



Research Article

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Premature Loss of the First Permanent Molar. School Solidarity with Panama.2020-2022.

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Abstract

The first permanent molar is one of the most important dental structures for the development of a physiological occlusion and an adequate masticatory function. Objective. To determine the premature loss of the first permanent molar in students from 6 to 18 years of age at the Solidarity School with Panama. Methodological design. An observational, descriptive, cross-sectional study was carried out with students from 6 to 18 years of age of both sexes, from the Solidaridad con Panamá school, from October 2020 to May 2022. The universe consisted of all students whose parents or guardians gave their consent to participate in the study. Variables such as age, sex, types of disability, premature loss of the first permanent molar, risk factors and location of the missing molar were analyzed. The statistical test of X² was performed. Results. 8.41% had premature loss of the first permanent molar with predominance in the age of 15-18 years (5.44%), p: 0.9. and the male sex (5.94%), p: 0.76, the most affected molar turned out to be the first lower left molar (47.83%), p: 0.96. Conclusions. Little loss of the first permanent molar with a predominance of physical or motor disability. The risk factors that most affected the patients were the cariogenic diet, there was a relationship between the previous experience of dental caries and the loss of the first permanent molar (p<0.05).

Keywords: First permanent molar, Loss of the first molar

Introduction

The first permanent molar is one of the most important dental structures for the development of a physiological occlusion and an adequate masticatory function, since it defines the development of a practical occlusion, it allows entering the posterior part with a large space, its existence being important for the stability and growth of the occlusion [1]. When there is a premature loss of the first permanent molars, secondary alterations appear that break the occlusal balance, resulting in a collapse in the development of the dental arches.[1,2] Toapanta [3] in his research on causes and effects associated with the loss of the first permanent molar in the permanent dentition, reports that in the European continent first molar caries has become a health problem, according to reports

published in Sweden, Spain, Africa and Asia. because approximately 90% of people between 7 and 17 years of age suffer from dental caries. Rosales, et al. [4], in their study on "Caries in first permanent molars and factors associated with it in Acapulco schoolchildren, states that in schoolchildren from South American countries report a prevalence of 22-70% of caries in these dental pieces. In Mexico the prevalence has a wider range of 25-80% and in Cuba a narrower range of 40-52% was reported. The oral health of disabled people is characterized by a low level of hygiene due to their physical and/or mental limitation, retaining food particles in the mouth for a long time, which causes gingival inflammation, caries and periodontal disease. Disabled patients require special care to perform



their hygiene according to their age, cooperation, level of disability and systemic commitment, otherwise they can easily develop these diseases and cause pain, dysfunction, discomfort and the need for long treatments, expensive and of dubious prognosis [5].

Care for people with disabilities is a priority within the National Stomatology Program in Cuba, because these people need optimal oral health to improve their quality of life. In 1984 the National Program for the Mentally Retarded was created in Cuba; but, despite being included in the training program for comprehensive general stomatologists, disabled people have been a difficult problem from the stomatological point of view [5]. The Solidarity with Panama school located in the Boyeros municipality in Havana was inaugurated on December 31, 1989, the only one of its kind in the country. This center provides primary and secondary education, there are also workshops where they learn a trade. The school has a stomatology consultation inaugurated in 1995, it consists of 2 dental units with their two stomatologists where the students of the same are attended. The studies related to the premature loss of the first permanent molar in disabled patients in Cuba are insufficient, it is verified by reviewing the literature, which constitutes a limitation. In the Solidaridad con Panamá school, there are no previous studies on this subject. It is necessary to investigate with the objective of determining the loss of the first permanent molar, which will make it possible to identify weaknesses and implement strategies that improve the quality of life of the affected children. The objective of our research is to determine the premature loss of the first permanent molar in students from six to eighteen years of age at the Solidarity School with Panama.

Methods

An observational, descriptive cross-sectional study was carried out from October 2020 to May 2022. The universe consisted of students from 6 to 18 years of age of both sexes, from the Solidaridad con Panamá school, in the period from October 2020. 2020 to May 2022, that their parents or guardians gave their consent to participate in the research. Variables such as age, sex, type of disability, loss of the first permanent molar, risk factors and location of the lost molar were used.

Techniques and Procedures

Obtaining the information: To carry out the work, a bibliographic review was developed on the subject in question in databases that can be accessed through Informed. An individual Clinical History was made for each student with interrogation and oral examination.

Processing and Analysis

The collected data was processed as automated means by a computer and the results were presented in statistical tables and graphs. Percentage was used as a summary measure. To identify the association between the variables, the Pearson Chi-square statistician was used for 95% confidence, for which the statistical software SPSS V. 16.0 was used.

