



Original Article

Emergency appointments in orthodontics

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ABSTRACT

Introduction: Patients undergoing fixed orthodontic treatment are usually recalled electively for the adjustments of the appliances, but sometimes they appear suddenly for emergency visit which must be addressed immediately. The primary objective of this study was to assess the nature and frequency of emergency visits made by patients under labial fixed orthodontic therapy. The secondary objective was to compare these visits between genders and age groups.

Materials and Methods: The study was conducted at orthodontic clinic, B. P. Koirala Institute of Health Sciences, Dharan, Nepal. All the patients undergoing fixed labial orthodontic treatment were included and followed up for a period of 6 months. The reason for emergency appointment was recorded along with the demographic and clinical details. Chi-square test was used to find out the possible association between gender and age group with emergency appointment.

Results: Of 327 patients undergoing active fixed orthodontic therapy, 199 were female and 128 were male. A total of 176 emergency appointments were encountered during the study period of 6 months. The most common reason was the loosening of brackets or bondable buccal tubes (118) followed by loosening of bands (45). Other reasons were trauma to the buccal mucosa by the overextended wire (5), detachment of buccal tubes from the band (5), tearing of bands (3), breakage of acrylic plate (2), loosening of ligature tie (1), and dislodgement of elastomeric chain (1). Emergency appointments were not found to have statistically significant association with age group ($\chi^2 = 0.073, P = 0.787$) or the gender ($\chi^2 = 3.196, P = 0.074$).

Conclusions: Loosening of the brackets or bondable buccal tubes was the most common cause for emergency visit. No significant association was found between the gender and age group with such visits.

Keywords: Emergency appointment, Fixed orthodontic appliances, Orthodontic treatment.

INTRODUCTION

Orthodontic treatment is usually elective, and the follow-up appointments are scheduled at an interval with flexible duration of 4–6 weeks in conventional fixed appliances or even at longer period depending on the type of appliances used. However, in some instances, patients do come to orthodontic clinic suddenly and often without prior information due to some acute problems which need to be addressed immediately. These additional visits, on the one hand, increase the overall treatment cost to the patient while, on the other hand, require extra chairside time for a busy clinician. Frequent visits may lead to loss of confidence and breach of doctor-patient relationship.^[1] In addition, breakages often lead to an overall increase in treatment duration which results in a greater potential for iatrogenic damage.

There are wide varieties of reasons for which patients appear for emergency appointments. These include dislodged brackets and tubes; loose bands; tearing of bands; weld failure; trauma due to extraoral appliance; soft tissue trauma with archwire, ligature wire, or bracket hooks; repair/adjustment of retainers; and dislodged module/elastomeric chain/ligature wire. In the fixed orthodontic treatment, the most frequent reason of surprise visit is the repair of the debonded brackets with tendency of breakage higher in some

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teeth than the other.^[2] Orthodontic appliances, besides the ill-fitting prosthesis, are supposed to be one of the major causes of physical iatrogenic injuries to the intra- and extra-oral tissues, leading patients to report back to the clinician.^[3]

The word “emergency” sounds something urgent and critical in the medical profession, but the orthodontic patients do not deserve such crucial attention,^[4] hence, better to refer as casual attender.^[5] Although few unscheduled arrivals of patients are anticipated, increased frequency bothers both the patient and the clinician. A wide range of unscheduled appointments has been reported by various researchers in the hospital-based audits.^[6,7] Some authors even discovered that almost half of the orthodontic appointments were dedicated to repair dislodged bands, ligatures, or management of soft tissue trauma.^[5] Bashir shares his experience of sparing an extra day for every 10 working days to manage repair appointments.^[8] Casual visits interfere with the routine plan of a clinician, and hence, every measure should be taken to reduce those by <5% of the total scheduled appointments.^[9]

The aim of this study was to explore the frequency and nature of these emergency appointments in patients undergoing labial fixed orthodontic treatment. Further, we aimed to find the possible association between these visits with gender and age group.

