Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Impact of the first month of Covid-19 lockdown on oncologic surgical activity in the Ile de France region university hospital otorhinolaryngology departments

O. Laccourreye a,1,*, H. Mirghani a,1, D. Evrard b,2, P. Bonnefont c,2, L. Brugel d, F. Tankere c, A. Costa d, B. Barry b, B. Baujat e, S. Atallah e,3, R. Kania f,3

a Service d’ORL et de Chirurgie Cervico-Faciale, Université Paris Centre, HEGP, AP–HP, 20–40, rue Leblanc, 75015 Paris, France
b Service d’ORL et de Chirurgie Cervico-Faciale, Université Paris Centre, Hôpital Bichat, AP–HP, 46, rue Henri-Huchard, 75018 Paris, France
c Service d’ORL et de Chirurgie Cervico-Faciale, Université Paris Nord, Hôpital La Pitié-Salpêtrière, AP–HP, 47–83, boulevard de l’Hôpital, 75013 Paris, France
d Service d’ORL et de Chirurgie Cervico-Faciale, Université Paris Est, Centre Hospitalier Intercommunal de Créteil, 40, avenue de Verdun, 94000 Créteil, France
e Service d’ORL et de Chirurgie Cervico-Faciale, Université Paris Sarbonne, Hôpital Tenon, AP–HP, 4, rue de la Chine, 75020 Paris, France
f Service d’ORL et de Chirurgie Cervico-Faciale, Université Paris Nord, AP–HP, Hôpital Lariboisière, 2, rue Ambroise-Paré, 75010 Paris, France

A R T I C L E  I N F O

Keywords:
Covid-19
Cancer
Otorhinolaryngology

E A S T R A C T

Objective: To evaluate the impact of the first month of lockdown related to the Covid-19 epidemic on the oncologic surgical activity in the Ile de France region university hospital otorhinolaryngology departments.

Material and methods: A multicenter prospective observational assessment was conducted in 6 university hospital otorhinolaryngology departments (Paris Centre, Nord, Est and Sorbonne) during the 1-month periods before (Month A) and after (Month B) lockdown on March 17, 2020. The main goal was to evaluate lockdown impact on oncologic surgical activity in the departments. Secondary goals were to report population characteristics, surgery conditions, postoperative course, progression of Covid status in patients and surgeons, and adverse events.

Results: 224 procedures were performed. There was 10.9% reduction in overall activity, without significant differences between departments. Squamous cell carcinoma and larynx, hypopharynx, oropharynx, oral cavity and nasal cavity and sinus locations were predominant, at 79% and 75.8% of cases respectively, with no significant differences between months. T3/4 and N2/3 tumors were more frequent in Month B (P= .002 and .0004). There was no significant difference between months regarding surgical approach, type of reconstruction, postoperative course, tracheotomy and nasogastric feeding-tube time, intensive care stay or hospital stay. None of the Month A patients were Covid-19-positive, versus 3 in Month B, without adverse events. None of the otolaryngologists involved in the procedures developed symptoms suggesting Covid-19 infection.

Conclusion: The present study underscored the limited impact of the Covid-19 epidemic and lockdown on surgical diagnosis and cancer surgery in the Ile de France university otorhinolaryngology departments, maintaining chances for optimal survival without spreading the virus.

© 2020 Elsevier Masson SAS. All rights reserved.

1. Introduction

In France, the first three cases of the Covid-19 epidemic, in patients of Chinese origin who had been staying in Wuhan, were diagnosed on January 24, 2020 (https://fr.m.wikipedia.org). On March 17, lockdown was implemented to combat the epidemic, and on March 25 the French Society of ENT (SFORL) published guidelines for head and neck cancer surgery [1].

The main aim of the present study was to assess the impact of this month of lockdown and of the SFORL guidelines in university hospital otorhinolaryngology (ORL) departments in the Ile de France region, where the epidemic was at its most severe. Secondary objectives were to report population characteristics, surgery conditions, postoperative course, progression of Covid status in patients and surgeons, and adverse events.

