiella pneumoniae (in 12.5% of the patients). In that group, the inflammation in the tracheostoma area was noted in 25% of the patients. In group B, the bacteria were isolated in 55% of the patients, and the most present one was Acinetobacter species (in 35.0% of the patients). It is generally known that Acinetobacter baumannii easily colonizes the tracheostoma area and it is one of the leading causes of hospital epidemics among immunocompromised patients in the world, especially in intensive care units. The epidemics of infections with this bacterium are attributed to contamination and transmission in the hospital environment. The presence of mycosis in both groups was noted in individual cases, which is contrary to the previous studies that published a high incidence of Candida wound infection in 47-66% (41, 50, 51).

CONCLUSION

According to our study results, COVID-19 elderly patients who are on Invasive Mechanical Ventilation (IMV) have an uncertain prognosis. It is necessary to estimate the time of performing the tracheotomy so as not to further traumatize the patients. There is a statistically significant difference in the mortality rate between the examined groups of covid and non-covid patients after tracheotomy.

Ethics Committee Approval: This study was approved by University Clinical Center Tuzla Ethics Committee (Date:02-09/2-83-2/21, No: 17.11.2021).

Informed Consent: Written informed consent was obtained.

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RESEARCH ARTICLE
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How Safe Is Airline Travel 48 Hours After Open Septo-Rhinoplasty Surgery?

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ABSTRACT

Objective: The aim of this study was to find out if patients can travel safely on a plane 48 hours after open septo-rhinoplasty (SRP) surgery. Also, to compare analgesic need, mobilization time, readmission rate, side effects, time out of work and routine life between travelling and non-travellingpatients.

Materials and Methods: This study was conducted at Istanbul Florence Nightingale Hospitals in Istanbul/Turkey and Group Florence Hospitals in London/United Kingdom.

A total of 120 patients who had SRP were included in the study. Sixty patients who traveled from London to Istanbul by plane (approximately 3 hours 40 minutes, 2520 km) for SRP surgery and returned home 48 hours after surgery were compared with 60 local patients. All patients were observed at 8, 12, 24, 36, and 48 hour intervals after surgery. Additionally, all patients who travelled from London to Istanbul were reviewed after 6 days, 14 days, 1 month, 3 months, 6 months and 1 year.

The analgesia need, mobilization time, readmission rate, early and late complications patterns and incidence, time out of work and daily routine was compared between the two groups.

Early onset side effects include pain, discomfort, bruising, ecchymosis, edema, oozing, bleeding, septal haematoma, and late onset complications like delayed septal haematoma, delayed bleeding, infection, excess edema, breathing problems were compared between travelling and non-travelling patients.

Results: The hospital stay was 24 hours for all patients. No further analgesia was needed in both groups during their hospital stay, Mobilization time was in 8 hours in both groups and none of the patients needed readmission in both groups.

Common early complications in travelling patients like pain, edema, bruising, ecchymosis, minor oozing, blocked nose, and pain after 48 hours were similar to the local patients and all travelling patients felt confident and strong enough to travel after 48 hours without additional medication or treatment during or after the surgery.

Conclusion: People with no underlying medical conditions, who want to travel abroad for surgery and cannot or do not want to stay longer than 48 hours due to their personal or business lives, can consider travelling back to their countries, following SRP surgery, which is as safe as having the surgery locally without travelling abroad.

Keywords: Rhinoplasty, safe travel, travel with planerhinoplasty, safe travel, travel with plane

INTRODUCTION

No doubt plastic surgery all around the world has increased rapidly in the last decade and septo-rhinoplasty (SRP) is one of the most popular plastic surgeries globally.

Many surgeons including Plastic surgeons, ENT surgeons, and Maxillofacial surgeons around the world are offering SRP to their patients. Social media has had a significant impact on marketing of all kinds of plastic surgery (1) and as a result many patients are travelling abroad to have their surgeries in other countries (2, 3).

In this article we aimed to find out if airline travel is safe 48 hours after SRP surgery, and compare the early and late onset complications of SRP surgery between travelling and non-travelling patients.

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Open SRP surgery is mostly done under general anesthesia and primary surgeries usually take around 2-3 hours and revision surgeries around 4-5 hours. Twenty-four hour hospital stays are usually necessary after SRP surgery and a majority of the patients are discharged the next day with no complications. The first follow-up is usually in a week and the second follow-up in a month.

Complications from SRP surgery can be summarized as early and late onset complications. Early complications from SRP surgery include pain, discomfort, nausea, vomiting, bruising, periorbital edema and ecchymosis, bleeding, septal haematoma and breathing due to congestion and usually develops within 24 hours. Minor bleeding usually caused by mucosal bleeding stops within 24 hours. Minor pain and discomfort usually extend up to 48 hours, the bruising, ecchymosis around the eyes heals in 7-10 days, and the edema takes a couple of weeks to settle.

Late complications including numbness, scarring, skin problems, breathing problems, septal perforations (especially after revision surgeries) usually develop after 7-14 days to a year including late bleeding due to infections or turbinate necrosis especially if a turbinate surgery or radio frequency was performed (4).

The aim of this study is to investigate whether patients can safely travel by plane 48 hours after open technique SRP surgery, and to compare patients with and without travel in terms of various variables such as analgesic need, mobilization time, and readmission rate, recovery time to go back to work, and early and late onset complication patterns.

METHODS

A total of 120 patients who underwent open SRP performed by the same surgeon (DK) were analyzed retrospectively; 60 patients who travelled from London to Istanbul were compared with 60 local patients in the same hospital (Florence Nightingale Hospital) between January of 2019 and December 2020.

Consent forms were obtained from all patients. None of the patients were on any regular medications or had any chronic disease before the surgery. Unsatisfactory results and revision surgery were not included in the study.

All patients flights from London to Istanbul were approximately 3 hours and 40 minutes (approx. 2520 km.) and they all underwent SRP surgery under general anesthesia within 24 hours.

Both groups, were asked to stop taking aspirin, ibuprofen and similar painkillers, green tea, herbal teas, and omega 3-6 tablets seven days before their surgery. Eight hours of fasting were required before the day of surgery.

All patients were reviewed 8 hours after surgery, then 12 hours and finally 48 hours. The mobilization times were noted, pain level was assessed individually using visual analog scale (VAS 0-10; 0: no pain, 10: unbearable pain), questioned/observed for edema, ecchymosis, bleeding, nausea, and vomiting. Edema and ecchymosis were evaluated separately using visual analog scales (0-10). On the rating scale, the smallest number indicated no edema or ecchymosis and the largest number indicated edema severe enough to close the eyelid or severe ecchymosis spreading to the lateral canthus.

When leaving the hospital the next day all patients were prescribed one gr Amoxicillin + Clavulanic acid tablet twice a day for 7 days, paracetamol 500 mg 4 times a day, 10 mg cetirizine twice a day for 5 days and chloramphenicol cream twice a day for 7 days to apply on sutures.

Surgical technique

All procedures were performed under general anesthesia. Local anesthetic administration was used; 1ml 1:100.000 Adrenaline with 2ml %1 lidocaine mixed with 5ml isotonic solution and total amount 2ml of mixture was injected to the columellar skin, to anterior and posterior septum mucosa, piriform aperture and to the tip area and waited for 10 minutes before the incision.

One thousand mg of Tranexamic acid with 500ml isotonic solution infusion (adjusted for 10mls per min) was started before the surgery. Also, 1gr Cefazoline iv as a single dose was given for prophylaxis to all patients in both groups.

Our standard SRP surgical steps were followed in all travelling and local patients, and it started with a columellar incision, followed by smas elevation and exposition of cartilaginous and bony dorsum.

Then, the dorsal bony hump was reduced with a Rubin osteotome and rasps. Next, the upper lateral cartilages were separated from the septum and septoplasty was performed using a Cottle elevator. The L strud was protected and a necessary amount of graft harvested posteriorly with a 15 blade. The bilateral lateral and para median osteotomies were done internally using lateral osteotomes.

After the osteotomies dry ice, wrapped in a sterile glove, was applied on the sides and on the radix for 10 minutes and 40 mg Prednisolone with 4 mg Dexamethasone was given.

Dorsal height was then determined, and 2 spreader grafts placed with 5/0 PDS sutures.

The cephalic alar resection was done to leave around 8mm cartilage support and then with trans domal and inter domal sutures, the tip was given its final shape. Only five cases used a strut graft, and in 55 cases the tongue-in-groove technique was used for tip support.

4-0 rapid vicryl was then used for suturing the septum mucosa by passing the needle from one side to another.

Silicone nasal splints were then inserted in two sides and fixed to the septum with a single 3-0 prolene suture.

The skin incision was closed with 6-0 PDS sutures. Sterile strips

were used to fix the skin and then a thermal splint was used as a cast.

For all patients as a post-operative care, 1gr paracetamol iv 4*1, single dose of 40 mg Prednisolone with 4 mg Dexamethasone was given at midnight.

The sleeping position was straight on their backs with a 45 degree upright position and every 2 hours, 10 minutes of dry ice compression was given by the nurses. Normal nasal saline spray was given 6 times a day, 2 sprays to each side to keep silicone splints moisturized and to keep them open for better breathing.

The silicone splints, thermal cast, and sutures were removed after 6 days. Nasal endoscopy was done, and clinical observations were noted.

Statistical analyses were performed with SPSS v.21 (IBM Corp, Armonk, NY). Variables were reported as mean ± SD, and a distribution of discrete variables was reported as a percentage for each group. Additionally, variables were compared utilizing the Mann–Whitney–U test.

RESULTS

Ninety-two (%77) were female and 28 (%23) was male. All female patients were between 20 and 39 years old, the mean age was 27 and all male patients were between 25 and 39, with a mean age of 31 years old.

Both groups stayed in the hospital for 24 hours and were discharged the next day following their surgeries. All patients had similar pain, discomfort, edema, bruising and ecchymosis (Table 1). Nausea was a common symptom in first 12 hours but none of the patients vomited. There was no septal haematoma or bleeding observed in any patients. All patients were able to mobilize after 6 hours and able to eat and drink with no problems.

No further analgesia was needed in both groups during their hospital stay, 1gr Paracetamol 4x1 and single dose of 40 mg Prednisolone with 4 mg Dexamethasone in 24 hours were enough to make patients comfortable. The mobilization time was 8 hours in both groups and all patients were able to walk around, go to the toilet, eat and drink. None of the patients needed readmission.

Common early complications within 48-72 hours in travelling patients like edema, bruising, ecchymosis, minor oozing, blocked nose, and pain were similar to the local patients and all travelling patients felt confident and strong enough to leave the hospital the next day and travel after 48 hours. Readmission was not needed in either group.

None of the patients had any bleeding after the silicone splint, cast and suture removal. Bruising was nearly gone and there was no pain. One female patient had minor oozing after silicone removal but when ice was applied oozing stopped in 7-10 minutes.

