Research Article

Pamukkale Medical Journal
doi:https://dx.doi.org/10.31362/patd.1125577

Surgery of head, neck, and skull base tumours during the COVID-19 pandemic: single center experience

COVID-19 pandemi sürecinde baş boyun ve kafa tabanı bölgesinde tümör cerrahisi: tek merkez deneyimi

Ergin Bilgin, Deniz Baklacı, Mustafa Dalgıç, Emrah Keskin

Posted date:03.06.2022 Acceptance date:06.08.2022

Abstract

Purpose: The purpose of this study is to provide usable instructions on how to avoid delays in the diagnosis and treatment of head and neck tumors during COVID-19 pandemic.

Material and methods: Major head and neck surgeries performed in our clinic between March 11, 2020 and March 11, 2022 were included in the study. All patients underwent polymerase chain reaction testing for COVID-19 24-48 hours before surgery. A total of 134 patients (110 men, 24 women) were operated. While malignant diagnosis was made in the pathological examination in 79 patients, the diagnosis of benign tumor was made in 55 of our patients. A total of 167 procedures were applied.

Results: No COVID-19 related postoperative complications developed. Neck dissection was mostly performed in addition to the excision of the primary malignancy. Primary neck dissection was undertaken in six patients. Although most of the parotidectomy operations were performed for primary parotid masses, parotidectomy was required in addition to surgical excision in six patients due to primary skin tumors. Reconstruction was undertaken using free flaps in three patients. Local flaps were used for defect repair in other head and neck operations.

Conclusions: With rigorous preoperative COVID-19 screening and isolation, head and neck surgical procedures can be continued to avoid delay in diagnosis and treatment without compromising the risk of transmission of COVID-19 to patients or healthcare workers.

Key words: Pandemic, head and neck surgery, skull base surgery.

Bilgin E, Baklaci D, Dalgic M, Keskin E. Surgery of head, neck, and skull base tumours during the COVID-19 pandemic: single center experience. Pam Med J 2023;16:23-28.

Öz

Amaç: Bu çalışmanın amacı baş boyun tümörü tanılı hastalarda COVID-19 pandemisi sürecinde tanı ve tedavi gecikmelerini azaltmak amacıyla tecrübelerimizi ve önerilerimizi sunmaktır.

Gereç ve yöntem: Çalışmaya 11 Mart 2020 tarihi ile 11 Mart 2022 tarihleri arasında kliniğimizde gerçekleştirilen major baş boyun cerrahileri dahil edildi. Tüm hastalara ameliyattan 24-48 saat önce COVID-19 için polimeraz zincir reaksiyon testi yapıldı. Toplamda 134 hasta (110 erkek, 24 kadın) opere edilmiştir. 79 hastada patolojik incelemede malign tanı koyulmuşken, 55 hastamızda bening tümör tanısı koyulmuştur. Toplamda 167 işlem uygulandı.

Bulgular: COVID-19 ilişkili postoperatif komplikasyon gelişmedi. Boyun diseksiyonu en sık primer malignitenin eksizyonuna ek olarak yapıldı. Primer boyun diseksiyonu ise altı hastada yapıldı. Parotidektomi cerrahisi daha çok primer parotis kitlelerine yönelik yapıldı ancak altı hastada primer cilt tümörüne ek olarak yapıldı. Üç hastada serbest flap ile rekonstrüksiyon yapılırken diğer tüm hastalarda lokal flapler kullanıldı.

Sonuç: Titiz preoperatif COVID-19 taraması ve izolasyonu ile COVID-19'un hastalara veya sağlık çalışanlarına bulaşma riskini tehlikeye atmadan tanı ve tedavide gecikmeyi önlemek için baş ve boyun cerrahi prosedürlerine devam edilebilir.

Anahtar kelimeler: Pandemi, baş boyun cerrahisi, kafa tabanı cerrahisi.

Bilgin E, Baklacı D, Dalgıç M, Keskin E. COVID-19 pandemi sürecinde baş boyun ve kafa tabanı bölgesinde tümör cerrahisi: tek merkez deneyimi. Pam Tıp Derg 2023;16:23-28.