* Corresponding author.
E-mail address: ollivier.laccourreye@aphp.fr (O. Laccourreye).
1 These authors contributed equivalently to the study.
2 These authors contributed equivalently to the study.
3 These authors contributed equivalently to the study.
Material and method

Six university hospital ORL departments in the Ile de France region (Paris Centre, Paris Nord, Paris Est and Paris Sorbonne) practicing oncologic surgery took part in a multicenter prospective observational study.

The main aim of the present study was to assess the impact of this month of lockdown and of the SFORL guidelines in university hospital otorhinolaryngology (ORL) departments in the Ile de France region, where the epidemic was at its most severe. Secondary objectives were to report population characteristics, surgery conditions, postoperative course, progression of Covid status in patients and surgeons, and adverse events. Review board approval was not sought, as the study did not come under French legislation for studies involving human subjects [2].

An Excel database (Appendix 1) available to each department to collate data on procedures performed during the month preceding (Month A: February 17 to March 17, 2020) and the month following (Month B: March 18 to April 18) initiation of lockdown. Procedures comprised: procedures resulting in diagnosis of cancer (endoscopy-biopsy, tonsillectomy, adenectomy) and cancer resection and treatment of acute complications (tracheotomy for tumoral dyspnea, salivary leakage, radionecrosis). Diagnostic procedures (endoscopy) not resulting in diagnosis of cancer, functional surgery performed after cancer treatment (tracheostomy enlargement, dilation of post-treatment stenosis, implantation or change of vocal prosthesis, tracheotomy and laser treatment for post-treatment dyspnea, reconstructive surgery) as well as head and neck surgeries for benign tumor, precancerous pathology (dysplasia, in-situ carcinoma) or basal cell carcinoma were excluded. Data for included oncologic procedures comprised: patient data (age, gender, body-mass index, smoking status, Charlson comorbidity index [3]), tumor data (location, histology, T, N and M stage [4]), diagnostic or therapeutic, surgical approach (transcutaneous, transmucosal or mixed), type of lymph-node surgery, laryngotraheal axis treatment (laryngeal disobstruction, tracheotomy, permanent tracheotomy), postoperative course (complications, intensive care unit and department stay, tracheotomy time, nasogastric feeding tube duration, hospital stay), and type of surgical mask used. In Month B, data further comprised adverse events (modification or implementation of emergency surgery, unscheduled admission, major complications and/or Covid-19-related death) and Covid-19 status progression in patients and surgeons during the study period and the following month.

Inter-month comparison used Chi² or Fisher test for qualitative variables and non-parametric Mann–Whitney U test for quantitative variables, on StatView software (StatView, USA). The significance threshold was set at P=0.005, in line with improved scientific method [5,6].

2. Results

2.1. Activity

224 oncologic procedures were performed, with a 10.9% decrease between Month A (118) and Month B (106). Progression varied between departments, with 15.7%, 24.2% and 23.3% decrease in 3 cases and 4.3%, 20% and 50% increase in the other 3 (Appendix 1), without significant difference (P=0.76).

Appendix 1 shows diagnostic procedures, with a 6.3% decrease (Month A: 47; Month B: 44). Progression varied between departments, with 14.2%, 33.3% and 50% decrease in 3 cases and 20% and 22.2% in 2; the other department had no diagnostic activity during the study period (Appendix 1). Again these differences were non-significant (P = 0.81).

Appendix 1 shows therapeutic procedures (n=133), with a 12.6% decrease (Month A: 71–Month B: 62). Progression varied between departments, with 7.6%, 19%, 31.2% and 50% decrease in 4 cases and 20% and 83.3% increase in 2 (Appendix 1), without significant difference (P=0.54).

2.2. Population, approaches, procedures and postoperative course

Table 1 shows the main population characteristics. T3/4 and N2/3 tumor was significantly more frequent in Month B (Table 1). Squamous cell carcinoma and larynx, hypopharynx, oropharynx, oral cavity, nasal cavity and facial sinuses locations predominated, at respectively 79% (177/224) and 75.8% (170/224) of procedures (Appendix 1), without significant inter-month difference (P respectively 0.74 and 0.53).