None of the patients had any further complications during their second month, 3rd month, 6th month and 1st year reviews including bad scarring in the columellar area. The time to get back to work was 7-10 days in both groups. All patients were told to avoid hot baths and housework for 2 weeks and exercise for 8 weeks.

Delayed complications like infections, bleeding, were not seen in either patient group.

DISCUSSION

Septo-rhinoplasty surgery is for sure one of the most popular aesthetic surgeries and everyday many patients travel abroad to have SRP surgery leaving their families behind and taking time off from their jobs. As a result, they do not prefer spending so much time away from their families and jobs.

Many surgeons are trying to master the surgery to provide better results and to prevent complications. None of the surgeries are risk free and patients need to be given good explanation of the complete process including complications. All patients need to read and understand all possible risks and complications related with SRP surgery and general anesthesia.

In some hospitals in the UK, SRP surgery is accepted as a day case surgery in which patients are resting after the surgery and discharged the same day (5).

Generally, after SRP surgery the hospital stay is 24 hours and patients are discharged with minimal pain, edema, bruising, minor oozing, or nasal congestion which are normally expected after SRP surgery. Most patients travel by car to their home after 24 hours.

Table 1: Variable measurement

	Travelled patients (Mean scores of n: 60)	Local patients (Mean scores of n:60)	*P* value
Pain (VAS)	2±1	3±1	*0.05<*
Mobilization time (mean hour)	6	6	*N/A*
Ecchymosis (VAS)	2±1	3±1	*0.05<*
Edema (VAS)	4±2	3±2	*0.05<*
Nausea (VAS)	3±1	2±1	*0.05<*
Vomiting (VAS)	1±1	1±1	*0.05<*

Patients who are willing to travel abroad are worried about recovery time, how long they will need to stay, how long off time they need to arrange from work, how long will they stay apart from their families. In the literature there is no research about the safety of travelling after SRP surgery and it would save so much time and money to find out how safe it is to fly after 48 hours following surgery.

Septo-rhinoplasty surgery is not like middle ear surgeries which are related with air pressure and can be affected by air pressure changes. Recent studies have shown that even after tympanoplasty surgery travelling by plane one day after surgery is safe and does not have any effect on graft healing (6).

There was no extra suture or extra dressing needed during or after the surgery in the travelling patients' group. There was no additional medication or different dosage of medications added in both groups for our research.

DVT (Deep venous thrombosis) prophylaxis is not recommended for patients who are travelling under 6 hours (7). Therefore, we did not consider any anticoagulant therapy.

The results showed that there was no clinical difference in between the two groups regarding pain, discomfort, or readmission rates. Also, early complications like edema, bleeding, and all other early and late onset complications were not more frequent, or more severe and travelling did not change the time to go back to work or normal life after the surgery in travelling patients.

All precautions, surgical steps, and medications during the hospital stay and post-operative care and medications after discharge were similar in both patient groups.

CONCLUSION

As a result, patients with no underlaying medical conditions, who consider travelling abroad for surgeries and cannot stay or do not prefer staying longer due to personal or business life, travelling after 48 hours following a SRP surgery should be considered relatively as safe as having the surgery without travelling abroad.

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CASE REPORT
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Primary Lymphoepithelial Carcinoma of Parotid Gland: Inadequate Preoperative Assessment Resulting in Extensive Surgery

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ABSTRACT

Parotid lymphoepithelial carcinoma is extremely rare, and makes up only 0.4% of cases among the anaplastic variant of salivary gland carcinoma. We present a 63-year-old man who had progressive enlarging right neck swelling for one year. He sought treatment in another centre and underwent superficial parotidectomy, following an ultrasound assessment of the mass that was suggestive of a benign parotid tumour. There was no fine needle aspiration cytology or other radiological imaging performed prior to the surgery. However, the surgeon encountered difficulty intraoperatively and abandoned the surgery. The incisional biopsy of the tumour was reported as lymphoepithelial carcinoma. He then presented to us with the progression of the residual parotid malignant tumour. CT and MRI showed a locally aggressive parotid tumour that had infiltrated the subcutaneous tissue, external auditory canal, facial nerve, and multiple ipsilateral metastatic cervical lymph nodes. Subsequently, the patient underwent total parotidectomy with facial nerve sacrifice, lateral temporal bone resection and ipsilateral modified radical neck dissection. The surgical site defect was reconstructed with anterolateral thigh myocutaneous free flap. Concurrent static facial reanimation with fascia lata sling was performed. The patient received adjuvant chemoradiation following the surgery. The extent of the local infiltration by the tumour and the resulting surgery could have been reduced if the tumour had been properly assessed and excised at the initial stage. A complete preoperative assessment of a parotid mass is essential to avoid misdiagnosis, unexpected intraoperative finding and delay in definitive treatment.

Keywords: Fine needle aspiration, parotid carcinoma, salivary gland carcinoma, lymphoepithelial carcinoma, myocutaneous free flap, facial reanimation

INTRODUCTION

Salivary gland malignancies represent about 6% of all head and neck carcinomas. Among these neoplasms, parotid tumours consist of about 85% of all salivary gland neoplasms, in which about 15% are malignant (1). One rare variant of poorly-differentiated salivary gland carcinoma is lymphoepithelial carcinoma (LEC) that is characterised by extensive lymphoid infiltration in the stroma, mimicking the histopathological features of undifferentiated nasopharyngeal carcinoma (NPC). In fact, this variant was first reported in nasopharynx in 1921 by Schminke (2). Later, in 1952, Godwin found benign lymphoepithelial lesions in salivary glands of about 11 patients, which subsequently became the first case series in the league (3). Primary salivary gland LEC are extremely rare, composing only 0.4% of all malignant salivary gland tumours, and parotid glands are the most commonly occurring sites (4). Besides the salivary glands, LEC tumours have been reported in the literature to exist in other head and neck regions such as tonsil, floor of mouth, sinonasal cavity and larynx, as well as other organs such as lungs, stomach, breast, uterus, bladder and skin (5).

Similar to NPC, primary salivary gland LEC have a notable geographical and demographic propensity, occurring more

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often among Asians from south eastern China and Japan, and the natives of Arctic region (6). It is postulated that the Epstein–Barr virus (EBV) has a close association with salivary gland LEC, especially in EBV-endemic areas (6). Meanwhile in the non-endemic regions, although EBV is mostly not present in the LEC tumours, the diagnosis of these rare tumours cannot be excluded totally (6). A primary salivary gland LEC must be differentiated from metastatic undifferentiated NPC by nasal endoscopic examination and radiological imaging.

Hereby, we present a rare case of primary parotid gland lymphoepithelial carcinoma that was misdiagnosed as a benign salivary gland tumour. This resulted in tumour progression, delay in treatment and a more extensive surgery. We emphasise the importance of a complete pre-operative assessment and investigation in a parotid tumour, especially when it is suspicious for malignancy.

CASE REPORT

A 63-year-old male with no comorbidity was referred from another medical centre for further management. He presented with right neck swelling at the parotid region for one year, which was painless and progressively increasing in size. Otherwise, there was no significant ear, nose or throat symptom. He was an ex-smoker (30 years previous) and an occasional alcohol consumer. He sought treatment in a medical centre and a neck ultrasonography was performed. He was told by the treating surgeon that the features were of a benign parotid gland tumour. There was no cytological investigation or other radiological imaging performed. The patient subsequently underwent right superficial parotidectomy. However, intraoperatively, the surgeon found that the tumour had involved the deep lobe of the parotid gland, with no clear plane around the facial nerve. It was difficult to excise the tumour while preserving the facial nerve. The surgeon decided to take an incisional biopsy of the tumour instead and discontinued the surgery. The histopathology of the tumour was later reported as lymphoepithelial carcinoma with the presence of intraparotid metastatic lymph nodes.

The patient was subsequently referred to our centre for further management. At 3 weeks after the first surgery, the parotid swelling had further increased in size. Examination showed a well-healed modified Blair incision at the right side, with a palpable right parotid mass with firm to hard consistency measuring 4 x 3 cm. The mass was fixed to the underlying structures and part of the overlying skin was tethered to the tumour. There was a palpable right level IV cervical lymph node measuring 2 x 1 cm. The facial muscles supplied by the right buccal and marginal mandibular branches of the facial nerve were weak, which the patient noticed after the parotid surgery. White light endoscopic examination of the nasopharynx revealed no mass and image enhanced endoscopy showed no abnormal mucosal lesion. A second histopathology reading of the biopsy specimen showed malignant cell infiltration in the salivary gland, arranged in syncytial islands and trabeculae pattern. The malignant cells displayed pleomorphic, vesicular nuclei, prominent nucleoli and eosinophilic cytoplasm, and were strong and diffusely positive for CK AE1/AE3 on immunohistochemistry study. Abundant lymphocytic cell infiltrates were seen in between the malignant cells, highlighted by a mixture of CD20 positive B-cells and CD3 positive T-cells. Residual salivary gland tissue was seen at the periphery. An EBV-encoded RNA in-situ hybridisation study (EBER ISH) was negative. These features are consistent with an undifferentiated carcinoma, favouring LEC of salivary gland.

Computed tomography (CT) of the neck showed an ill-defined heterogeneous mass involving both the superficial and deep lobes of the right parotid gland, measuring 2.9 x 4.0 x 4.1 cm (Figure 1a, b). The tumour extended medially, causing mild

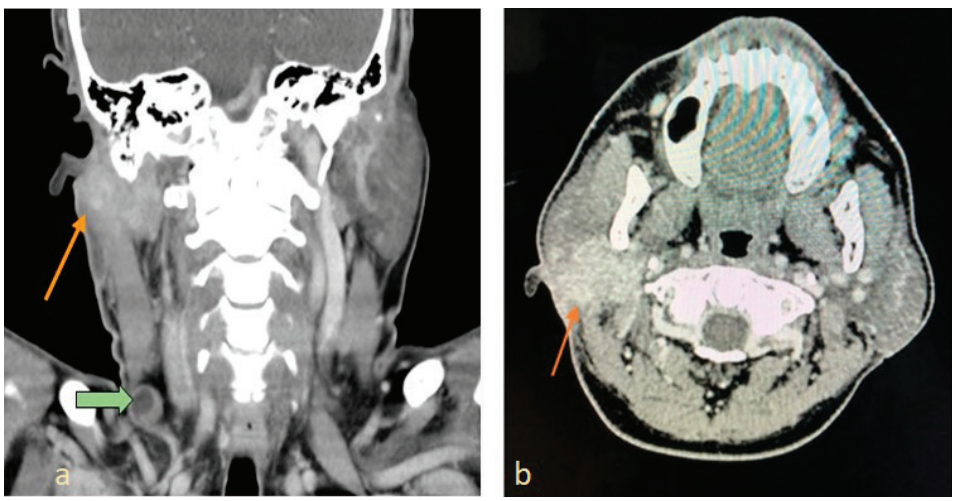

Figure 1: (a) Coronal CT scan shows an irregular shape contrast-enhanced right parotid tumour (thin arrow) with poor demarcated margin. The tumour is encroaching the soft tissue near the pinna and the stylomastoid foramen. An enlarged level IV lymph node with central necrosis is seen (thick arrow). (b) Axial CT scan shows ill-defined heterogeneous mass (arrow) involving both the superficial and deep lobes of the right parotid gland, and is seen extending medially, causing mild effacement of the parapharyngeal space

effacement of the parapharyngeal space. The tumour extended superiorly to the floor of the right external auditory canal. There was no direct involvement of the masticator space, pterygoid muscles, paravertebral muscles, internal jugular vein or carotid arteries. There were multiple enlarged ipsilateral cervical lymph nodes at levels II, III and IV with central necrosis, the largest measuring 1.7 x 2.5 cm at level II. No distant metastases were evidenced in the staging CT scan. Magnetic resonance imaging of the neck showed isointense parotid tumour on T1W1, hyperintense on T2W1 with heterogeneous enhancement post contrast. Areas of restricted diffusion were seen within. There was no clear fat plane seen between the tumour and the sternocleidomastoid muscle and the posterior belly of digastric muscle (Figure 2). Laterally, the tumour had extended to the adjacent subcutaneous fat and skin. The tumour was seen extended medially to the stylomastoid foramen. The facial nerve was thickened with solid enhancement up to the mastoid segment, likely perineural spread of the tumour. There was no abnormal enhancing lesion at the nasopharynx to suggest nasopharyngeal carcinoma.