Ergin Bilgin, Asst. Prof. Bulent Ecevit University, Otorhinolaryngology and Head and Neck Surgery Clinic, Zonguldak, Turkey, e-mail: erginbilgin67@hotmail.com (https://orcid.org/0000-0001-7191-6209)

Deniz Baklacı, Assoc. Prof. Bulent Ecevit University, Otorhinolaryngology and Head and Neck Surgery Clinic, Zonguldak, Turkey, e-mail: doktorent@gmail.com (https://orcid.org/0000-0001-8449-4965)

Mustafa Dalgıç, M.D. Bulent Ecevit University, Otorhinolaryngology and Head and Neck Surgery Clinic, Zonguldak, Turkey, e-mail: dalgic_816@hotmail.com (https://orcid.org/0000-0003-1886-8994) (Corresponding Author)

Emrah Keskin, Asst. Prof. Bulent Ecevit University, Brain and Nerve Surgery Clinic, Zonguldak, Turkey, e-mail: drkeskinemrah@gmail.com (https://orcid.org/0000-0001-5326-741X)

Introduction

The COVID-19 outbreak was declared a pandemic in March 2020 [1]. The rapid progress of the COVID-19 pandemic and the disease becoming a healthcare priority have resulted in changes in the health systems of countries. This situation has adversely affected patients with head and neck tumors. In this process, delays have occurred the diagnosis and treatment of patients with cancer. Due to these delays, the disease has progressed to further stages and the treatment process has been interrupted in some patients [2]. The high risk of airborne transmission of COVID-19 through aerosols also poses a challenge in the surgery of patients with head and neck tumors [3]. In the early days of the pandemic, when The polymerase chain reaction (PCR) testing opportunities were limited and there was no vaccine available, some authors suggested applying chemoradiotherapy in cases where surgery and chemoradiotherapy would have had similar benefits [4]. In the current study, we share our experience in major head and neck surgical operations performed at our clinic during the pandemic and how the surgical team was protected from contracting COVID-19.

Material and methods

This retrospective study was conducted in a single center and covered major head and neck surgical operations performed at the Otorhinolaryngology Clinic of Zonguldak Bulent Ecevit University between March 11, 2020, and March 11, 2022. Patients who received only chemotherapy or radiotherapy were not included in the study. This study was approved by the Bulent Ecevit University Clinical Research Ethics Committee.

A total of 134 patients aged over 18 years, who underwent major head and neck surgery for therapeutic purposes, were included in the sample. Procedures such as direct laryngoscopy, lymph node excision, and biopsy were not included in the study. The polymerase chain reaction PCR test for COVID-19 was performed on all the patients at 24-48 hours before surgery. The operations were performed by the same surgical team using second-level personal protective equipment (N95 masks, safety glasses, visors, gowns, and double gloves).

The patients were questioned for signs of fever, cough, shortness of breath, or upper respiratory tract infection at the time of first presentation. Patients who did not require emergency surgery and those with COVID-19 symptoms were re-evaluated after the PCR test was performed in accordance with the infection protocols and the isolation process was completed. One day before surgery, the PCR test was applied to the patients who did not have any COVID-19 symptoms, and surgery was performed if the test result was negative.

The patients with head and neck malignancies who were positive for COVID-19 according to the PCR test and did not require emergency surgery were scheduled for surgery within four weeks at the latest.

Results

A total of 134 patients, 110 (81.9%) males and 24 (17.9%) females were included in the study. The mean ages males and females were 47.14±9.88 and 53.45±9.57 years, respectively. 79 of the pathologies (58.9%) were malignant while remaining 55 (41.1%) were benign. A total of 167 procedures were applied. Distribution of benign and malign pathologies in each group were given in Table 1.