MATERIALS AND METHODS

This was a prospective cohort study conducted at the orthodontic clinic, B. P. Koirala Institute of Health Sciences, Dharan, Nepal after ethical clearance from the Institutional Review Committee. With informed consent, all the patients undergoing fixed orthodontic treatment (labial) were included and followed up for a period of 6 months. Patients of all age groups and both genders were included, all of them being treated by three faculty orthodontists of the university under the same set up following same treatment protocol. Patients with removable appliances only, removable functional appliances, lingual fixed appliances, and fixed/removable retainers were excluded from the study.

All the patients satisfying the criteria were included in the study and their visits to the clinic were recorded. The routine and scheduled visits were not further enquired while the emergency appointments were recorded in detail with the reason for unplanned visit along with few demographic and clinical information.

All the data were recorded and entered into MS Excel and then to SPSS version 20 for further statistical analysis. Chi-square test was used to find out the possible association between gender and emergency appointments. All the patients were divided into two age groups - young(≤20 years) and adult(>20 years)^[10] and their association with emergency visits was also explored with Chi-square.

RESULTS

We had 327 patients undergoing active fixed orthodontic therapy, of which 199 were female and 128 were male. A total of 176

emergency appointments were encountered during the study period of 6 months. It accounts for approximately 30 emergency visits per month and at least 1 per working day (6 working days per week). All these visits were made to the orthodontic outpatient clinic and none to the general emergency which opens 24 hours a day with provision of true emergency care only.

Of the total 327 patients, only 126 made surprise visit(s) for 176 times. 201 orthodontic patients did not have any problems to appear for extra visits during the period of 6 months studied. Among those who had emergencies, two appeared for five extra appointments [Table 1]. The overall rate of emergency visit was found to be 8.23% (which is calculated as the number of emergency visit divided by the total number of regular and emergency visits for 6 months period).

The most common reason of emergency visit was the loosening of brackets or bondable buccal tubes, followed by loosening of bands, dewelding of buccal tube, trauma from the archwire, band tearing, breakage of acrylic plate, loosening of ligature tie, and dislodgement of elastomeric chain [Table 2].

Table 1: Frequency distribution of number of emergency appointments.

Number of emergency appointments	Count of patients
0	201
1	87
2	32
3	5
5	2

Table 2: Various reasons for emergency visits and their frequencies.

Reasons	Count
Debonding	118
Loose bands	45
Dewelding of buccal tube	5
Trauma from distal extension of wire	5
Band tearing	3
Breakage of acrylic plate	2
Loosening of ligature tie	1
E-chain dislodgement	1

Table 3: Distribution of debonded bracket types.

Arch	Tooth	Count of debonded brackets/ buccal tubes
Maxillary	Canine	4
	Incisor	8
	Molar	28
	Premolar	15
Mandibular	Canine	6
	Incisor	16
	Molar	8
	Premolar	45
Total		130

Debonding was encountered 118 times with 130 debonded brackets/buccal tubes. The most common teeth encountered were mandibular premolars followed by maxillary molars [Table 3].

Chi-square test was done to find whether there was some association between gender and the emergency appointments, but no significant association was found ($\chi^2 = 3.196$, $P = 0.074$) [Table 4]. Similarly, no statistically significant association was found between age group and the emergency visits ($\chi^2 = 0.073$, $P = 0.787$) [Table 5].

DISCUSSION

This was a prospective cohort study undertaken to assess the pattern and frequency of emergency appointments in patients with fixed orthodontic treatment which would disclose the most problematic component of the appliance in terms of repair or readjustment. We found that the most common reason for emergency appointments was the loosening of brackets or bondable buccal tubes followed by loosening of bands. The most common teeth to experience debonding were mandibular premolars. The emergency visits were not found to have any statistically significant association with age group or the gender.