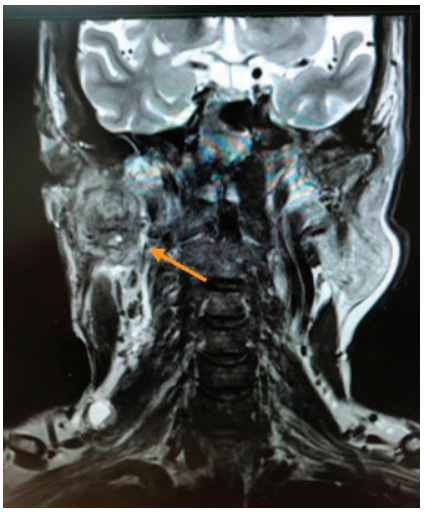

Figure 2: Coronal T2W1 MRI shows the right parotid mass (arrow) with sternocleidomastoid muscle involvement and multiple enlarged ipsilateral cervical lymph nodes.

In view of the aggressive nature of the tumour, the patient was counselled for completion of parotidectomy, modified radical neck dissection, lateral temporal bone resection and free flap reconstruction. He was also informed that the facial nerve would most likely be sacrificed due to perineural tumour spread. The skin adjacent to the tumour was excised due to tumour infiltration, and the skin incision was made to expose the parotid tumour, the neck and the mastoid, with a good cutaneous margin. The tumour was seen engulfing the facial nerve to the stylomastoid foramen, thus making the preservation of facial nerve surgically impossible. The facial nerve was therefore transected and removed together with the tumour. Ipsilateral modified radical neck dissection was performed, and the right sternocleidomastoid muscle and spinal axillary nerve were removed, preserving the internal jugular vein. This was then followed by lateral temporal bone resection, in which the entire tympanic bone, tympanic membrane, incus, malleus, mastoid tip and stylomastoid foramen were removed. Part of the conchal cartilage was excised, preserving the ear pinna. The mastoid segment of the facial nerve was exposed and excised to the second genu. The surgical defect was reconstructed with an antero-lateral thigh myocutaneous free flap. Meanwhile, static facial reanimation was performed in the same setting using tensor fascia lata sling to reduce post-operative facial asymmetry.

The histopathology finding showed a lobulated unencapsulated tumour infiltrating the parotid gland parenchyma. The neoplastic cells were polygonal to spindle-shaped in solid

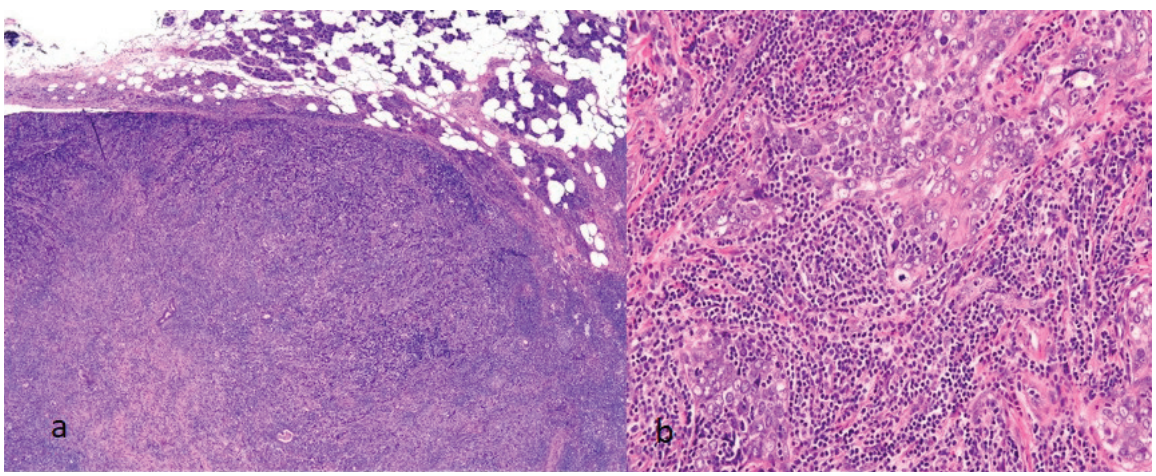

Figure 3: (a) The tumour is composed of malignant cells infiltration in syncytial islands and trabeculae amongst benign lymphoid component. A normal salivary gland tissue is seen at upper part of the image (Hematoxylin & Eosin, 4x). (b) Higher magnification showed that the malignant cells exhibit pleomorphic, vesicular nuclei, prominent nucleoli, and moderate amount of lightly eosinophilic cytoplasm with indistinct cellular borders. There are abundant lymphocytic infiltrates in between the malignant cells (Hematoxylin & Eosin, 20x).

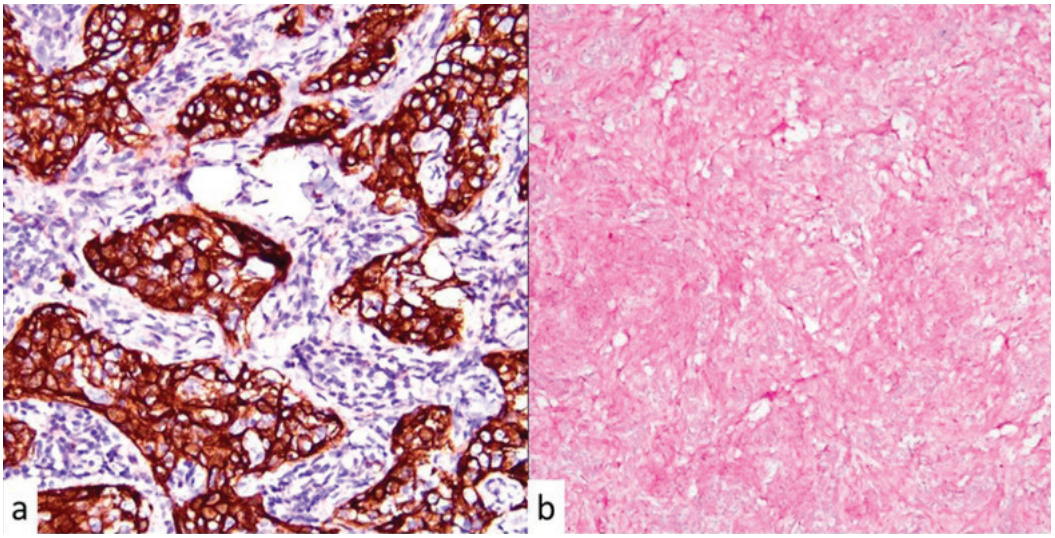

Figure 4: (a)The malignant epithelial cells are diffusely positive (brown staining) to pancytokeratin CKAE1/AE3, in contrast to the negative staining within the lymphoid component, (20x) while (b) the Epstein Barr Virus-encoded RNA in-situ hybridization study (EBER ISH) is negative (10x).

sheet and nests with large round to oval vesicular nuclei, in the background of non-neoplastic lymphoid stroma and entrapped glands (Figure 3a, b). Perineural invasions were prominent. The malignant cells were positive for pancytokeratin (Figure 4a). The Epstein Barr Virus-encoded RNA in-situ hybridization study (EBER ISH) was negative (Figure 4b). There were metastases in 23 out of 95 lymph nodes with extranodal extension seen. The resected facial nerve fibre was infiltrated by malignant cells but the proximal end was tumour free. The resected cartilaginous and bony external ear canal showed no evidence of malignant infiltration. These findings were consistent with a parotid gland lymphoepithelial carcinoma with lymph node metastases and facial nerve involvement.

The patient made an uneventful recovery. The facial expression was acceptable to the patient with House-Brackmann grade IV (Figure 5a, b). A second stage facial reanimation surgery is planned later after the patient completes the oncological treatment. He subsequently received adjuvant chemo-radiotherapy 8 weeks post-surgery.

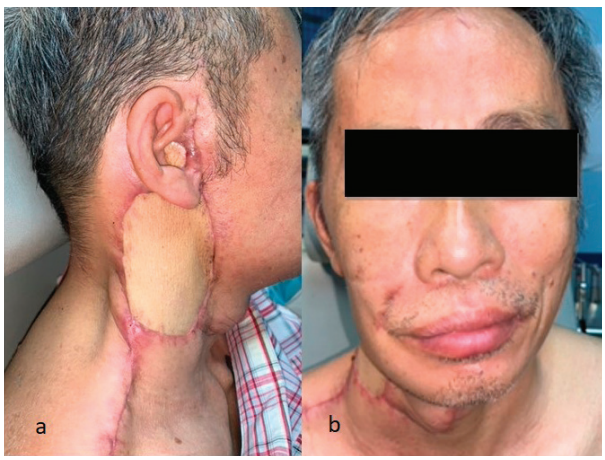

Figure 5: (a) and (b) House Brackmann Grade IV facial nerve function at rest

DISCUSSION

LEC of salivary glands is a rare tumour that primarily involves the parotid gland. It commonly presents in adults aged 30 to 50 years, with female preponderance (ratio 3:2). Parotid LEC mostly presents itself with a rather rapidly growing mass. It is often painless, but pain or discomfort may be present in some patients. About 10-20% of patients with parotid malignancies commonly present with facial nerve palsy (7). This facial nerve dysfunction implies that the tumour has already infiltrated the nerve and it is a negative prognostic factor. On the contrary, the surgery involving facial nerve sacrifice does not show better survival rate in these patients nor a better tumour control (8).