Neck dissection was mostly performed in addition to the excision of the primary malignancy. Primary neck dissection was undertaken in six patients. Although most of the parotidectomy operations were performed for primary parotid masses, parotidectomy was required in addition to surgical excision in six patients due to primary skin tumors. Reconstruction was undertaken using free flaps in three patients; one with the carcinoma of the floor of the mouth and two with skin carcinoma in the preauricular region. Local flaps were used for defect repair in other head and neck operations.

Among the five patients who underwent maxillectomy, subtotal maxillectomy was performed with the open technique in one patient, inferior maxillectomy with the open technique in two patients, and endoscopic medial maxillectomy in the remaining two patients.

During the 30-day postoperative period one patient who had undergone total laryngectomy died due to a pulmonary hemorrhage.

Table 1. Distribution of major head, neck, and skull base operations performed at our clinic between March 2020 and March 2022

Surgery	Number
Neck dissection	38
- Bilateral	22
- Unilateral	16
Parotidectomy	32
- Superficial	20
Pleomorphic adenoma	15
Warthin tumor	5
- Total	12
Mucoepidermoid carcinoma	4
Malign melanoma (metastasis of skin melanoma)	4
Adenoid cystic carcinoma	2
Squamous cell carcinoma	2
Total thyroidectomy	12
Papillary carcinoma	6
Hurtle Cell Carcinoma	3
Multinodular Goiter	3
Laser cordectomy Glottic larynx carcinoma	12
Lip cancer surgery Lower Lip Carcinoma	9
Submandibular gland excision	9
Sialolithiasis	7
Adenoid cystic carcinoma	2
Skin cancer excision	8
Squamous cell carcinoma	5
Basal cell carcinoma	2
Malign melanoma	1
Total laryngectomy Larynx carcinoma	6
Maxillectomy	5
Squmaous cell carcinoma	4
Adenoid cystic carcinoma	1
Cordectomy with cold dissection Glottic larynx carcinoma	4
Auricular cancer excision	4
Squamous cell carcinoma	3
Basal cell carcinoma	1
Thyroid lobectomy Benign follicular neoplasm	3
Floor of the mouth cancer surgery Squamous cell carcinoma	3
Paranasal tumors surgery Inverted papilloma	3
Tongue cancer surgery Squamous cell carcinoma	3
Schwannoma excision from the neck	3
Buccal carcinoma excision	3
Thyroglossal cyst excision	3
Cerebellopontine angle tumor excision Acoustic neurinoma	2
Glomus tympanicum excision	2
Neck sarcoma excision	1
Glomus caroticum excision	1
Facial hemangioma excision	1
Total	**167**

In another patient who underwent glomus caroticum surgery, a cerebrovascular event due to thromboembolism was observed in the postoperative period. Reoperation was planned in one patient due to free flap dehiscence in the postoperative period. Another patient that underwent total thyroidectomy required urgent surgery again in the postoperative period due to a life-threatening massive hematoma in the neck. No significant morbidity was observed in the remaining patients during the postoperative 30-day period.

Discussion

As in other surgical fields, the pandemic has had some effects on head and neck surgery. In most centers, there has been a decrease in the number of operations due to the lack of beds and operating rooms, concerns about the risk of transmission, and lack of healthcare personnel [5, 6]. This has caused delays in the diagnosis and treatment of many patients.

During the pandemic, there have also been some changes in the choice of treatment options in head and neck malignancies. Non-surgical options have come to the fore in cases where chemotherapy or radiotherapy is possible. In a study conducted with 1,137 patients with a recent diagnosis of head and neck malignancies, it was stated that more non-surgical treatments were undertaken, especially in the presence of oropharynx and larynx malignancies [7]. However, we consider that with the widespread use of vaccines and infection control, surgery can be safely performed for head and neck malignancies during the pandemic, although it is a longer and more complex process compared to the pre-pandemic period.

Some guidelines recommend two separate PCR tests in surgical patients in the preoperative period [8-10], while others emphasize that a single PCR test should be performed in patients 24 hours before surgery [11, 12]. In our clinic, surgical procedures were planned by taking a single PCR sample from all the patients 24 hours before surgery.

