

Retrospective Study on the Flow and Characteristics of Dental Emergency Patients in Chosun University Hospital

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Purpose: The aim of the present study is to assess the importance of proper treatment timing for dental emergency patients by characterizing current patient care in the emergency room.

Materials and Methods: A retrospective chart review of 3,211 patients who visited the Chosun University Hospital's dental emergency department (Gwangju, Korea) was conducted from January 1, 2011 to May 31, 2014. Information regarding age, gender, onset date, main causes, and diagnoses were collected and analyzed. The main causes were divided into six categories: assault, household/play, sports, traffic, work, and others.

Result: Emergency visits were more common for men (69%), and the ratio of males to females was 2.2:1. On average, the major cause was household/play (49.8%), followed by others (18.9%), traffic (16.6%), assault (9.1%), sports (2.9%), and work (2.6%). The most frequent diagnosis on average was dental trauma with 82.4%, followed by infection (10.7%), others (4.7%), and bleeding (2.2%).

Conclusion: The main reasons for visits to the dental emergency department are dental trauma, dental infection, bleeding, and others. The most frequent reason for dental emergency patients to visit the emergency department was dental trauma (82.4%).

Key Words: Dental emergency; Dental trauma; Emergency visits

Introduction

Some dental injuries are just limited to oral and

maxillofacial areas. However, they are occasionally directly or indirectly related to facial disfigurement, or damages to other parts of the body¹. These

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dental injuries occur for various reasons: diseases, accidents, injuries, etc. And in many cases, they are emergencies. As we know, for complete recovery, the dental treatment needs an accurate diagnosis from the very initial stage. A diagnosis at this point greatly influences the duration of the treatment and degree of the patient's recovery. Therefore, the role of primary treatment at an emergency center has been regarded as important².

The emergency center of Chosun University Hospital (Gwangju, Korea) is visited by numerous people from the city and surrounding Jeollanamdo area 24 hours a day. When patients arrive, a doctor at the emergency center examines them first, and then contacts the dentist on call if the patient's symptoms are related to the oral and maxillofacial area. Usually, oral and maxillofacial surgery (OMFS) interns and residents are on duty in the dental emergency department. Upon the seriousness of symptoms, OMFS specialists and professors are on call to give the best possible remedies.

The purpose of this study is to investigate the clinical characteristics and the incidence (i.e., dental trauma, dental infections, and so on) of oral and maxillofacial area injuries for the patients in the dental emergency department of Chosun University Hospital. The study has meaningful results for further studies as it aims for the comprehension of current conditions in dental emergency cases and emphasizes the importance of the initial diagnosis and treatment for emergency oral and maxillofacial injuries.

Materials and Methods

We conducted a retrospective investigation of the charts of patients who visited the dental emergency department of Chosun University Hospital from January 1, 2011 to May 31, 2014. The age, gender, onset date (dd/mm/yy), cause of injury and diagnosis of the dentist were checked. The primary cause of injury was categorized in six groups:

assault, household/play, sports, traffic accidents, work, and others. We referred to Gassner's study¹. Dental diagnoses were divided by four factors of trauma into oral and maxillofacial areas, infections, intraoral bleeding, and others³⁻⁵. Cases of oral and maxillofacial trauma were subdivided into intraoral and extraoral, damage to soft tissue and teeth, multiple injuries of the teeth and soft tissue, and maxillofacial fractures by the degree of injuries. Descriptive statistical analysis was conducted using IBM SPSS Statistics version 19.0 for Windows (IBM Co., Armonk, NY, USA) to check frequent distribution and a Pearson's chi-square test ($P < 0.05$) was carried out to look for significant relationships between factors.

Result

A total of 3,211 cases treated in the dental emergency department of Chosun University Hospital were analyzed. The ages varied from 4 months to 89 years. The most frequently appearing group was in the 0 to 9 age range (21.6%). Next were those between 10 and 20 years old (14.6%). Teenagers were mainly injured in traffic accidents and sport activities. Assault was a major factor in injuries of those below the age of 40 years old (Fig. 1).

