Surgical Emergencies in ENT: Observational Descriptive Study of Experience at a Tertiary Hospital

Original Article

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Abstract

Objective: To characterize the ENT (Ear, Nose and Throat) surgical emergencies in the Emergency Department of Hospital Pedro Hispano, between 2010 and 2020.
Material and methods: Data was provided by the Statistics Service of the Local Health Unit of Matosinhos. The variables evaluated included age, sex, origin, admission diagnosis and surgical procedure.
Results: There were 423 surgical emergencies, with a predominance of males (64.3%).
Most patients (71.2%) were treated in the context of an emergency episode. The most frequent admission diagnosis were abscesses (21.7%), neoplasms (17.5%) and postoperative hemorrhages (17.0%). The most performed surgical procedures were tracheostomy (38.6%), abscess drainage (18.1%) and bleeding control after surgery/biopsy (14.8%).
Conclusion: The lack of similar studies reinforces the importance and originality of this study.
Keywords: Surgical emergencies, Otolaryngology

Introduction

The emergency service is the cornerstone of hospital activity and is also extremely important for training and developing physician skills. The hospital urgency/emergency network is composed of medical-surgical and multipurpose emergency services. These services form a hierarchical network and work together. Globally, the number of patients visiting emergency departments, including Ear, Nose and Throat care (ENT), has recently increased[1], along with the associated challenges of waiting times and emergency surgical care.

Most ENT emergencies are resolved within the emergency room (ER), but some patients require observation and treatment in an operating room (OR).

The objective of this study was to

characterize epidemiological and clinical surgical emergencies in the ENT emergency department (ED) of Pedro Hispano Hospital between 2010 and 2020.

Material and Methods

Pedro Hispano Hospital has a medical-surgical ED but does not offer emergency care in neurosurgery, maxillofacial surgery, or interventional neuroradiology. The department serves patients from the municipalities of Matosinhos and Póvoa do Varzim and Vila do Conde, with total populations of 175,000 and 143,000 residents, respectively.

One specialist and one resident are onsite from 8 a.m. to 8 p.m. Monday to Friday, and one specialist is on call after 8 p.m. on weekdays, holidays, and weekends at the ENT ED of Pedro Hispano Hospital.

We analyzed electronic records between 2010 and 2020 provided by the statistics department of the local healthcare unit in Matosinhos. All patients admitted and transferred to the ENT ED and all inpatients who required intervention in the ENT OR were included. The evaluated variables included age, sex, origin, reason for admission, and type of surgical procedure. We grouped the various reasons for admission and types of surgical procedures into broad categories to facilitate statistical analyses and ensure the manuscript's readability. For example, peritonsillar, parapharyngeal, periorbital, and retropharyngeal abscesses were grouped in the category of abscesses.

Cancer complications included stridor, spontaneous and postoperative bleeds, and ENT bleeds in patients with cancer. The remaining reasons for admission were unrelated to cancer. Periorbital abscesses are often caused by rhinosinusitis complications, but we included them in the category of abscesses rather than rhinosinusitis complications. Cancer and non-cancer surgical procedures were not divided.

Data were processed and analyzed using SPSS v. 28.0 (IBM Corp., Armonk, NY, USA) and Excel (MAC) software (Microsoft Corp., Redmond, WA, USA).

Results

A total of 426 surgical emergencies occurred between 2010 and 2020. Three episodes were excluded because of data duplication in the computer records. Figure 1 shows that the demand for urgent surgical procedures was maximal during 2012 (n = 50) and 2013 (n = 52) and minimal during 2010 (n = 24). Among 43 patients who required emergency intervention in 2020, 16 (37.2%) were infected with SARS-CoV-2.

Male patients predominated, accounting for 272 (64.3%) of 423 analyzed records. Age varied between 6 months and 96 (mean 46) years, and 54 (12.8%)patients were aged > 75 years. The predominant age group was between 45 and 74 years (n = 196, 46.3%). Further, pediatric patients accounted for 20.1% of visits (n = 85).