There were no significant inter-month differences in surgical approach, lymph-node surgery, type of reconstruction, tracheotomy and permanent tracheotomy or in postoperative course in terms of complications and mortality (Table 2–Appendix 1). Type of mask differed significantly (P<0.0001), with an increase in use of FFP2 masks from 11% (13/118) in Month A to 66.2% (66/106) in Month B. There were no significant differences in

| Table 1 |
|-----------------------------------------------|
| Main clinical characteristics of the study population (M: median; RT: radiation therapy; H&N: head and neck; SCC: squamous cell carcinoma). |
|-----------------------------------------------|
| Gender (female/male) | Global | Month A | Month B | P |
|-----------------------------------------------|
| Age (years) | 65/159 | 38/80 | 27/79 | 0.3 |
| Body–mass index | 18–92 – M:63 | 18–92 – M:64 | 29–85 – M:63 | 0.92 |
| Smoking | 13–39 – M:24 | 13–37 – M:23 | 13–39 – M:25 | 0.037 |
| Pack-years | 5/0 < 0.10 – M:28 | 0/0 < 0.10 – M:26 | 0/0 < 0.10 – M:30 | 0.46 |
| Active (yes/no) | 68/50 | 34/80 | 34/70 | 0.66 |
| Comorbidity | Charlson index [2] | 0–10 – M:2 | 0–10 – M:2 | 0–8 – M:2 | 0.26 |
| H&N cancer (yes/no) | 46/178 | 31/87 | 15/91 | 0.031 |
| Non-H&N cancer (yes/no) | 39/185 | 20/96 | 15/87 | 0.86 |
| Cervical RT (yes/no) | 18/206 | 11/107 | 07/99 | 0.62 |
| Type of cancer | SCC (yes/no) | 177/47 | 99/26 | 85/21 | 0.74 |
| T (1 and 2/3 and 4) | 76/38 | 48/12 | 28/26 | 0.002 |
| N (0 and 1/2 and 3) | 103/27 | 63/6 | 40/21 | 0.0004 |
| M (0/1) | 124/6 | 68/1 | 56/5 | 0.098 |
| Initial Covid status | Not tested/positive/negative | 177/44/3 | 106/12/0 | 71/32/3 | < 0.001 |

* Distribution based on therapeutic procedures.
tracheotomy time or nasogastric feeding, intensive care unit and department stay or hospital stay (Table 3, Appendix 1).

2.3. Covid status, adverse events

Percentage nasopharyngeal swab and polymerase chain reaction (PCR) analysis on the eve of surgery varied significantly between months and departments ($P < 0.0001$): from 10.1% in Month A to 33% in Month B (Table 1) and 5.6%, 10%, 10.3%, 17.1%, 18.1% and 40.4% according to department (Appendix 1). No Month A patients were Covid-19-positive, versus 3 in Month B (Appendix 1). The first 3 of these 3 was asymptomatic, scheduled for petectomy and parotidectomy, and had negative PCR on eve of surgery. At day 6, the surgeon was informed that the examination was in fact slightly positive; PCR at discharge was negative. The patient was readmitted on day 17 for local superinfection, with PCR again positive and becoming negative during the hospital stay. The second patient had suggestive Covid-19 symptomatology and positive PCR at eve of surgery scheduled for glossectomy with free flap and neck dissection, which was therefore postponed for 2 weeks. PCR was still slightly positive at eve of surgery, but the operation was maintained due to increased tumor volume and absence of respiratory symptoms. The third patient had moderate pulmonary pathology and underwent salvage total pharyngolaryngectomy with free flap after a 2-week postponement. The other 291 patients did not develop signs of Covid-19 during the study period or following month; nor did the senior and junior physicians involved in surgery.

3. Discussion

The prospective study in more than 500 Chinese hospitals published in Lancet Oncology in March 2020 was the first analysis of the relation between Covid-19 and cancer, and suggested that persons with or treated for cancer (mainly lung or colorectal) showed extra risk of viral infection and of severe disease, especially in case of chemotherapy or surgery in the month preceding infection [7]. In China, these findings led to guidelines advocating changing certain practices during the epidemic in digestive and lung cancer patients, with 2 main aims in view: to limit high-risk situations such as surgery, and to limit contact, especially with health-care establishments. At the same time, several societies, groups and associations specializing in head and neck cancer surgery put forward various advices [1.8–18]. The first idea was a form of triage, adapting the interval to surgery according to the potential danger of the cancer. The second was to reduce head and neck oncologic surgery activity so as to be able to concentrate anesthesiology personnel and equipment on intensive care units that were experiencing exponential rises in admissions due to Covid-19. The third, given a threatened shortage of protective equipment (gloves, masks, etc.), was to protect ENT physicians against possible infection, ENT and head and neck surgery being at high risk of transmission due to tracheotomy and mucosal resection near infected areas.