The proportion of male patients was more than

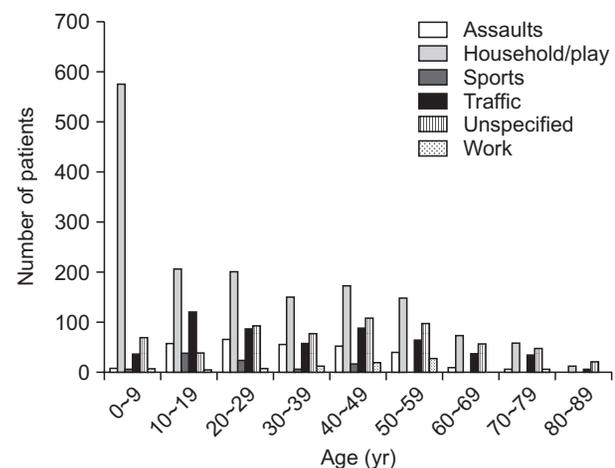


Fig. 1. Causes of injury by age.

twice that of females. Males comprised 69%, and the ratio of males to females was 2.2:1 (Fig. 2). The dental emergency department was busier on weekends (45.0%) than weekdays, and 22.3% of patients came on Saturdays and 22.7% on Sundays (Fig. 3). The busiest months of the year were May (12.4%) and June (9.5%) (Fig. 4). We could not find any significant changes in diagnoses (trauma, infections, bleeding, and others) from year to year.

The major cause of trauma was household/play (49.8%), followed by others (18.9%), traffic accidents (16.6%), assault (9.1%), sports (2.9%), and work (2.6%). Male patients were more common in the categories of sports, assault, and work-related accidents (Fig. 5).

Most of the diagnoses were categorized as trauma

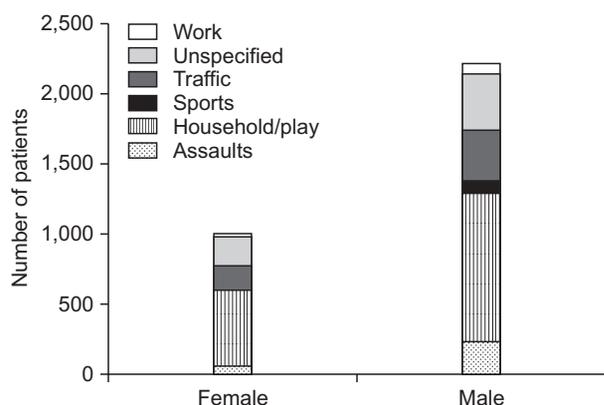


Fig. 2. Causes of injury by gender.

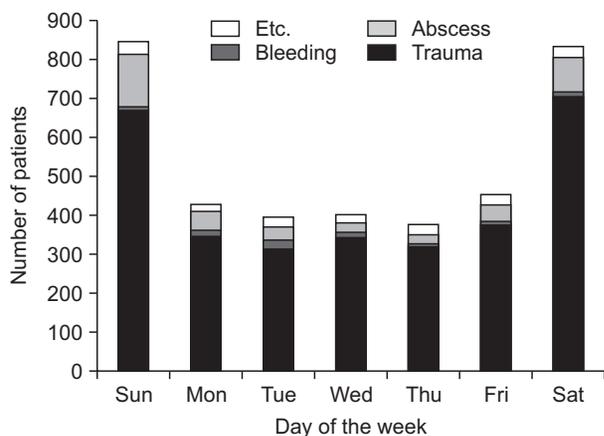


Fig. 3. Primary diagnosis of patients according to days of the week.

in the oral and maxillofacial areas (82.4%). Next were bleeding (2.2%), inflections (10.7%), and others (4.7%) (Table 1). Others include temporomandibular disorders, prosthetic problems, orthodontics-related problems, and dental counseling. We can find some tendencies in the relationship between diagnoses and months: trauma was common in November

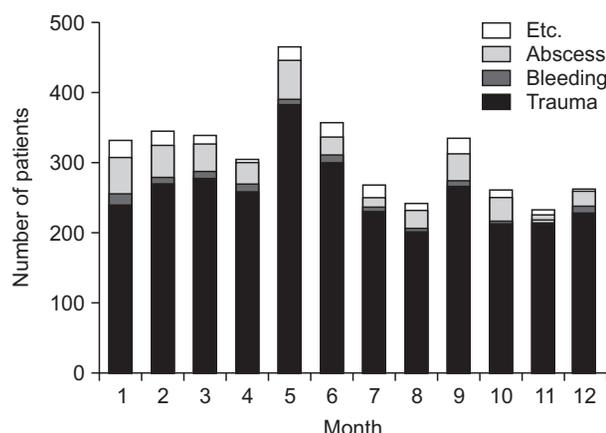


Fig. 4. Primary diagnosis of patients according to the month.