Most patients (n = 301, 71.2%) received surgical treatment in the context of an emergency

Figure 1
Distribution of surgical emergencies between 2010 and 2020

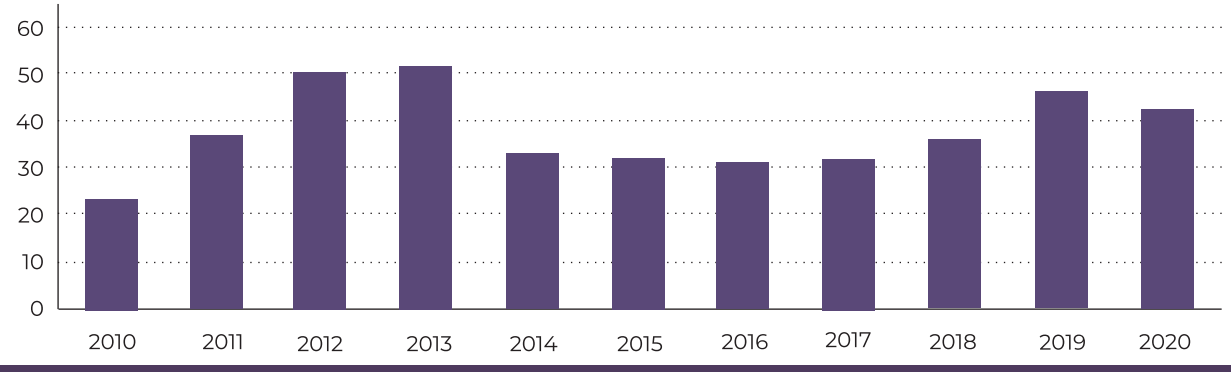
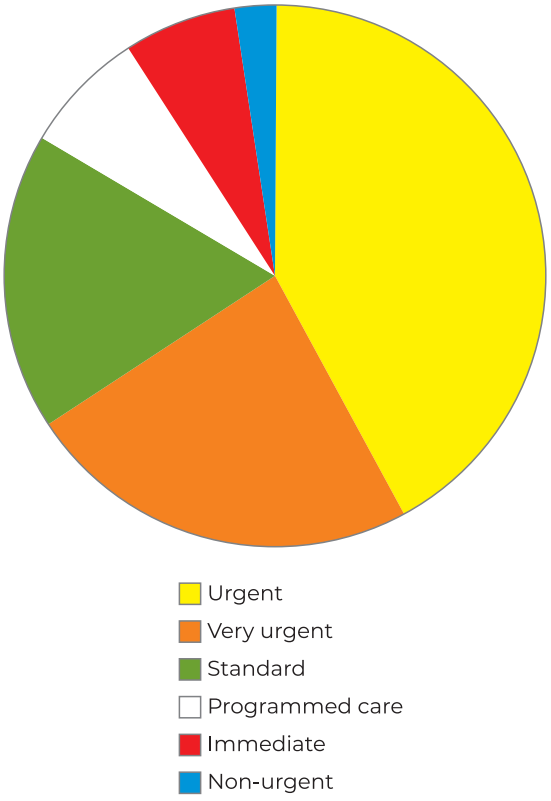


Figure 2
Distribution of triage outcomes according to the Manchester system



episode. The remaining patients were hospitalized in the ENT or other wards.

Among the patients from the ED, 22.3% (n = 67) were from the Integrated Pediatric Emergency of Porto (UPIP). The remaining 234 patients were admitted or transferred to the ENT ED and were triaged based on the Manchester system. Most patients from ED (Figure 2) were triaged as urgent (yellow, n = 98, 41.9 %) and very urgent (orange, n = 55, 23.5%), and the remaining were triaged in decreasing order of urgency as standard (green, n=42, 17.9 %), programmed care (white, n = 18, 7.7%), immediate (red, n=16, 6.8%), and non-urgent (blue, n = 5, 2.1%).

The most frequent reason for surgical admission was abscess (n = 92, 21.7%), followed by cancer complications (ENT) (n = 80, 18.9%), postoperative bleeds (n = 66, 15.6%), prolonged tracheal intubation (n = 47, 11.1%), and bilateral vocal cord paralysis (n = 40, 9.5%). Table 1 shows other less frequent reasons.

The distribution of treated abscesses according to subtype was parapharyngeal (n = 39, 42.3%), peritonsillar (n = 28, 30.4%), submandibular (10, 10.9%), periorbital (n = 6; 6.5%), and intratonsillar

Table 1
Reasons for surgical admission

	Frequency	Ratio (%)
Abscesses	92	21,7
Cancer complications	80	18,9
Postoperative bleeding	66	15,6
Prolonged orotracheal intubation	47	11,1
Bilateral vocal cord paralysis	40	9,5
Trauma	23	5,4
Foreign body/Poisoning	22	5,2
Complicating acute/chronic otitis media	16	3,8
Epistaxis	8	1,9
Lower respiratory infection	8	1,9
Laryngeal infection	7	1,7
Complicating rhinosinusitis	7	1,7
Other postoperative complications	6	1,4
Choanal atresia	1	0,2
Total	**423**	**100,0**