By comparing data for the months preceding and following the start of lockdown on March 17 from six hospital departments, the present study reflects the impact of lockdown and of the SFORL guidelines [1] on the practice of head and neck oncologic surgery in university hospital departments in the Île de France region, where the Covid-19 epidemic was most rife. The first finding was that head and neck oncologic surgery was relatively stable in these departments over the two months straddling the start of lockdown, with an overall fall of 10.9%. The decrease was 6.3% for diagnostic procedures and 12.6% for therapeutic procedures, without significant differences between the two time periods or the six departments; nor did it involve any particular change in clinical profile, with 79% squamous cell carcinoma (Table 1) located for 75.8% in the larynx, hypopharynx, oropharynx, oral cavity or nasal cavities and facial sinuses (Appendix 1). These data, and the fact that T3/4 and N2/3 tumors were significantly more frequent in Month B (Table 1) testify in our opinion to the effort made by surgery teams to avoid any adverse impact on survival of delaying treatment for these tumors [19–21], given that most head and neck cancers double in volume within 1 to 3 months [22] and that the first month of lockdown in France witnessed a dramatic fall in community ENT consultations, which are where the vast majority of such tumors are first detected; community ENT physician in Réunion Island reported a mean decrease of 75.6% in their consultations over this period [23]. Months A and B did not significantly differ in surgical approach, neck dissection, type of reconstruction, postoperative course, complications rate and mortality, intensive care stay, tracheotomy time and nasogastric feeding time, or hospital stay (Table 3–Appendix 1), confirming the commitment of the surgery teams participating in this prospective study, who did not fundamentally alter their management of cancer and patients during the epidemic. Secondly, although two studies [24,25] reported a decrease in the use of micro-anastomosed free flaps for reconstruction, the present data point to no adverse effects (Table 2). And a third finding of interest was the absence of symptoms suggestive of Covid-19 infection over the study period and following month in the 221 patients unaffected at the beginning of the study period and in the senior and junior surgeons involved in the 224 procedures, testifying in our opinion to good management of the epidemic within the hospitals of the participating departments. It is notable in this regard that a lack of protective masks, feared at one point, did not in fact affect the head and neck surgery departments and that the significant change ($P < 0.0001$) in the type of mask used by the surgeons in the 224 procedures, with FFP2 mask use increasing from 11% in Month A to 66.2% in Month B, was due not to equipment shortage but to individual choice, as seen in the significant variation ($P < 0.0001$) in type of mask when comparing the six departments.

### Table 2

| Procedures (PB: parotid biopsy; UND: unilateral neck dissection; TM: transmucosal; TC: transcutaneous; MX: mixed transmucosal-transcutaneous; BND: bilateral neck dissection; TRS: permanent tracheotomy; TRT: tracheotomy; LD: laryngeal disobstruction; MAF: micro-anastomosed flap, PMF: pediculated muscle flap; LF: local flap; FF: free flap). |
|------------------|---|---|---|---|
| Diagnostic       | Global | Month A | Month B | $P$   |
| Endoscopy/tonsillectomy | 81/3 | 44/1 | 37/2 | 0.59 |
| Adenectomy/UND/PB  | 7/2/1 | 2/1/1 | 5/1/0 | -    |
| Therapeutic       |       |       |       |      |
| Tumor            |       |       |       |      |
| Approach (TC/TM/MX) | 43/29/39 | 24/16/21 | 19/13/18 | 0.033 |
| Trachea (TRS/TRT/LD) | 28/18/1 | 14/9/0 | 14/9/1 | 0.61 |
| Nodal            |       |       |       |      |
| Yes/no           | 85/48 | 43/28 | 42/20 | 0.46 |
| Adenectomy/UND/BND | 14/26/45 | 7/11/25 | 7/15/20 | 0.56 |
| Reconstruction   |       |       |       |      |
| Yes/no           | 35/98 | 16/55 | 19/43 | 0.32 |
| MAF/PMF/LF/FF    | 12/10/9/3 | 4/5/5/2 | 8/5/4/1 | 0.64 |