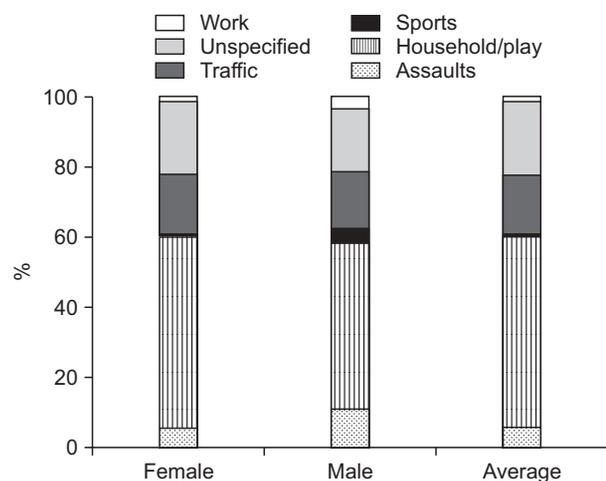


Fig. 5. Causes of injury by gender.

Table 1. Primary diagnosis of patients according to the year

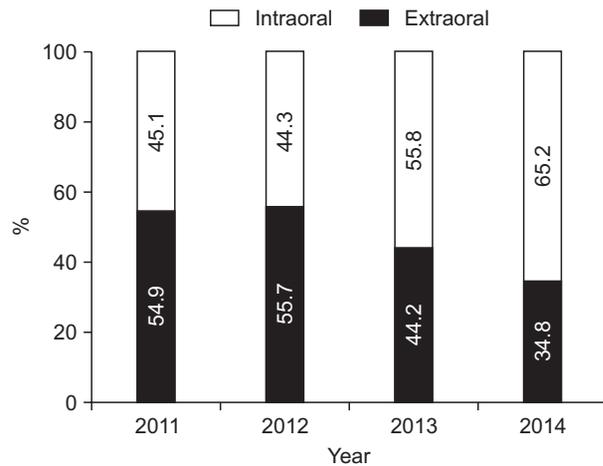
	2011	2012	2013	2014	Mean
Trauma	81.1	85.1	84.4	76	82.4
Bleeding	2.6	2.6	1.5	1.7	2.2
Abscess	8.7	10.3	9.7	20.3	10.7
Etc.	7.5	2.0	4.4	2.0	4.7

Values are presented as %.

Table 2. Distribution of primary diagnosis according to the month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Trauma	75.4	81.1	82.6	88.3	83.4	85.1	86.1	84.4	82	81.5	91.4	87.7
Bleeding	3.2	1.8	2.4	2.4	1.2	2.8	2.5	2.3	2.2	2.1	1.8	2.6
Abscess	16.0	13.4	11.7	7.8	12.7	7.8	6.7	10.4	12.7	13.4	4.3	8.2
Etc.	5.4	3.7	3.3	1.5	2.7	4.3	4.7	2.9	3.1	3.0	2.5	1.5

Values are presented as %.

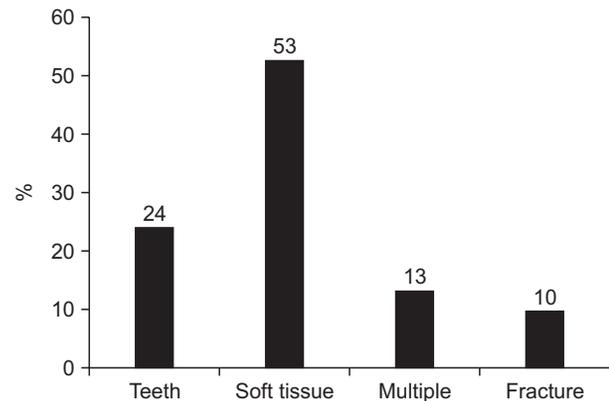
**Fig. 6.** Annual distribution of intraoral and extraoral trauma.

(91.4%), December (87.7%), and July (86.1%), while abscess were most frequent in January (16.0%), February (13.4%), and October (13.4%) (Table 2).