Except in cases requiring emergency surgery, such as dyspnea and hemorrhage, it is recommended to perform surgery within four to six weeks after diagnosis in patients with high-grade squamous cell carcinomas (oral cavity, oropharynx, larynx, hypopharynx, and nasopharynx), tumors that may threaten the airway, high-grade and progressive salivary gland tumors, T3 and T4 stage malignant melanomas, locally advanced skin cancers, and thyroid malignancies invading the airway [13-15]. According to some guidelines, surgery planned to be performed for reasons such as low-grade aerodigestive system squamous cell carcinomas, low-grade and non-progressive salivary gland malignancies, skin malignancies without progression and metastasis, well-differentiated thyroid malignancies (papillary cell carcinoma and follicular cell carcinoma), and superficial larynx malignancies can be delayed for more than six weeks [16-18]. In our clinic, the patients diagnosed with head and neck malignancies that did not require emergency surgical intervention were scheduled within a maximum four weeks of diagnosis.

In patients scheduled for surgery that may lead to aerosol formation, it is recommended that the surgical team use PPAR or N95 masks, safety glasses, gowns, foot protection, and gloves [12, 19]. In our clinic, all the surgical operations were performed by the same surgical team using second-level personal protective equipment (N95 masks, safety glasses, visors, gowns, and double gloves).

In conclusion head and neck malignancies are diseases that may require emergency intervention in some cases, and timing is essential in the course of the disease. The surgical team is at high risk of transmission due to their proximity to the respiratory tract during the operation. Therefore, the examination and treatment of patients should be undertaken by taking the necessary precautions required by the pandemic conditions. The treatment of high-grade malignancies should not be delayed. Performing a preoperative PCR test for COVID-19, use of personal protective equipment, and vaccination are recommended for infection control.

Conflict of interest: No conflict of interest was declared by the authors.