These features of enlarging, painful parotid mass and facial nerve involvement should alarm clinicians and raise the suspicion of a malignant tumour (7). In our case, the patient initially presented with a painless parotid swelling with no facial palsy. The cause of facial palsy that developed after the first surgery could not be ascertained, either iatrogenic or due to tumour infiltration. However, the facial nerve involvement by the tumour was proven whereby the facial nerve was thickened and enhanced in radiological imaging and malignant infiltration was evident in the postoperative facial nerve histopathology examination.

A retrospective analysis done in Poland on patients who were treated for parotid carcinoma reported that cases with worse prognosis were from the patients with preoperative facial nerve palsy and patients with initial diagnosis of pleomorphic adenoma (9). In another case series of salivary duct carcinoma, it was reported that the factors contributing to disease-specific

survival and the overall survival are lower grade of tumours, early stages of I and II, smaller size of tumours (≤3 cm) and absence of metastasis to neck nodes (9).

LEC tumours are generally as radiosensitive as their nasopharynx counterparts. Nevertheless, the mainstay of treatment of any parotid gland malignancy is still complete surgical resection, which is followed by adjuvant radiotherapy. The adjuvant therapy is given in LECs as it is rather challenging to achieve adequate positive resection margins (5).

The biggest lesson learnt in this case is misdiagnosing a malignant parotid tumour as a benign tumour, and embarking on surgery without appropriate preoperative evaluation. The use of ultrasound to diagnose a malignant parotid mass has low accuracy (20%), due to the poor sonography characteristics difference between benign and malignant tumours (10). CT scan or MRI are more valuable as they show the extent of the parotid tumour, including the deep lobe involvement and its relation to the major vessels. Most of the parotid LEC are irregular in shape with ill-defined margins, and show heterogeneous signal intensity on plain imaging with no cystic degeneration. The reported accuracy of fine needle aspiration cytology in detecting malignant parotid tumours varies but it is a valuable pre-operative assessment method for subsequent surgical anticipation and proper planning. In a review of 14 cases of LEC, the FNAC result was found to be 78.6% in concordance with the final histology diagnosis (11). The clinical features together with the radiological characteristics of a malignant parotid tumour, typical FNAC results and an absence of nasopharyngeal lesion on nasal endoscopy or CT/MRI with or without nasopharyngeal biopsy would all help in the diagnosis of a parotid LEC.

As mentioned, the mainstay of treatment for parotid LEC is total surgical resection followed by adjuvant radiotherapy, due to its radiosensitivity. Adjuvant chemotherapy is required in the presence of adverse features such as extranodal extension, as seen in this case. Total parotidectomy was performed in our case as the tumour had involved the deep lobe. Ipsilateral modified radical neck dissection was performed, as multiple cervical lymph nodes metastases were evident on clinical examination and radiological imaging. The sternocleidomastoid muscle and the spinal accessory nerve had to be resected due to direct tumour infiltration. Generally, the facial nerve will be preserved in malignant parotid surgery if the nerve is uninvolved. In this case, the patient had normal facial nerve function at presentation. He developed nerve palsy over the buccal and marginal mandibular branches after the first incisional biopsy surgery, but clinically the cause could not be determined (whether iatrogenic or malignant invasion). However, the latter aetiology is favoured since the facial nerve was shown thickened with significant contrast enhancement. Therefore, the facial nerve had to be sacrificed to ensure an oncologic safe tumour resection. On top of that, the extent of surgery was further increased as the tumour had encroached the cartilaginous part of the external auditory canal as well as the mastoid segment of the facial nerve. Thus, lateral temporal bone resection was performed to ensure complete tumour removal and high probability of loco-regional control.

Facial nerve resection must always be followed by reconstruction procedures as it significantly affects the patient's quality of life. Various methods of reconstruction are available, including immediate cable nerve graft interposition, and dynamic and static facial reanimation procedures. This can be done in a single stage or multiple stages. In our case, interposition nerve grafting was surgically difficult as the proximal stump of the facial nerve was in the tympanic segment. Thus, static suspension using fascia lata sling was performed in the same setting. The post-operative facial function was acceptable to the patient. The remaining reanimation procedures can be performed at a later stage after the patient has completed the adjuvant cancer therapy.

CONCLUSION

LEC of the parotid gland is a rare malignant tumour that may require complete resection followed by adjuvant radiotherapy. The surgical resection can be extensive depending on the tumour extension, and in our case, including total parotidectomy, ipsilateral modified radical neck dissection, and lateral temporal bone resection. The surgical defect was reconstructed with an antero-lateral thigh myocutaneous free flap, in addition to the static facial reanimation procedure. The extent of the surgery in this patient could have been less if the malignant parotid tumour had been appropriately assessed during the patient's first presentation with accurate diagnosis and proper surgical planning. We emphasise the importance of complete preoperative assessment of a parotid mass to avoid misdiagnosis and delay in definitive management.

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Author Contributions: Conception/Design of Study- T.R., L.S.G., S.H.M.P., A.Z.M.S.;Data Acquisition- T.R., L.S.G., S.H.M.P., M.R.M.Y.; Data Analysis/Interpretation- T.R., L.S.G; Drafting Manuscript- T.R., L.S.G., S.H.M.P; Critical Revision of Manuscript- M.R.M.Y., S.H.M.P, A.Z.M.S.; Final Approval and Accountability- M.R.M.Y., A.Z.M.S., S.H.M.P., T.R., L.S.G; Material or Technical Support- L.S.G., A.Z.M.S., S.H.M.P., T.R.; Supervision- M.R.M.Y.

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CASE REPORT
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An Unusual Presentation of a Patient with Covid-19 Infection—Lemierre's Syndrome

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ABSTRACT

Lemierre's syndrome refers to septic thrombophlebitis of the internal jugular vein that is rarely seen after an oropharyngeal infection. We present the case of a 64-year-old female patient with Covid-19 infection and Lemierre's syndrome. Contrast-enhanced computed tomography of the neck revealed thrombosis in the left internal jugular vein and non-contrast-enhanced computed tomography of the thorax was consistent with Covid-19 infection. The patient was immediately hospitalized. Systemic antibiotics, anticoagulation therapy, and favipiravir treatment for Covid-19 infection were started. Unfortunately, the patient died about two weeks after hospitalization. To the best of our knowledge, this is the first case of Lemierre's syndrome and Covid-19 overlap. Clinical suspicion of Lemierre's syndrome is important for rapid diagnosis. During this Covid-19 pandemic, we should keep in mind that any patient may have Covid-19 infection. In addition to the patient's primary disease, with clinical or laboratory suspicion of Covid-19 infection, diagnostic tests for it should also be conducted.

Keywords: Lemierre's syndrome, internal jugular vein thrombosis, Covid-19 infection, deep neck infection

INTRODUCTION

Lemierre's syndrome (LS) refers to a septic thrombophlebitis of the internal jugular vein (IJV) because of an oropharyngeal infection. The development of suppurative thrombophlebitis and neck pain are hallmarks of the disease. It is a systemic disease that originates from an oropharyngeal infection and may lead to septic clot fragments in the rest of the body (1). The causative agents are mostly normal oral flora organisms, and the most common organism among them is the fusobacterium species, especially necrophorum. We described the case of a patient presenting with severe neck pain, subsequently diagnosed with LS and COVID-19 infection simultaneously.

CASE PRESENTATION

A 64-year-old female patient was admitted to the hospital with severe pain on the left side of the neck and chin. The patient had had neck and jaw pain for four days. The patient had complained of a sore throat for 10 days. The left side of the neck was tender and painful with palpation, but no space-occupying lesion was palpated. Oral cavity and oropharynx examinations revealed no features other than oropharyngeal hyperemia.

The patient had no cough, chest pain, or shortness of breath. The patient had no known chronic lung disease and was a non-smoker, and saturation at room air was 95. In the laboratory tests of the patient, acute phase reactants were found to be high. Bilateral parenchymal infiltrations were detected in chest radiography. Non-contrast-enhanced thorax CT was consistent with COVID-19 Reporting and Data System (CO-RADS) category 5 (2). The contrast-enhanced CT of the neck showed edematous pharyngeal mucosa, microabscess formation in the retropharynx, inflammation of interplanar fatty tissue, and a total occlusion of the left IJV from the hyoid level to the origin

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of the brachiocephalic vein (Figure 1), consistent with LS. The patient was admitted to Covid services. The polymerase chain reaction (PCR) test for SARS-CoV-2 was positive, and the patient was assigned to CO-RADS category 6 (2). The test for blood culture was negative. The patient was given 2g ampicillin-sulbactam four times a day intravenously, 600mg clindamycin three times a day intravenously, 8mg dexamethasone orally, and a standard 5-day regimen of favipiravir for the COVID-19 infection. Enoxaparin and warfarin were started as anticoagulant therapy targeting an international normalized ratio (INR) between 2 and 3.

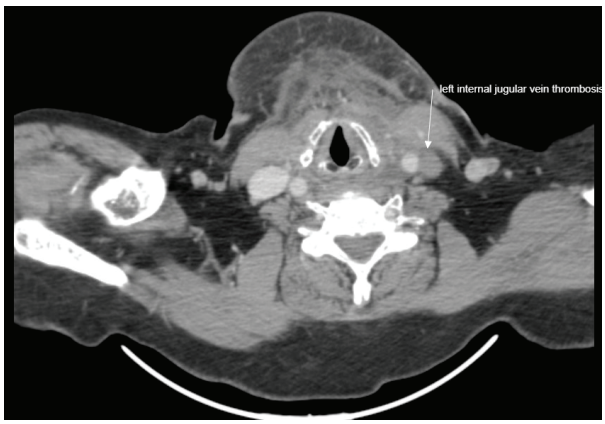

Figure 1: Contrast-enhanced neck CT. Left internal jugular vein thrombosis is seen at thyroid cartilage level

On the seventh day of hospitalization, retropharyngeal and parapharyngeal abscess formation was developed (Figure 2). The patient, whose condition worsened due to bacterial infection, was followed up in the intensive care unit (ICU) on the seventh day of hospitalization. Abscesses were drained surgically and recanalization of left IJV was observed during surgery. The abscess material was sent for microbiological analysis, but there was no growth in the abscess culture, possibly because the patient was under antibiotic therapy.