Table 2
Characterization of abscesses

	Frequency	Ratio (%)
Parapharyngeal	39	42,3
Peritonsillar	28	30,4
Submandibular	10	10,9
Periorbital	6	6,5
Intratonsillar	3	3,3
Salivary	2	2,2
Retropharyngeal	1	1,1
Masticator space	1	1,1
Tongue	1	1,1
Nasal vestibule	1	1,1
Total	**92**	**100,0**

(n = 3, 3.3%). Other less frequent subtypes are listed in Table 2. The most prevalent reasons for the surgical admission of women were abscess (n = 38, 25%), postoperative hemorrhage (n = 28, 18.4%), and prolonged orotracheal intubation (n = 17, 11.2%), whereas those for men were cancer complications (n = 68, 24.9%), abscess (n = 54, 19.8%), and postoperative bleeding (n = 44, 16.1%). Among the surgical patients from the ED (Table 5), those triaged as white (n = 6, 33.3%), blue (n = 3, 60%), and orange (n = 24, 43.6%) had cancer complications. Most of those triaged as green and yellow had abscesses (n = 17, 39.5% and n = 38, 38.8%, respectively), whereas most triaged as red had trauma (n = 5, 31.3%). Most inpatients had complications from prolonged tracheal intubation (n = 46, 37.4%), and most pediatric patients had postoperative bleeds (n = 25, 37.3%). The most frequent reasons for surgical admission, per age group, (Table 6) were postoperative bleeds in patients aged

Table 3
Characterization of patients with cancer

Carcinoma location	Frequency	Ratio (%)
Larynx	51	68.9
Hypopharynx	14	18.9
Oropharynx	8	10.8
Oral cavity	1	1.4
Total	**74**	**100.0**

Table 4
Characterization of postoperative hemorrhage

Postoperative hemorrhage	Frequency	Ratio (%)
Tonsillectomy	49	74.3
Septal hematoma/hematoma with pus	14	21.2
ENT biopsy	2	3.0
Tracheostomy	1	1.5
Total	**66**	**100.0**

Table 5
Most frequent origins and reasons for surgical admission

Origin	Reason for surgical admission
Emergency department	
White	Cancer complications
Blue	Cancer complications
Green	Abscess
Yellow	Abscess
Orange	Cancer complications
Red	Trauma
Inpatients	Prolonged orotracheal intubation
UPIP	Postoperative bleeding

Table 6
Most frequent age groups and reasons for surgical admission

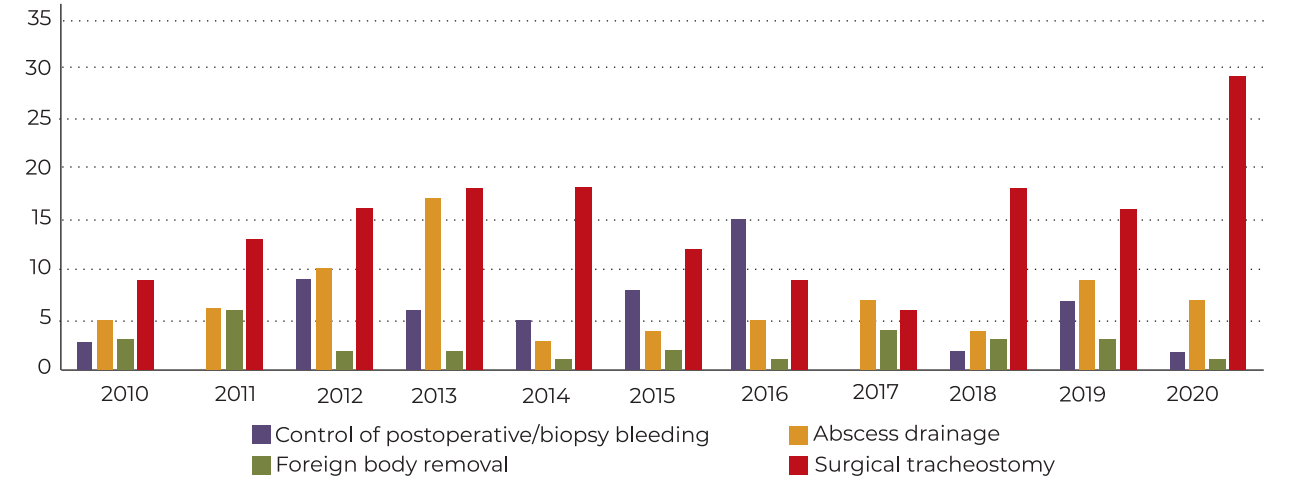
Age (y)	Reason for surgical admission
0–29	Postoperative bleeding
30–59	Abscess
≥ 60	Cancer complications