References

1. Timeline: WHO's COVID-19 response [Internet]. [cited 2020 Sep 30]. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline. Accessed Sept 30, 2020
2. Oncology TL. Safeguarding cancer care in a postCOVID-19 world. Lancet Oncol 2020;21:603. https://doi.org/10.1016/S1470-2045(20)30243-6
3. Day AT, Sher DJ, Lee RC, et al. Head and neck oncology during the COVID-19 pandemic: reconsidering traditional treatment paradigms in light of new surgical and other multilevel risks. Oral Oncol 2020;105:104684. https://doi.org/10.1016/j.oraloncology.2020.104684
4. Schutte HW, Heutink F, Wellenstein DJ, et al. Impact of time to diagnosis and treatment in head and neck cancer: a systematic review. Otolaryngol Head Neck Surg 2020;162:446-457. https://doi.org/10.1177/0194599820906387
5. Ralli M, Minni A, Candelori F, Cialente F, Greco A, de Vincentiis M. Effects of COVID-19 pandemic on otolaryngology surgery in Italy: the experience of our university hospital. Otolaryngol Head Neck Surg 2020;163:86-88. https://doi.org/10.1177/0194599820928970
6. Brethauer SA, Poulose BK, Needleman BJ, et al. Redesigning a department of surgery during the COVID-19 pandemic. J Gastrointest Surg 2020;24:1852-1859. https://doi.org/10.1007/s11605-020-04608-4
7. Collaborative CO. Head and neck cancer surgery during the COVID-19 pandemic: an international, multicenter, observational cohort study. Cancer 2021;127:2476-2488. https://doi.org/10.1002/cncr.33320
8. Irish Head and Neck Society (2020) Considerations on H&N during COVID-19. Available from: https://www.ahns.info/wp-content/uploads/2020/03/Irish-Head-and-Neck-Society-considerations-on-COVID-20-3-20.pdf. Accessed April 14, 2022
9. University of Cape Town Division of Otolaryngology. COVID-19 Recommendations for the ENT Surgeon. Available from: https://docs.mymembership.co.za/docmanager/41bfc900-b208-47bb-8517-69aa8219597e/00149202.pdf. Accessed April 14, 2022
10. Australian Society of Otolaryngology Head and Neck Surgery (2020) ASOHNS Review of Guidance for PPE for ENT surgeons during the COVID-19 Pandemic. Available from: https://asohns.org.au/Portals/6/COVID-19%20Resources/ASOHNS%20Updated%20Guidance%20for%20PPE%20ENT%20surgeons%20COVID19%202020-04-02_%20NC%20-%20GLG%20-%20SK[1](2).pdf?ver=2021-01-11-114418-110. Accessed April 14, 2022
11. Fakhry N, Schultz P, Morinière S, et al. French consensus on management of head and neck cancer surgery during COVID-19 pandemic. Eur Ann Otorhinolaryngol Canadian Association of Head & Neck Surgical Oncology (CAHNSO) (2020) Guidelines for management of Head & Neck Cancer during the COVID-19 Pandemic. Available from: https://www.entcanada.org/wp-content/uploads/CAHNSO-Cancer-Mx-Guidelines-COVID-19-Apr-3-2020-.pdf. Accessed April 14, 2022
12. Canadian Association of Head & Neck Surgical Oncology (CAHNSO) (2020) Guidelines for management of Head & Neck Cancer during the COVID-19 Pandemic. Available from: https://www.entcanada.org/wp-content/uploads/CAHNSO-Cancer-Mx-Guide lines-COVID-19-Apr-3-2020.pdf. Accessed April 14, 2022
13. Jozaghi Y, Zafereo ME, Perrier ND, et al. Endocrine surgery in the Coronavirus disease 2019 pandemic: Surgical Triage Guidelines. Head Neck J Sci Spec Head Neck 2020;42:1325-1328. https://doi.org/10.1002/hed.26169
14. Gurushanthaiah D, Wang K, Moon S, Butt F, Ledgerwood L, O'Toole T, Fong B, Meltzer C (2020) HN cancer care guidelines during COVID-19 epidemic. Available from: https://www.entcanada.org/wp-content/uploads/NCAL-HN-Oncologic-Surgery-in-COVID-Era_v3.pdf. Accessed April 18, 2022
15. British association of endocrine & thyroid surgeons (2020) BAETS statement on COVID-19 and Thyroid Cancer Services. Available from: https://www.endocrinology.org/media/3571/baets-statement-on-covid-19-and-thyroid-cancer-services.pdf. Accessed April 18, 2022
16. Brody RM, Albergotti WG, Shimunov D, et al. Changes in head and neck oncologic practice duringthe COVID-19 pandemic. Head Neck 2020;42:1448-1453. https://doi.org/10.1002/hed.26233
17. Heffernan DS, Evans HL, Huston JM, et al. Surgical infection society guidance for operative and peri-operative care of adult patients infected by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). Surg Infect (Larchmt) 2020;21:301-308. https://doi.org/10.1089/sur.2020.101
18. Givi B, Schif BA, Chinn SB, et al. Safety recommendations for evaluation and surgery of the head and neck during the COVID-19 pandemic. JAMA Otolaryngol Head Neck Surg 2020;146:579-584. https://doi.org/10.1001/jamaoto.2020.0780
19. Toptaş G, Sungur AC, Bayir Ö, Çadallı Tatar E, Saylam G, Korkmaz MH. Precautions for examination and evaluation of otolaryngology patients during COVID-19 pandemic. J Ear Nose Throat and Head Neck Surg 2020;28:25-30. https://doi.org/10.24179/kbbbc.2020-75584

This study has previously been presented at 16th Turkish Rhinology Congress, 4th National Head and Neck Surgery Congress and 1st Pediatric otorhinolaryngology congress in 13th May 2022.

Ethics committee approval: This study was approved by the Bulent Ecevit University Clinical Research Ethics Committee (date: 2021 and number: 11).

Authors' contributions to the article

D.B. has constructed the main idea and hypothesis of the study. M.D. has developed the theory and arranged/edited the material and method section. E.B. and E.K. have done the evaluation of the data in the Results section. Discussion section of the article. Written by M.D. and D.B. has reviewed, corrected and approved. In addition, all authors discussed the entire study and approved the final version.