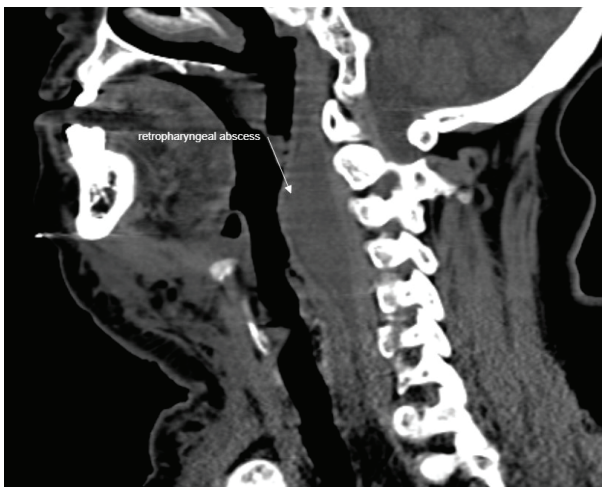

Figure 2: Non-contrast-enhanced neck CT.
The patient developed retropharyngeal abscess six days after admission to hospital.

Recanalization of the left IJV was also seen in the neck CT after abscess drainage (Figure 3). There was no septic embolism because the IJV thrombophlebitis was detected. The patient's general condition deteriorated each day, and unfortunately, she died from sudden cardiac arrest on the tenth day of ICU admission.

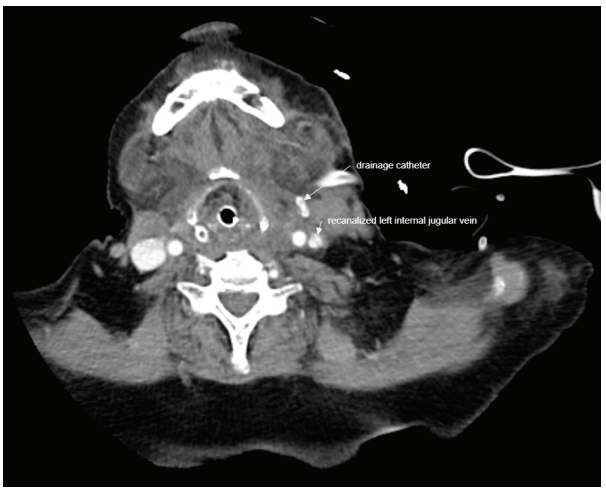

Figure 3: Contrast-enhanced neck CT
Near-total recanalization of left internal jugular vein is seen.

Her husband provided written consent after being informed about the aim of the study.

DISCUSSION

LS is a very rare disease, with a reported incidence of 0.6–2.3 per million (3). Since it was described in 1936 by Andre Lemierre, the incidence of LS has fallen dramatically because of antibiotic usage, to the extent that it has been called the forgotten disease. Primary infection in most cases of LS is associated with oropharyngeal infection as in our case. In patients with LS, primary infection is followed by a local invasion of the pharyngeal space and IJV, causing septic thrombophlebitis, with a 1–3 week time interval (4). The time interval between sore throat and LS in our patient was about 7–10 days. Common signs and symptoms of septic thrombophlebitis of IJV are pain, induration, or swelling at the ipsilateral angle of the mandible of the neck extending along the sternocleidomastoid muscle together with high fever and trismus (5). A thrombosed IJV is rarely palpable, and there may be no significant neck findings upon presentation. Therefore, in case of doubt, especially if the patient has symptoms such as severe neck and jaw pain and signs of tender and painful neck with palpation, neck imaging should be performed. A study has shown that IJV thrombophlebitis was detected in 59% of patients with increased use of imaging (6).

Covid-19 infection is a disease that predisposes to coagulopathy, and an increase in plasma D-dimer levels is the most frequently described report related to Covid-19 coagulopathy (7, 8). In hospitalized patients for Covid-19 infection, a coagulation profile should be performed, including D-dimer, PT, PTT, platelet count and fibrinogen (9). In patients with a Covid-19

infection, coagulopathy can be varying degrees from high levels of D-dimer to severe disseminated intravascular coagulation characterized by thrombocytopenia, prolonged PT, and elevated D-dimer (10). The worsening of laboratory parameters related to coagulation indicates progression in the severity of the Covid-19 infection. In this case, there was only an increase in the D-dimer level among the coagulation parameters. Therefore, clinical deterioration of our patient was mainly due to a bacterial infection and subsequent retropharyngeal abscess formation.

Management of IJV thrombosis in LS has changed over time. Before the use of antibiotics, ligation, or resection of the IJV was common, but today, systemic antibiotherapy is the main method of treatment. Ligation or resection of the IJV is indicated in cases of uncontrolled sepsis or ongoing septic emboli despite antibiotics (11). In a recent study, 8% of patients with LS required IJV ligation or resection (12). Anticoagulation therapy is not routinely used in LS, but under some circumstances, such as extensive thromboses, acute setting, and when thrombosis has the potential for retrograde progression to the cavernous sinus, anticoagulation therapy is recommended (13, 14). In this case, because of acute setting and extensive thrombosis, the patient was administered anticoagulation therapy. In most patients, recanalization occurs in the thrombosed vein with aggressive systemic antibiotherapy and surgery in necessary cases. Anticoagulation should be considered for high-risk patients if there is no contraindication to anticoagulation. Recanalization of the thrombosed vein may take several weeks or months. In our case, recanalization occurred seven days after diagnosis, and this recanalization was seen both during the surgical operation for abscess drainage and the contrast-enhanced neck CT scanning after the operation.

CONCLUSION

To our knowledge, this is the first case of Lemierre's syndrome presenting simultaneously with SARS-CoV-2. These two diseases on their own can have severe consequences for patients. Thus, the coexistence of the two may aggravate the devastating effects. Prompt diagnosis, early hospitalization, initiation of intravenous antibiotherapy, and a multidisciplinary team approach are crucial in the management of such patients. The COVID-19 pandemic is an ongoing global health problem. Therefore, nowadays, it should be kept in mind under any circumstances, as in this case with Lemierre's syndrome.

Informed Consent: Written informed consent was obtained from the patient's family for this case report.

Peer-Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- O.S., S.K., M.Ö., A.A.; Data Acquisition- O.S., S.K., M.Ö., A.A.; Data Analysis/Interpretation- O.S., S.K., M.Ö., A.A.; Drafting Manuscript- O.S., S.K., M.Ö., A.A.; Critical Revision of Manuscript- O.S., S.K., M.Ö., A.A.; Final Approval and Accountability- O.S., S.K., M.Ö., A.A.

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CASE REPORT
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Salivary Gland Choristoma of the Middle Ear: Case Report

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ABSTRACT

Choristoma, a salivary gland tumor, may localize at unforeseen locations. Since 1961 when it was first described, roughly 50 cases of choristoma have been accounted for, including 30 cases among pediatric–adolescents. The patient in this current study is a girl of 14 years of age. She was admitted to a tertiary otolaryngology polyclinic with right-sided hearing problems and aural fullness complaint. Her average airway hearing level measured using the pure tone audiometry hearing test was 70 dB, whereas the bone conduction pure tone average was 6 dB. A high-resolution computerized tomography of the temporal bone demonstrated a mass behind the intact tympanic membrane. The tumor was excised entirely over the facial nerves tympanic part of the facial nerve with careful dissection. Histopathological examination revealed the tumor to be a salivary gland choristoma. In this article, we present the case of a 14-year-old girl with unilateral conductive hearing loss caused by salivary gland choristoma.

Keywords: Choristoma, conductive hearing loss, middle ear

INTRODUCTION

Choristoma is the development of mature tissue at an unexpected location. A choristoma may develop in various parts of the body. A salivary gland choristoma located in the middle ear is unusual (1). Since it was first described in 1961, only 30 pediatric–adolescent cases have been reported (2, 3).

Salivary gland choristomas usually occur behind the healthy tympanic membrane, and are associated with unilateral conductive hearing loss. Furthermore, comorbid facial nerve anomalies, and other anomalies, including Mondini dysplasia, alopecia, preauricular pit, ear tag, and situs inversus, have also been reported (4, 5). The present study aimed to present the surgical, clinical, and radiological findings of a case, which is predominantly observed in the pediatric and adolescent age group, in the light of the literature.

Here we describe a case of salivary gland choristoma along with associated surgical, clinical, histological, and radiographic findings. Ethics committee approval was not obtained for this case report. Before the operation, the patient's parents were informed, and a consent form was signed.

CASE REPORT

The patient, a 14-year-old female, presented to a tertiary otolaryngology polyclinic complaining of hearing loss and aural fullness in the right ear. Her mother stated that the hearing loss had persisted for a long time and that she did not have any other otologic complaints, such as ear discharge, dizziness, or ear pain. The patient's family, pregnancy, and delivery histories were unremarkable. The right eardrum was intact during the otologic examination, but a reddish-brown mass was detected behind the posterior upper quadrant.

The air-bone conduction average (PTA) was 70 dB Hearing Level (HL), the bone conduction PTA was 6 dB HL, and the speech discrimination score was normal in the right ear audiometric examinations. The hearing levels were within normal limits in

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the left ear. A type-A curve was obtained in the tympanometric study.

According to high-resolution computed tomography (CT) of the temporal bone, a mass was observed behind the tympanic membrane, which was associated with the tympanic part of the seventh nerve and was in the region consistent with the facial recess, the border of which could not be distinguished (Figure 1).

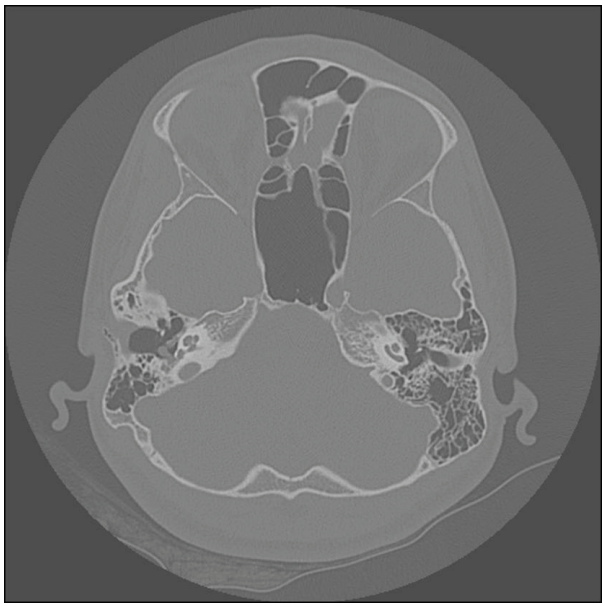


Figure 1: Image of the axial section of the temporal bone and the middle ear mass

Upon the preliminary diagnosis of congenital cholesteatoma or facial nerve neuroma, the patient underwent explorative tympanotomy via an end–aural approach under general anesthesia. The mass was 0.6 cm in diameter and reddish-brown in appearance (Figure 2). The mass was excised entirely over the tympanic part of the 7. nerve with cautious and careful dissection, without inducing any facial nerve stimulation, under

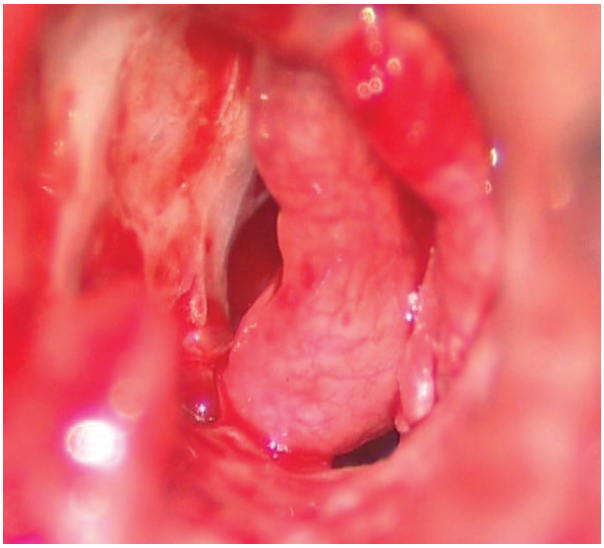


Figure 2: Preoperative image

continuous facial nerve monitoring, and the excised tissue (hereafter, specimen) was sent for further analysis.