The subdivision of injuries between intraoral and extraoral was estimated as 48.9% versus 51.1%. But intraoral injuries were on an increase trend (Fig. 6). These injuries in detail were teeth (24%), soft tissues (53%), multiple injuries (13%), and bone fractures (10%) (Fig. 7).

Discussion

Former studies had found an increase in the number of patients in the dental emergency department during the night time for treatment of trauma and infections^{3,4}. It was also said that there were gender differences among patients. Social and traditional factors in Korea were an influence in the high rate of male patients, who are more likely to be wild and active and are thus involved in

**Fig. 7.** Distribution of trauma to teeth, soft tissue, multiple injuries, and fracture.

violent cases. They also prefer outdoor life⁶⁻⁸. In this study, we also found that male patients were more prevalent due to sports activities and involvement in assault.

Other studies reported that children under 10 were also very frequently seen in dental emergency departments⁹⁻¹². Children are active, dependent, curious, and adventurous while they are not good at controlling and balancing their bodies. They lack the ability to make a judgment. Thus, it is easy for them to be injured, especially in the oral and maxillofacial areas. Choi et al.'s 10 years of research¹¹ on 1,856 children found that most of the patients who suffered dental trauma were from the ages of one to three. And the ratio of males to females was 1.67:1. The results also show us that boys are more likely to be active and get involved in outdoor activities. Our study can support these results as we also found that the proportion of patients under the age of 10 was high (21.6%).

Regarding the time of occurrence of injuries, Bae

et al.⁵⁾ found that injuries increased on Sunday from May to August. Our study shows similar results: weekends and May and June were busy. Choi et al.¹¹⁾ analyzed that the reason for these similar results among studies was that people tend to go outside more often from May to August. Many other studies supported that occasional factors like the weather or school vacations, which influence people's outdoor activities, are related to dental injuries.

Similar to the former studies, this research found that the main reason for visiting dental emergency departments was trauma^{3,4)}. Also, traumas was the dominant reason (82.4%) for visits among patients under the age of 10 years old. This implies that more education and precautions should be conducted with parents and children. Furthermore, teachers and students should also be educated with those precautions to prevent severe oral and maxillofacial injuries¹³⁾.

The treatments for patients were stitching up the wounds, filling injured teeth, extracting teeth, installing protective devices, conducting open/closed reduction, etc. Among the traumas in the oral and maxillofacial area, intraoral injuries made up 48.9% and extraoral injuries took 51.1%. But intraoral injuries have shown an increasing tendency. We assume that, in particular, a mouth guard can prevent severe injuries in outdoor activities.

Regarding the regions of damages, more than half of the patients had damaged soft tissue (53%), while others received damage to teeth (24%) and bones (10%). To prevent damage to the teeth, malocclusion, especially the large overjet of upper incisors, should be treated first. At the same time, a good way to prevent mandibular fracture is by removing the third molar in a mandibular angle that is fragile¹⁴⁾.

Among infected patients, 10.7% were treated with administering antibiotics, curettage, incision and

drainage of abscesses. Patients in a critical condition were diagnosed with the help of computed tomography (CT) scans and had surgery under general anesthesia.

In this study, only 2.2% were cases of bleeding. Most of these suffered from side effects and inappropriate control after operations or the removal of teeth in other hospitals. Pressure to control hemorrhage was applied, resuturing under local anesthesia was performed, and hemostatic was used in cases of severe bleeding.

Temporomandibular disorders were treated with analgesic, CT scans, manual disc reduction technique, and additional treatment as outpatients.

Conclusion

Most of the patients (82.4%) who visited the dental emergency department in Chosun University Hospital had trauma in oral and maxillofacial areas. Of these patients, 10.7% suffered from infections and 2.2% from bleeding. The remaining 4.7% were for other reasons. The composition of the patients' symptoms did not change over time. Even though we analyzed four years of data, we could not find any significant relationships between years and patients' symptoms.

An initial rapid and accurate diagnosis along with the application of proper treatment is important for the complete recovery of an emergency patient with acute symptoms or injuries. Finally, we suggest that dentists should be trained and be prepared to perform efficient measures in an emergency environment. Also, further epidemiological surveys should be conducted to comprehend the complexities of oral and maxillofacial injuries.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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