In our study, 60.85% of the total patients were female showing increased attraction of females toward orthodontic treatment. Several studies have shown that females are more dissatisfied with their dentofacial appearance when compared with males and show desire for esthetic treatment more often.^[11,12] The result in our study is quite similar to that reported by Piao *et al.* in 5-year study in South Korea where 60.7% of the total orthodontic patients were female.^[13] Several authors have also reported the majority of females among orthodontic patients.^[14,15]

We found 126 patients at 176 emergency visits during the period of 6 months studied which roughly account to at least 1 per working day (6 working days in a week). In a study at Orthodontic Department

of Cardiff Dental School, Oliver found 227 casual attenders in 17-week period with 2 per day for a 6 working days a week.^[5]

To limit the unnecessary burden, the recommended guideline suggests that the surprise visits of the patients should be <5% of the total scheduled appointments.^[9] In our study, however, the rate of emergency appointments was 8.23% which was higher than suggested. Similar result was obtained with the orthodontic patients in the Mersey and North Wales where 8.6% of the total visits were unscheduled.^[16] In the clinic audit done at Chesterfield Royal Hospital, the casual visits rate was 5.96% in 2016 and 6% in 2011.^[17] The casual rate in that hospital varied widely (1.49% to 12.5%) from full time to part time orthodontist. More casual visits were recorded among patients treated by postgraduates which might be attributed to their inexperience.^[5] In our study, all the patients were treated by three full-time faculty orthodontists with 3–6 years of clinical experiences, and hence, the emergency rates were not analyzed separately.

It is believed that 90% of problems are caused by 10% of the orthodontic patients and those are referred as “wreckers.”^[18] We found two patients reporting for emergency 5 times in 6 months!

Nearly two-thirds (118 of 176) of the emergency visits constitute of repair of the debonded brackets or buccal tubes (bondable). Debonded brackets occupy the highest percentage of casualties and it was reported to be nearly one-third of all the casualties.^[11] The higher rates in our study might be due to the difference in dietary habits between two population. Out of all, mandibular premolars were found to be debonded more frequently which could be due to the approximation of buccal cusp tip of maxillary premolar to the bracket wing. And also, the second premolar and first molar are the area which bears maximum occlusal load.^[19]

Orthodontic appliances often cause irritation to the oral mucosa, leading to traumatic lesions mostly adjacent to the brackets or distal ends of archwire demanding immediate attention for the management of pain or discomfort. We encountered five cases of traumatic lesions caused by the distal end of the archwire. Similarly, another study found oral mucosal lesions in 63% of the orthodontic patients compared with 47% of control individuals.^[20] In an investigation of pain and ulcerations by orthodontic appliances, 75.8% of patients reported some sort of lesions in oral cavity, but only 2.5% had severe ulcerations and the frequency of such lesions was noted higher in girls than boys.^[21] We did not find any statistically significant difference in the rate of emergency visits by females when compared to male.

Table 4: Gender distribution of patients reporting at least one emergency visit.

Emergency appointments	Gender		Total	Chi-square value	P value
	Female	Male			
No	130	71	201	3.196	0.074
Yes	69	57	126		
Total	199	128	327		

Table 5: Age distribution of patients reporting at least one emergency visit.

Emergency appointments	Age group		Total	Chi-square value	P value
	Young (≤ 20 years)	Adult (> 20 years)			
No	115	86	201	0.073	0.787
Yes	74	52	126		
Total	189	138	327		

In our study, we classified patients into young (≤ 20 years) and adult (> 20 years). The rate of casualties when assessed with Chi-square test was not significantly different in these age groups. Oliver also found no significant difference in the average ages of patients reporting casualties and those without in Dental School of Cardiff. Oliver, however, cited Newcombe who found younger patients with more breakages.^[5]

Considering the cost of casual visits to the orthodontist and patients in terms of time and money, it is worth being extra cautious in every routine appointment. Each orthodontic clinic has its own modality of treatment and thus unique problems which need to be identified and analyzed critically through regular audits. Such reviews can help in identifying the etiology of problems and improving the clinical standard to minimize any unnecessary burden to the patient and the clinician.

CONCLUSIONS

Loosening of the brackets or bondable buccal tubes was the most common cause for casual visit. No significant association was found between the gender and age group with emergency appointment.

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Conflicts of interest

There are no conflicts of interest.

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