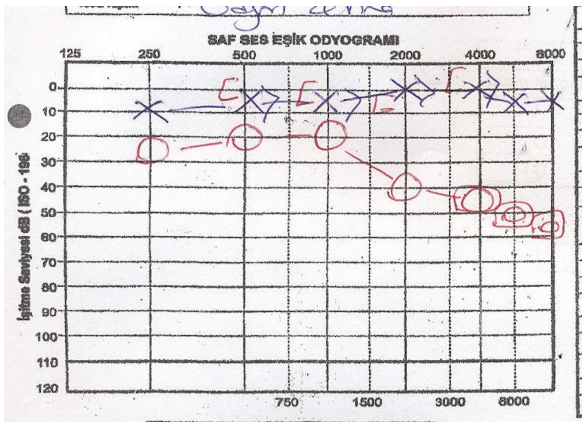
The ossicular chain was intact, there was no erosion, and the ossicles were mobile, as observed during the middle ear examination after removal of the tumor.

Facial nerve motor functions were normal during the postoperative period. The pure tone threshold audiograms of the patient with persistent hearing loss at high frequencies in the right ear were performed at the preoperative and postoperative periods and shown in Figure 3.

Based on histopathological examination, the mass was determined to be a salivary gland choristoma, which indicated salivary gland acinar structures in the tissue stroma covered with pseudostratified cylindrical epithelium (Figure 4).

One year after the patient's surgery, the tympanic membrane was intact, and no recurrence was observed as confirmed by postoperative temporal bone magnetic resonance imaging

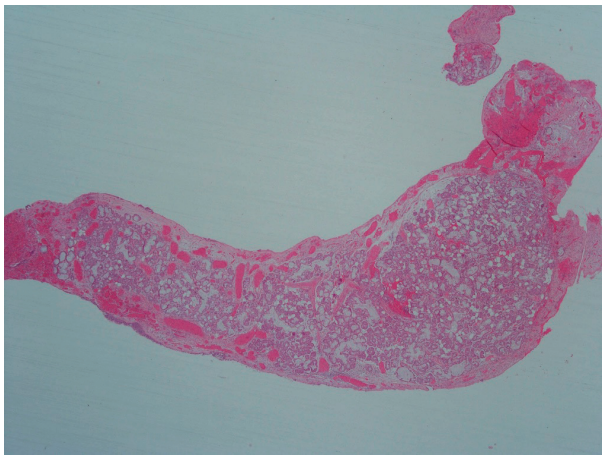
a



b

Figure 3: a,b Preoperative (a) Postoperative 2. Month (b)

a



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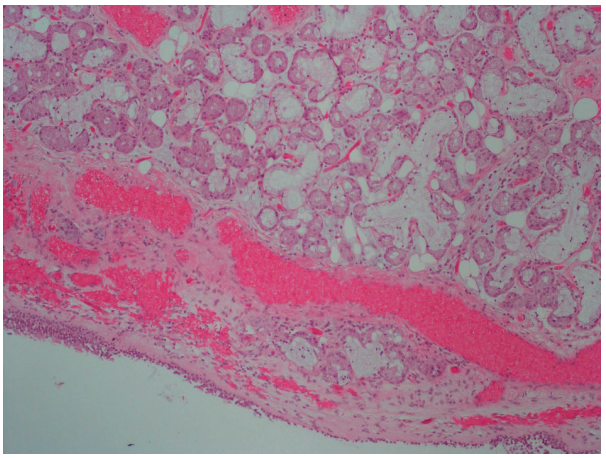

Figure 4: a, b.Polypoid tissue with acinar structures of the salivary gland (H&E×20) (a); Salivary gland acinar structures in the tissue stroma covered with pseudostratified cylindrical epithelium (H&E ×100) (b)

(MRI) (Figure 5); nevertheless, conductive hearing loss at high frequencies continued in the right ear.

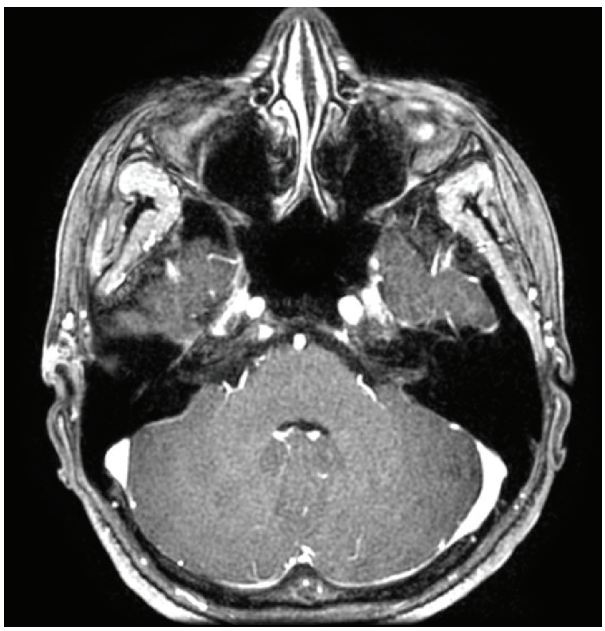

Figure 5: Axial T1-weighted MR images Temporal bone

DISCUSSION

A choristoma is the development of histologically normal mature tissue in an unexpected region. As a well-defined example of heterotopic salivary glands, choristomas are prevalent in the ear-nose-throat region but are rarely located in the middle ear (6, 7). The exact cause of this anomaly remains unknown.

Cases of choristoma observed in the ear-nose-throat region have been reported (8). Only 30 pediatric–adolescent cases have been reported since 1961 when Taylor and Martin first described the condition. (2). Approximately 50 cases have been reported, including 30 cases in the pediatric–adolescent age group (3).

The mechanism of salivary gland tissue development in the middle ear remains to be elucidated. Relevant literature suggests that salivary gland tissue that has been compressed during the process fusion of the temporal bone and remained in the middle ear, tissues without sufficient embryological resolution, and the second branchial arch defects that develop before the 4th intrauterine month may account for the condition (4).

Left ear involvement is more frequent in salivary gland choristomas and more prevalent in children and young adults (10 months – 52 years) (8). Varnetta et al. (9). reported that sensorineural hearing loss following labyrinthitis development is a choristoma case with a round window anomaly.

Furthermore, choristomas were reported with comorbidities, such as short cochleas, inner ear anomalies, such as Mondini dysplasia, and other abnormalities, including temporal alopecia, conchal bands, facial asymmetry, branchial cyst, and situs inversus totalis (4, 10, 11). There was no additional anomaly in the present case.

Relevant studies in the literature reported choristoma cases in the middle ear with Branchiootorenal syndrome induced by an autosomal dominant inheritance due to a mutation in the 8th chromosome (12). The family tree of our case was unremarkable.

Characteristically, a choristoma is a benign and slowly growing lesion. CT renders better results in detecting small masses in the middle ear. CT provides a better view, especially of the ossicular system structures, and allows the detection of small erosions and dislocations (13). CT cross-sectional images facilitate the differential diagnosis of choristomas from other benign middle-ear masses, including hamartoma, teratoma, dermoid cyst, epidermoid cyst, and congenital cholesteatoma

(14). The present case was followed up using MRI during the postoperative period, although CT was the preferred procedure during the preoperative period.

The nature of the surgical operation varies depending on location of the mass, the size and the erosion it creates in the ossicular system (15). Total excision of the mass by means of explorative tympanotomy is usually sufficient. Nevertheless, in rare cases, mastoidectomy, canal wall-up mastoidectomy, and ossiculoplasty may be required (3). In the present case, mastoidectomy and ossiculoplasty were not preferred as there was no destruction or dislocation of the ossicular chain.

In addition, the risk of iatrogenic seventh nerve injury is 12% during these types of surgical operations (4). Therefore, closeness to the facial nerve should be considered during the procedure, and accordingly, an intraoperative facial nerve stimulator should be used, and electrocauterization of the mass should be avoided (3). The postoperative motor functions of the facial nerve were normal.

Choristomas in the middle ear may cause erosions on the ossicular system due to the mass effect. It was reported that ossicular system reconstructions through primary and secondary surgeries significantly benefit the patient's hearing function (8). In the present case, no erosion was observed in the preoperative ossicular system, and therefore, no reconstruction was performed. However, a second look surgery intended for conductive hearing loss was recommended to the parents, and we decided to follow the patient closely.

A previous study reported that preoperative potassium titanium phosphate (KTP) laser had facilitated the excision of a mass without inducing any damage to the ossicular system. KTP laser option was not available in our clinic; therefore, it was not used and successful excision was achieved using classical otologic surgical instruments (16).

CONCLUSION

In the middle ear, salivary gland choristomas are very rare. The location of the mass behind the intact eardrum should be taken into consideration in the initial diagnosis, especially its proximity to the facial nerve, and its association with comorbidities, such as erosion, anomalies, and syndromes, in the ossicular system should be kept in mind in patients presenting with unilateral hearing loss.

Informed Consent: Written informed consent was obtained.

Peer Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- N.T., M.Ö.P., E.K., M.K.G.; Data Acquisition- N.T., M.Ö.P., E.K.; Data Analysis/Interpretation- N.T., Ş.A.İ., M.F.A.; Drafting Manuscript- Ş.A.İ., M.Ö.P.; Critical Revision of Manuscript- Ş.A.İ.; Final Approval and Accountability- Ş.A.İ., M.F.A.; Material or Technical Support- E.K., M.Ö.P.; Supervision- Ş.A.İ.

Conflict of Interest: The authors have no conflict of interest to declare.

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AIM AND SCOPE

The Turkish Journal of Ear Nose and Throat (Tr-ENT) aims to contribute to the literature by publishing high quality original articles, case clinical reports, surgical techniques and invited reviews focusing on key subjects and contemporary developments in the field. The scope of the journal includes otology, neurootology, rhinology, head and neck, general ORL, facial plastic surgery and laryngology. The journal welcomes articles from other disciplines as well, provided that these are related to the major subject area. The target audience of the journal consists of academicians, researchers, professionals, students, related professional and academic bodies and institutions.