Table 7
Surgical procedures

Procedure	Frequency	Ratio (%)
Tracheostomy	164	38.8
Abscess drainage	77	18.2
Control of post-surgery/biopsy bleeding	63	14.9
Foreign body removal	22	5.2
Otologic surgery	21	5.0
Nasal surgery	18	4.3
Oropharyngeal surgery	16	3.8
Drainage of septal hematoma/hematoma with pus	14	3.3
Suspension laryngoscopy	8	1.9
Control of epistaxis	7	1.7
Revision of tracheostomy	5	1.2
Closure of laceration/dehiscence	3	0.7
Incisional/excisional biopsy	2	0.4
Exploratory cervicotomy	2	0.4
Nasogastric tube placement	1	0.2
Total	**423**	**100.0**

up to 29 years (n = 52, 39.1%), abscess (n = 32, 23.5%) in the group aged between 30 and 59 years, and cancer complications (n = 41, 26.3%) in those aged > 60 years. The most prevalent surgical procedures were tracheostomy (n = 164, 38.8%), abscess drainage (n = 77, 18.1%), and control of postoperative/biopsy bleeds (n = 63, 14.8%). Table 7 shows other less frequent surgical procedures. The most frequent procedure for patients with cancer was

Figure 3
Evolution of four main surgical procedures



surgical tracheostomy (n = 61, 82.3%), followed by postoperative control of hemostasis (n = 4, 5.4%) and tracheostomy revision (n = 3, 4.0%).

Data about the evolution of the four main surgical procedures over the 10-year period (Figure 3) showed that the need for postoperative hemostasis control fluctuated, with a peak during 2016 (n = 15) and none during 2017. The number of abscess drainage procedures varied over the years, with a peak of one in 2013. Further, the number of procedures to remove foreign bodies from the ENT area always remained below five per year, with a peak of four during 2017 and none during 2011. Moreover, the number of surgical tracheostomy procedures increased from nine to 18 between 2010 and 2014, gradually decreased to six in 2017, and increased again to 18 in 2018. The number of procedures peaked at 29 during 2020.

Discussion

Surgical ENT emergencies vary from simple foreign bodies in the ENT of children to acute bilateral vocal cord paralysis requiring urgent tracheostomy. This study aimed to determine ENT surgical activity in a medical-surgical ED.

The institutional records and coding system caused many difficulties. Thus, each clinical record had to be investigated in detail to determine the reason for admission and the actual surgical procedure, given the redundancy of codes for diagnoses and difficulties identifying correct codes for surgical procedures.

We determined the numbers and types of medical-surgical emergencies between 2010 and 2020. Despite restrictions on mobility and in-person contact caused by the COVID-19 pandemic and contrary to results at other centers[2], the number of ENT surgical emergencies did not decrease in 2020 relative to previous years. This finding should be considered in the context of the increased number of surgical tracheostomies, many of which were associated with prolonged tracheal intubation in patients with respiratory disease caused by SARS-CoV-2.

Regarding the reasons for surgical admission, epistaxis and face/neck trauma accounted for a low proportion of visits, although they are considerably frequent during daily ENT emergency practice. This finding can be explained by the absence of specialties such as neurosurgery and interventional neuroradiology in the medical-surgical EDs. Severe epistaxis and ENT trauma are not treated in the ED and are ideally referred to a multipurpose ED.

A comparison between the present and international findings revealed the predominance of men in the ENT ED[3,5] and a wide variation in patient ages 3-7. Postoperative hemorrhage was more

frequent among children and young adults in this study because ambulatory surgery accounted for a significant component of all surgical procedures in the ED; 68.1% of all hemorrhages were post-tonsillectomy bleeds. Tonsillectomy is associated with a significant risk of postoperative bleeding, which can reach 5.1% in the adult population[8].

The distribution of deep neck space infections according to age contradicted reported data[9], indicating a higher prevalence in the first 30 years of life. However, the authors considered abscesses drained in both the OR and ER. Regarding cancer, a consensus was reached that the prevalence of cancer is higher among older men[10].

This study determined the most frequent ENT surgical conditions encountered in a medical-surgical ED and various diagnoses and surgical procedures. These findings are important because they provide an overview of requirements in terms of the medical and surgical knowledge required of ENT physicians working in an ED at a tertiary hospital.

Conclusions

The ENT ED at Pedro Hispano Hospital has a significant surgical component. Although it is a medical-surgical emergency department, the number of surgical procedures is significant. The lack of similar evaluations of surgical activity in an emergency setting reinforces the importance and originality of this study. We emphasize the need for other EDs to disclose their activities and develop more appropriate record-keeping and coding systems for clinical activities.

Conflicts of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

Data Confidentiality

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

Protection of humans and animals

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the 2013 Helsinki Declaration of the World Medical Association.

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Availability of scientific data

There are no datasets available, publicly related to this work.

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