Ethical Considerations

Prior to the collection of the information, authorization was requested from the school management to carry out said study in the institution, the objectives and importance of the study were communicated to the parents and guardians, the opportunity was offered to decide the participation following the autonomy principle. It was explained that only the data from the interrogation and physical examination essential to reach its diagnosis were taken for the investigation and no other non-essential procedures were added for this purpose and that the results were only used for scientific purposes. Discretion in the handling of information was guaranteed, as well as anonymous data and the signing of the informed consent was requested as proof of approval to participate in the study.

Results

Table 1 shows that only 8.41% presented premature loss of the first permanent molar where the age of 15-18 years predominates (5.94%). The Chi Square test of independence determined a $p=0.9$, where the loss of the first permanent molar is not related to the age of the patient (Table 1).

When analyzing the premature loss of the first permanent molar according to sex, it was found 5.44% in the male sex and 2.97% in the female sex. The Chi Square test of independence yields a significant probability at 95% certainty ($p=0.76$) which expresses that there is no association between both variables (Table 2).

Table 3 presents the results of the students according to the premature loss of the first permanent molar and the type of disability where it is observed that only 8.41% presented loss and patients with physical or motor disabilities predominate. The Chi Square test of independence determined $p=0.84$, which means that the loss of the first permanent molar is not related to the type of disability of the patient (Table 3).

Table 4 shows the presence of risk factors according to the loss of the first permanent molar in the students. It was determined that in the students with loss the previous experience of dental caries predominated (8.41%), and in the case of those who did not have loss of the first molar, the cariogenic diet predominated (91.08%). When analyzing the risk factors, it was shown that there is a relationship between the previous experience of dental caries and the loss of the first permanent molar, being statistically significant ($p<0.05$) (Table 4).

Table 5 shows that the loss of the first permanent molar is greater in schoolchildren aged 15-18 (78.26%) and the largest number of molars lost corresponded to the lower left molar, with 47.83%. When analyzing the location of the loss of the first permanent molar according to the age of the patients, it was shown that there is no relationship between the variables, being statistically non-significant ($p>0.05$) (Table 5).

Table 1: Premature loss of the first permanent molar according to age.

| Age Group | Children with First Permanent Molar Loss | | Children Without First Permanent Molar Loss | | Total | |
|-----------|--|------|---|-------|-------|-------|
| | No. | % | No. | % | No. | % |
| 6-9 | - | - | 81 | 40,09 | 81 | 40,09 |
| 10-14 | 5 | 2,47 | 92 | 45,54 | 97 | 48,01 |
| 15-18 | 12 | 5,94 | 12 | 5,94 | 24 | 11,88 |
| Total | 17 | 8,41 | 185 | 91,58 | 202 | 100 |
| P-Value | $X_2 = 1,31$ gl=2 p=0,9 | | | | | |

Table 2: Premature loss of the first permanent molar according to sex.

| Sex | Children With First Permanent Molar Loss | | Children Without First Permanent Molar Loss | | Total | |
|---------|--|------|---|-------|-------|-------|
| | No. | % | No. | % | No. | % |
| Male | 11 | 5,44 | 113 | 55,94 | 124 | 61,38 |
| Female | 6 | 2,97 | 72 | 35,64 | 78 | 38,61 |
| Total | 17 | 8,41 | 185 | 91,58 | 202 | 100 |
| P-Value | $X_2 = 0,09$ gl= 1 p= 0,76 | | | | | |

Table 3: Premature loss of the first permanent molar according to types of disability.

| Types of disability | Children with first permanent molar loss | | Children without permanent molar loss | | Total | |
|------------------------------|--|------|---------------------------------------|-------|-------|------|
| | No. | % | No. | % | No. | % |
| Physical or motor disability | 17 | 8,41 | 185 | 91,58 | 202 | 100 |
| Intellectual disability | 10 | 4,95 | 85 | 42,7 | 95 | 47,2 |
| P-Value | $X_2 = 0,04$ gl= 1 p=084 | | | | | |

Table 4: Risk factors according to loss of the first permanent molar.

| Tooth Loss | Previous Dental Caries Experience | | Cariogenic Diet | |
|--|-----------------------------------|-------|----------------------|-------|
| | No. | % | No. | % |
| Children with loss of the first permanent molar | 17 | 8,41 | 15 | 7,42 |
| Children without loss of the first permanent molar | 148 | 73,26 | 184 | 91,8 |
| Total | 165 | 81,68 | 199 | 98,51 |
| P-Value | $X_2 = 13,87$ p= 0,00 | | $X_2 = 9,29$ p= 0,99 | |

Table 5: Location of the loss of the first permanent molar according to age.