The editorial and publication processes of the journal are shaped in accordance with the guidelines of the International Committee of Medical Journal Editors (ICMJE), World Association of Medical Editors (WAME), Council of Science Editors (CSE), Committee on Publication Ethics (COPE), European Association of Science Editors (EASE), and National Information Standards Organization (NISO). The journal is in conformity with the Principles of Transparency and Best Practice in Scholarly Publishing (doaj.org/bestpractice).

The Turkish Journal of Ear Nose and Throat is currently indexed in TUBITAK ULAKBIM TR Index.

Processing and publication are free of charge with the journal. No fees are requested from the authors at any point throughout the evaluation and publication process.

All expenses of the journal are covered by the İstanbul University.

INSTRUCTION TO AUTHORS

The Turkish Journal of Ear Nose and Throat (Tr-ENT) is an international, scientific, open acces and peer-reviewed publication of Istanbul University. It is published quarterly in March, June, September and December. The publication language of the journal is English. The journal started off in 1990 under the editorship of Professor Behbut Cevanşir. Since then it has been a significant source of knowledge in the field of otorhinolaryngology for researchers, residents and specialists. As of year 2018 Volume 28 Issue 1, the title of the journal was changed from “Kulak Burun Boğaz İhtisas Dergisi” (ISSN: 1300-7475, E-ISNN: 2147-67569) to “The Turkish Journal of Ear Nose and Throat” and the journal decided to publish articles only in English with a frequency of four issues per year. The Turkish Journal of Ear Nose and Throat aims to contribute to the literature by publishing high quality original articles, case reports, surgical techniques and invited reviews focusing on key subjects and contemporary developments in the field. The scope of the journal includes otology, neurootology, rhinology, head and neck, general ORL, facial plastic surgery and laryngology. The journal welcomes articles from other disciplines as well, provided that these are related to the major subject area. The target audience of the journal consists of academicians, researchers, professionals, students, related professional and academic bodies and institutions. Former title of the journal: Kulak Burun Boğaz İhtisas Dergisi (P-ISNN: 1300-7475 / E-ISNN: 2147-6756)

POLICIES

Publication Policy

The journal is committed to upholding the highest standards of publication ethics and pays regard to Principles of Transparency and Best Practice in Scholarly Publishing published by the Committee on Publication Ethics (COPE), the Directory of Open Access Journals (DOAJ), the Open Access Scholarly Publishers Association (OASPA), and the World Association of Medical Editors (WAME) on https://publicationethics.org/resources/guidelines-new/principles-transparency-and-best-practice-scholarly-publishing

The subjects covered in the manuscripts submitted to the Journal for publication must be in accordance with the aim and scope of the Journal. Only those manuscripts approved by every individual author and that were not published before in or sent to another journal, are accepted for evaluation.

Changing the name of an author (omission, addition or order) in papers submitted to the Journal requires written permission of all declared authors.

Plagiarism, duplication, fraud authorship/denied authorship, research/data fabrication, salami slicing/salami publication, breaching of copyrights, prevailing conflict of interest are unethical behaviors. All manuscripts not in accordance with the accepted ethical standards will be removed from the publication. This also contains any possible malpractice discovered after the publication.

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Submitted manuscripts that pass preliminary control are scanned for plagiarism using iThenticate software. If plagiarism/self-plagiarism will be found authors will be informed. Editors may resubmit manuscript for similarity check at any peer-review or production stage if required. High similarity scores may lead to rejection of a manuscript before and even after acceptance.

Depending on the type of article and the percentage of similarity score taken from each article, the overall similarity score is generally expected to be less than 15 or 20%.

Double Blind Peer-Review
After plagiarism check, the eligible ones are evaluated by the editors-in-chief for their originality, methodology, the importance of the subject covered and compliance with the journal scope. The editor provides a fair double-blind peer review of the submitted articles and hands over the papers matching the formal rules to at least two national/international referees for evaluation and gives green light for publication upon modification by the authors in accordance with the referees' claims.

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ETHICS

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All parties involved in the publishing process (Editors, Reviewers, Authors and Publishers) are expected to agree on the following ethical principles.

All submissions must be original, unpublished (including as full text in conference proceedings), and not under the review of any other publication synchronously. Authors must ensure that submitted work is original. They must certify that the manuscript has not previously been published elsewhere or is not currently being considered for publication elsewhere, in any language. Applicable copyright laws and conventions must be followed. Copyright material (e.g. tables, figures or extensive quotations) must be reproduced only with appropriate permission and acknowledgement. Any work or words of other authors, contributors, or sources must be appropriately credited and referenced.

Each manuscript is reviewed by at least two referees under double-blind peer review process. Plagiarism, duplication, fraud authorship/denied authorship, research/data fabrication, salami slicing/salami publication, breaching of copyrights, prevailing conflict of interest are unethical behaviors.

All manuscripts not in accordance with the accepted ethical standards will be removed from the publication. This also contains any possible malpractice discovered after the publication.

Research Ethics
The journal adheres to the highest standards in research ethics and follows the principles of international research ethics as defined below. The authors are responsible for the compliance of the manuscripts with the ethical rules.

- Principles of integrity, quality and transparency should be sustained in designing the research, reviewing the design and conducting the research.

- The research team and participants should be fully informed about the aim, methods, possible uses and requirements of the research and risks of participation in research.
- The confidentiality of the information provided by the research participants and the confidentiality of the respondents should be ensured. The research should be designed to protect the autonomy and dignity of the participants.
- Research participants should participate in the research voluntarily, not under any coercion.
- Any possible harm to participants must be avoided. The research should be planned in such a way that the participants are not at risk.
- The independence of research must be clear; and any conflict of interest or must be disclosed.
- In experimental studies with human subjects, written informed consent of the participants who decide to participate in the research must be obtained. In the case of children and those under wardship or with confirmed insanity, legal custodian's assent must be obtained.
- If the study is to be carried out in any institution or organization, approval must be obtained from this institution or organization.
- In studies with human subject, it must be noted in the method's section of the manuscript that the informed consent of the participants and ethics committee approval from the institution where the study has been conducted have been obtained.

Ethics Committee Approval and Informed Consent

The Turkish Journal of Ear Nose and Throat (Tr-ENT) takes as principle to comply with the ethical standards of World Medical Association (WMA) Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects revised in 2003 and WMA Statement on Animal Use in Biomedical Research revised in 2016.

An approval of research protocols by the Ethics Committee in accordance with international standards mentioned above is required for experimental, clinical, and drug studies and for some case reports. If required, ethics committee reports or an equivalent official document will be requested from the authors. For manuscripts concerning experimental research on humans, a statement should be included that shows that written informed consent of patients and volunteers was obtained following a detailed explanation of the procedures that they may undergo. For studies carried out on animals, the measures taken to prevent pain and suffering of the animals should be stated clearly. Information on patient consent, the name of the ethics committee, and the ethics committee approval number should also be stated in the Materials and Methods section of the manuscript. It is the authors' responsibility to carefully protect the patients' anonymity. For photographs that may reveal the identity of the patients, signed releases of the patient or of their legal representative should be enclosed.

Author's Responsibilities

It is authors' responsibility to ensure that the article is in accordance with scientific and ethical standards and rules. And authors must ensure that submitted work is original. They must certify that the manuscript has not previously been published elsewhere or is not currently being considered for publication elsewhere, in any language. Applicable copyright laws and conventions must be followed. Copyright material (e.g. tables, figures or extensive quotations) must be reproduced only with appropriate permission and acknowledgement. Any work or words of other authors, contributors, or sources must be appropriately credited and referenced.

All the authors of a submitted manuscript must have direct scientific and academic contribution to the manuscript. The author(s) of the original research articles is defined as a person who is significantly involved in "conceptualization and design of the study", "collecting the data", "analyzing the data", "writing the manuscript", "reviewing the manuscript with a critical perspective" and "planning/conducting the study of the manuscript and/or revising it". Fund raising, data collection or supervision of the research group are not sufficient roles to be accepted as an author. The author(s) must meet all these criteria described above. The order of names in the author list of an article must be a co-decision and it must be indicated in the Copyright Agreement Form. The individuals who do not meet the authorship criteria but contributed to the study must take place in the acknowledgement section. Individuals providing technical support, assisting writing, providing a general support, providing material or financial support are examples to be indicated in acknowledgement section.

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When an author discovers a significant error or inaccuracy in his/her own published paper, it is the author's obligation to promptly cooperate with the Editor to provide retractions or corrections of mistakes.

Responsibility for the Editor and Reviewers

Editor-in-Chief evaluates manuscripts for their scientific content without regard to ethnic origin, gender, sexual orientation, citizenship, religious belief or political philosophy of the authors. He/She provides a fair double-blind peer review of the submitted articles for publication and ensures that all the information related to submitted manuscripts is kept as confidential before publishing.

Editor-in-Chief is responsible for the contents and overall quality of the publication. He/She must publish errata pages or make corrections when needed.

Editor-in-Chief does not allow any conflicts of interest between the authors, editors and reviewers. Only he has the full authority to assign a reviewer and is responsible for final decision for publication of the manuscripts in the Journal.

Reviewers must have no conflict of interest with respect to the research, the authors and/or the research funders. Their judgments must be objective.

Reviewers must ensure that all the information related to submitted manuscripts is kept as confidential and must report to the editor if they are aware of copyright infringement and plagiarism on the author's side.

A reviewer who feels unqualified to review the topic of a manuscript or knows that its prompt review will be impossible should notify the editor and excuse himself from the review process.

The editor informs the reviewers that the manuscripts are confidential information and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other persons. The anonymity of the referees must be ensured. In particular situations, the editor may share the review of one reviewer with other reviewers to clarify a particular point.

PEER REVIEW

Peer Review Policies
Only those manuscripts approved by its every individual author and that were not published before in or sent to another journal, are accepted for evaluation.

Submitted manuscripts that pass preliminary control are scanned for plagiarism using iThenticate software. After plagiarism check, the eligible ones are evaluated by editor-in-chief for their originality, methodology, the importance of the subject covered and compliance with the journal scope.

The editor hands over the papers matching the formal rules to at least two national/international referees for double-blind peer review evaluation and gives green light for publication upon modification by the authors in accordance with the referees' claims.

Responsibility for the Editor and Reviewers
Editor-in-Chief evaluates manuscripts for their scientific content without regard to ethnic origin, gender, citizenship, religious belief or political philosophy of the authors. Editor-in-Chief provides a fair double-blind peer review of the submitted articles for publication and ensures that all the information related to submitted manuscripts is kept as confidential before publishing.

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- Does the manuscript contain new and significant information?
- Does the abstract clearly and accurately describe the content of the manuscript?
- Is the problem significant and concisely stated?
- Are the methods described comprehensively?
- Are the interpretations and consclusions justified by the results?
- Is adequate references made to other Works in the field?
- Is the language acceptable?