### Table 3

| Postoperative course (M: median, ENT: ear nose and throat). |
|------------------|---|---|---|---|
|                  | Global | Month A | Month B | $P$   |
| Postoperative course |       |       |       |      |
| Simple/complicated | 33/191 | 17/101 | 16/90 | 0.99 |
| ENT complications (yes/no) | 21/203 | 11/107 | 10/96 | 0.99 |
| General complications (yes/no) | 16/208 | 8/110 | 8/98 | 0.99 |
| Death (yes/no)   | 3/221 | 2/116 | 1/105 | 0.99 |
| Times (days)     |       |       |       |      |
| Intensive care service | 0/7:M:0 | 0/7:M:0 | 0/5:M:0 | 0.83 |
| Intensive care unit | 0/4:M:0 | 0/2:M:0 | 0/4:M:2 | 0.86 |
| Tracheotomy       | 3/31:M:8 | 3/31:M:10 | 4/14:M:8 | 0.57 |
| Nasogastric intubation | 2/42:M:13 | 2/34:M:12 | 3/42:M:13 | 0.35 |
| Hospital stay     | 1/45:M:3 | 1–45:M:3 | 1–45:M:3 | 0.46 |
These positive findings should be weighed against the fact that only 1.3% of the patients operated on during the study period (n = 3) were affected by the virus. The treatment these 3 patients received, detailed in the result section, was in line with the SFORL guidelines [1], which recommend deferring surgery in Covid-19-positive patients and adapting the delay to the potential gravity of the cancer, and allowed for successful management of the tumors without any adverse event.

4. Conclusion

The present data highlighted that the Covid-19 epidemic and March 17 lockdown only very slightly impacted the cancer surgery care pathway in the university hospital ORL departments in the Ile de France region, protecting patients' chances of survival, without spreading the virus. The data support the decentralized strategy operating in the hospitals involved in the study, and validate the SFORL guidelines. They suggest that surgical management of head and neck cancer should be pursued along the same lines in case of a second wave of the epidemic in Ile de France.

Disclosure of interest

The authors declare that they have no competing interest.

Acknowledgments

The authors thank the Progrès 2000 Association and Mr Clément Jourdain for technical support, and Ms Sophie Guiquerro for precious help with the literature search.

Appendix1. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.anorl.2020.06.007.

References

[1] Fakhry N, Schultz P, Morinier S, et al. French consensus on management of head and neck cancer surgery during COVID-19 pandemic. Eur Ann Ototorhinolaryngol Head Neck Dis 2020;137:159–60.
[2] Loi n ° 2012-300 du 5 mars 2012 relative aux recherches impliquant la personne humaine; 2012 [J O Rep Fr n ° 0056, March 6].
[3] Charlson ME, Pompei P, Alex KL, McKenzie CR. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chron Dis 1987;5:373–83.
[4] Brierley JD, Gospararowicz MK, Wittekind C. TNM Classification of Malignant Tumours. 8th Edition Hoboken, New Jersey, USA: Wiley-Blackwell; 2016.
[5] Ioannidis JPA. The proposal to lower P value thresholds to.005. JAMA 2018;319:1429–30.
[6] Laccourreye O, Lisan Q, Bonfils P, et al. Use of P-values and the terms “significant”, “non-significant” and “suggestive” in abstracts in the European Annals of Ototorhinolaryngology Head & Neck Diseases. Eur Ann Ototorhinolaryngol Head Neck Dis 2019;136:469–73.
[7] Liang W, Guan W, Chen R, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol 2020;21:315–7.
[8] Cai Y-C, Wang W, Li C, et al. Treating head and neck tumors during the SARS-CoV-2 epidemic, 2019–2020: Sichuan cancer hospital. Head Neck 2020, http://dx.doi.org/10.1002/hed.26161.
[9] Ansarin M. Surgical management of head and neck tumours during the SARS-CoV (Covid-19) pandemic. Acta Otorhinolaringologica Italica 2020, http://dx.doi.org/10.14639/0392-100X-N0783.
[10] Sabene AM, Allevi F, Bigioli F, Felusi G. Role and management of a head and neck department during the COVID-19 outbreak in Lombardy. Otolaryngol Head Neck Surg 2020, http://dx.doi.org/10.1177/0194599820917914.
[11] Day AT, Sher DJ, Lee CR, et al. Head and neck oncology during the COVID-19 pandemic: Reconsidering traditional treatment paradigms and new surgical and other multilevel risks. Oral Oncology 2020, http://dx.doi.org/10.1016/j.oraloncology.2020.104684.
[12] Givi B, Schiff 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, http://dx.doi.org/10.1001/jamaoto.2020.0780.
[13] Kulcsar NC, Montenegro FL, Arap SS, Tavares MR, Kowalski LP. High risk of COVID-19 infection for head and neck surgeons. Int Arch Otorhinolaryngol 2020;24:2181–87.
[14] Rassekh CH, Jenks CM, Ochroch EA, Douglas JE, O’Malley Jr BW, Weinstein GS. Management of the difficult airway in the COVID-19 pandemic: Illustrative case report of a head and neck cancer scenario. Head Neck 2020;42:1273–75.
[15] Shanti RM, Stoopler ET, Weinstein GS, et al. Considerations in the evaluation and management of oral potentially malignant disorders during the COVID-19 pandemic. Head Neck 2020, http://dx.doi.org/10.1002/hed.26258.
[16] Yee E, Fote G, Horwitz P, et al. Head and neck cancer care in the COVID-19 pandemic: A brief update. Oral Oncol 2020;105:104738, http://dx.doi.org/10.1016/j.oraloncology.2020.104738.
[17] Kowalski LP, Sanabria A, Bidge JA, et al. COVID-19 pandemic: Effects and evidence-based recommendations for otorhinolaryngology and head and neck surgery practice. Head Neck 2020, http://dx.doi.org/10.1002/hed.26183.
[18] American Academy of Otolaryngology–Head and Neck Surgery. Position statement: otorhinolaryngologists and the COVID-19 pandemic. 2020, https://www.entnet.org/content/aaos-hns-position-statementotorhinolaryngologists-and-covid-19-pandemic.
[19] Laccourreye O, Mirghani H, Maisonneuve H. Watch out for the endpoints in head & neck oncology! Eur Ann Ototorhinolaryngol Head Neck Dis 2019, http://dx.doi.org/10.1016/j.anorl.2019.12.007 [pii]; S1879-7296(19)30210-8.
[20] Graboys EM, Kompelli AR, Neskey DM, et al. Association of treatment delays with survival for patients with head and neck cancer: a systematic review. JAMA Otolaryngol Head Neck Surg 2019;145:166–77.
[21] Schutte HW, Heutink F, Welensstein DJ, et al. Impact of time to diagnosis and treatment in head and neck cancer: a systematic review. Otolaryngol Head Neck Surg 2020;162:446–57.
[22] Jensen AR, Nellemann HM, Overgaard J. Tumor progression in waiting time for radiotherapy in head and neck cancer. Radiother Oncol 2007;84:5–10.
[23] Rubin F, Vellin F, Berkaoui J, et al. Impact of l’epidemie SARS-CoV-2 sur les consultations libérales d’ototorhinolaryngologie lors du premier mois de confinement de l’ile de la Réunion en 2020. Eur Ann Ototorhinolaryngol Head Neck Dis 2020 [In press].
[24] Rampinelli V, Mattavelli D, Guaitieri D, et al. Reshaping head and neck reconstruction policy during the COVID-19 pandemic peak: experience in a front-line institution. Auris Nasus Larynx 2020, http://dx.doi.org/10.1016/j.anl.2020.04.008 [S0385-8146(20)30088-2].
[25] Patel RJ, Kejner A, McMullen C, et al. Early institutional head and neck oncologic and microvascular surgery practice patterns across the United States during the SARS-CoV-2 (COVID19) pandemic. Head Neck 2020, http://dx.doi.org/10.1002/hed.26185.