Reviewers must ensure that all the information related to submitted manuscripts is kept as confidential and must report to the editor if they are aware of copyright infringement and plagiarism on the author's side.

A reviewer who feels unqualified to review the topic of a manuscript or knows that its prompt review will be impossible should notify the editor and excuse himself from the review process.

The editor informs the reviewers that the manuscripts are confidential information and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other persons. The anonymity of the referees is important.

Manuscript Organization and Submission

The manuscripts should be prepared in accordance with ICMJE-Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (updated in December 2015 - http://www.icmje.org/icmje-recommendations.pdf). Author(s) are required to prepare manuscripts in accordance with the CONSORT guidelines for randomized research studies, STROBE guidelines for observational original research studies, STARD guidelines for studies on diagnostic accuracy, PRISMA guidelines for systematic reviews and meta-analysis, ARRIVE guidelines for experimental animal studies, and TREND guidelines for non-randomized public behavior.

Manuscripts can only be submitted through the journal's online manuscript submission and evaluation system, available at https://dergipark.org.tr/tr/journal/3565/submission/step/manuscript/new Manuscripts submitted via any other medium will not be evaluated.

Manuscripts submitted to the journal will first go through a technical evaluation process where the editorial office staff will ensure that the manuscript has been prepared and submitted in accordance with the journal's guidelines. Submissions that do not conform to the journal's guidelines will be returned to the submitting author with technical correction requests.

Author(s) are required to submit the following documents together with the manuscript and must ensure that the abstract and keywords are in line with the standards explained in below.

- **Copyright Agreement Form**
- **Author Form and ICMJE Potential Conflict of Interest Disclosure Form**
- **Ethics Committee Approval**
- **Cover Letter to the Editor**
- **Title Page**: A separate title page should be submitted with all submissions and this page should include:

- The full title of the manuscript as well as a short title (running head) of no more than 50 characters,
- Name(s), affiliations, academic degree(s) and ORCID ID(s) of the author(s),
- Grant information and detailed information on the other sources of support,
- Name, address, telephone (including the mobile phone number) and fax numbers, and email address of the corresponding author,
- Acknowledgment of the individuals who contributed to the preparation of the manuscript but who do not fulfil the authorship criteria.

Abstract: Abstract should be submitted with all submissions except for Letters to the Editor. The abstract of Original Articles should be structured with subheadings (Objective, Materials and Methods, Results, and Conclusion). Abstracts of Case Reports and Reviews should be unstructured. Abstracts should be 200-250 words.

Keywords: Each submission must be accompanied by a minimum of 3 to a maximum of 6 keywords for subject indexing at the end of the abstract. The keywords should be listed in full without abbreviations. The keywords should be selected from the National Library of Medicine, Medical Subject Headings database (http://www.nlm.nih.gov/mesh/MBrowser.html) .

Manuscript Types

Original Articles: This is the most important type of article since it provides new information based on original research. The main text of original articles should be structured with Introduction, Material and Method, Results, Discussion, and Conclusion subheadings..

Statistical analysis to support conclusions is usually necessary. Statistical analyses must be conducted in accordance with international statistical reporting standards (Altman DG, Gore SM, Gardner MJ, Pocock SJ. Statistical guidelines for contributors to medical journals. Br Med J 1983: 7; 1489-93). Information on statistical analyses should be provided with a separate subheading under the Materials and Methods section and the statistical software that was used during the process must be specified.

Units should be prepared in accordance with the International System of Units (SI).

Invited Review Articles: Reviews prepared by authors who have extensive knowledge on a particular field and whose scientific background has been translated into a high volume of publications with a high citation potential are welcomed. These authors may even be invited by the journal. Reviews should describe, discuss, and evaluate the current level of knowledge of a topic in clinical practice and should guide future studies. The main text should contain Introduction, Clinical and Research Consequences, and Conclusion sections. Please check Table 1 for the limitations for Review Articles.

Case Reports: There is limited space for case reports in the journal and reports on rare cases or conditions that constitute challenges in diagnosis and treatment, those offering new therapies or revealing knowledge not included in the literature, and interesting and educative case reports are accepted for publication. The text should include Introduction, Case Presentation, Discussion, and Conclusion subheadings. Please check Table 1 for the limitations for Case Reports.

Letters to the Editor: This type of manuscript discusses important parts, overlooked aspects, or lacking parts of a previously published article. Articles on subjects within the scope of the journal that might attract the readers' attention, particularly educative cases, may also be submitted in the form of a "Letter to the Editor." Readers can also present their comments on the published manuscripts in the form of a "Letter to the Editor." Abstract, Keywords, and Tables, Figures, Images, and other media should not be included. The text should be unstructured. The manuscript that is being commented on must be properly cited within this manuscript.

Tables

Tables should be included in the main document, presented after the reference list, and they should be numbered consecutively in the order they are referred to within the main text. A descriptive title must be placed above the tables. Abbreviations used in the tables should be defined below the tables by footnotes (even if they are defined within the main text). Tables should be created using the "insert table" command of the word processing software and they should be arranged clearly to provide easy reading. Data presented in the tables should not be a repetition of the data presented within the main text but should be supporting the main text.

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Figures, graphics, and photographs should be submitted as separate files (in TIFF or JPEG format) through the submission system. The files should not be embedded in a Word document or the main document. When there are figure subunits, the subunits should not be merged to form a single image. Each subunit should be submitted separately through the submission system. Images should not be labeled (a, b, c, etc.) to indicate figure subunits. Thick and thin arrows, arrowheads, stars, asterisks, and similar marks can be used on the images to support figure legends. Like the rest of the submission, the figures too should be blind. Any information within the images that may indicate an individual or institution should be blinded. The minimum resolution of each submitted figure should be 300 DPI. To prevent delays in the evaluation process, all submitted figures should be clear in resolution and large in size (minimum dimensions: 100 × 100 mm). Figure legends should be listed at the end of the main document.

All acronyms and abbreviations used in the manuscript should be defined at first use, both in the abstract and in the main text. The abbreviation should be provided in parentheses following the definition.

When a drug, product, hardware, or software program is mentioned within the main text, product information, including the name of the product, the producer of the product, and city and the country of the company (including the state if in USA), should be provided in parentheses in the following format: "Discovery St PET/CT scanner (General Electric, Milwaukee, WI, USA)"

All references, tables, and figures should be referred to within the main text, and they should be numbered consecutively in the order they are referred to within the main text.

Limitations, drawbacks, and the shortcomings of original articles should be mentioned in the Discussion section before the conclusion paragraph.

Revisions

When submitting a revised version of a paper, the author must submit a detailed "Response to the reviewers" that states point by point how each issue raised by the reviewers has been covered and where it can be found (each reviewer's comment, followed by the author's reply and line numbers where the changes have been made) as well as an annotated copy of the main document. Revised manuscripts must be submitted within 30 days from the date of the decision letter. If the revised version of the manuscript is not submitted within the allocated time, the revision option may be canceled. If the submitting author(s) believe that additional time is required, they should request this extension before the initial 30-day period is over. Accepted manuscripts are copy-edited for grammar, punctuation, and format. Once the publication process of a manuscript is completed, it is published online on the journal's webpage as an ahead-of-print publication before it is included in its scheduled issue. A PDF proof of the accepted manuscript is sent to the corresponding author and their publication approval is requested within two days of their receipt of the proof. The latest status of the submitted manuscripts and other information about the journal can be accessed at http://tr-ent.com. The editorial and publication processes of the journal are conducted in accordance with the guidelines of the International Council of Medical Journal Editors (ICMJE), the World Association of Medical Editors (WAME), the Council of Science Editors (CSE), the Committee on Publication Ethics (COPE), the European Association of Science Editors (EASE), and National Information Standards Organization (NISO). The journal conforms to the Principles of Transparency and Best Practice in Scholarly Publishing (doaj.org/bestpractice). An ORCID ID is required for all authors during the submission of the manuscript. The ID is available at http://orcid.org with free of charge.

Reference Style and Examples

Authors are responsible for supply complete and correct references. References should be numbered according to the order used in the text. Numbers should be given in brackets and placed at the end of the sentence. Examples are given below on the use of references. Reference end note style Vancouver

Periodicals: Author(s) Last Name initial(s) name of author(s) (if there are six or fewer authors, all authors should be written; if the number of authors are seven or more, only the first six of the authors should be written and the rest as "et al"). The title of the article, the abbreviated name of the journal according to the Index Medicus, Year; Volume (Issue): The first and last page numbers.

Example: Robson A, Greene J, Ansari N, Kim B. Eccrine porocarcinoma (malignant eccrine poroma): a clinicopathologic study of 69 cases. The American Journal of Surgical Pathology 2001;25:710-20. Books: Surname of the author(s) initial name(s) of author(s). The name of the book. The edition number. Place of publication: Publisher, Publication year.

Book chapters: The author (s) surname of the chapter initial (s) letter of the name. Section title. In: Surname of editor (s) initial (s) letter of first name (s) ed / eds. The name of the book. Edition number. Place of publication: Publisher, year of publication: The first and last page numbers of the chapter. Web address: If a "web" address is used as the reference address, the web address date should be given in brackets with the address. The DOI (Digital Object Identifier) number must be provided, when a web access article used in the text as a reference.

Example: AB Author, CD Author. Title of document. Retrieved from http://Web address (Accession date: aa/bb/2016).

Congress papers:

Thesis: Maden KL. Experimental investigation of the ..... Master Thesis, Health Science Institute of Ankara University, Ankara, 2005.

SUBMISSION CHECKLIST

- Cover letter to the editor
  - The category of the manuscript
  - Confirming that "the paper is not under consideration for publication in another journal".
  - Including disclosure of any commercial or financial involvement.
  - Confirming that the statistical design of the research article is reviewed.
  - Confirming that last control for fluent English was done.
  - Confirming that journal policies detailed in Information for Authors have been reviewed.
  - Confirming that the references cited in the text and listed in the references section are in line with NLM.
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- Permission of previous published material if used in the present manuscript
- Acknowledgement of the study "in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration.
- Statement that informed consent was obtained after the procedure(s) had been fully explained. Indicating whether the institutional and national guide for the care and use of laboratory animals was followed as in "Guide for the Care and Use of Laboratory Animals".
- Title page
  - The category of the manuscript
  - The title of the manuscript
  - Short title (running head)
  - All authors' names and affiliations (institution, faculty/department, city, country), e-mail addresses
  - Corresponding author's email address, full postal address, telephone and fax number
  - ORCIDs of all authors.
- Main Manuscript Document
  - The title of the manuscript
  - Abstract 200-250 words
  - Key words: 3 - 6 words
  - Main article sections
  - References
  - Acknowledgement (if exists)
  - All tables, illustrations (figures) (including title, description, footnotes)

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