| Age Group | Upper Right | | Top Left | | Bottom Right | | Bottom Left | | Total | |
|-----------|----------------------------|------|----------|------|--------------|-------|-------------|-------|-------|-------|
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| 6-9 | - | - | - | - | - | - | - | - | - | - |
| 14-Oct | 1 | 4,35 | 1 | 4,35 | 1 | 4,35 | 2 | 8,70 | 5 | 21,74 |
| 15-18 | 2 | 8,70 | 1 | 4,35 | 6 | 26,9 | 9 | 39,13 | 18 | 78,26 |
| Total | 3 | 13,4 | 2 | 8,70 | 7 | 30,43 | 11 | 47,83 | 23 | 100 |
| P-Value | $X_2 = 0,98$ gl=6, p= 0,96 | | | | | | | | | |

Discussion

The premature loss of the first permanent molar in 8.41% of the children is greater in the male sex and with respect to age the age of 15-18 years predominates. Table 1 and 2 these results differ from *Ozmen* [6] and *Ávila* [7] where they determined in their study that females have more missing teeth than males. According to Cuyac and Cols8, in their study it presents a loss of 3% and it is greater in the female sex and the age of 11 years, results that differ from this study. Table 3 presents the results of the students according to the premature loss of the first permanent molar and the type of disability (8.41%) where patients with physical or motor disabilities predominate. In this regard, *Tan Suárez, et al.* [8] refers in his study on patients with mental retardation that 8.3% of patients have their first permanent molars extracted or to be extracted. There is little literature on the matter, which means a limitation of the study. It is appropriate to point out that the educational and curative work in these patients must begin from an early age, since the younger the person, the easier their education and care will be when intercepting oral conditions in the initial stages of their development. This work must be systematic and involve a lot of professional dedication, since there are many risks to which these patients are subjected, and which must be controlled in order to achieve adequate oral health. [8] Table 4 shows the presence of risk factors according to the loss of the first permanent molar in the students evaluated, where it is evident that 98.51% of them presented a cariogenic diet and dental caries affected 81.68% of the students. In the case of for students with loss of the first permanent molar, it was determined that the predominant risk factor was the previous experience of dental caries (8.41%). *Sánchez, et al.* [9] establish that *Llena, et al.* [10] determined that a consumption of foods with cariogenic potential greater than 2 times a day is associated with a 52% prevalence of caries, specifically, sweets and soft drinks are the most significant due to their high sugar content in this study. The most prevalent risk factor in their research is the cariogenic diet with 57.3%.

The first permanent molars are vulnerable to the appearance of caries due to histological and morphological factors, among others, such as age, type of diet, poor oral hygiene with inadequate brushing practices, use of orthodontic appliances, non-visits to the dentist and in Regarding the morphology and anatomy of these teeth, they have characteristics that favor the appearance of caries, such as the large occlusal surface, it has five cusps separated by deep grooves that facilitate the accumulation of bacterial plaque and tooth brushing is more difficult. In these cases, it is therefore recommended to apply pit and fissure sealants, which act as a protective barrier for dental enamel, preventing the microorganisms that cause dental caries from penetrating. [11] Table 5 shows that of the total lost permanent molars, it is higher in schoolchildren aged 15-18 (78.26%) and the cases in the lower left molar predominated, representing 47.83%. *Ozmen* [6] agrees with the study, noting that the mandibular teeth are extracted more frequently than the maxillary ones and the lower left first permanent molars have more extraction than the others. It is concluded that: the mandibular

first molars are lost more frequently than the maxillary ones. The causes that favor the premature loss of the first permanent molar, fundamentally of the lower jaw, is that generally the pieces of the mandible appear before those of the maxilla, in this way they are exposed for a longer time to the oral environment, an unfavorable acid environment for the dental mineralization, in addition to the fact that this is a permanent tooth that does not have its deciduous predecessor, and its development occurs in an insufficient tuberosity or in the mandibular branch while the craniofacial growth and development takes place, which places them in difficult positions for the accommodation of teeth. soft tissues around it, being these predisposing factors to the accumulation of biofilm (bacterial dental plaque) that associated with the high intake of sugars in this period of life consequently facilitates the development of dental caries [12].

Conclusions

The premature loss of the first permanent molar was more frequent in the age group of 15-18 years and males. The risk factor that most affected the patients was the cariogenic diet, although the previous experience of caries was greater in children with premature loss of the first permanent molar. In the schoolchildren studied, the most affected molar turned out to be the lower left one.

Author Contributions

- a) Pedro Rolando Lopez R odríguez: Reviewed medical records and searched for bibliography. He chose the sampling method by selecting the study population and analyzed and discussed the content of the tables.
- b) Grethell Beltran Herrera: He stated the objectives of the study, selected and triangulated the variables, and performed the translation into English and the final revision of the manuscript.
- c) Yosniel Lugo Echevarria: He helped in the review of medical records and bibliographic search, performed the statistical processing, calculated the arithmetic mean and standard deviation of the quantitative variables.
- d) Anaiza León Mursuli: she performed the statistical processing, calculated and interpreted the chi-square, and associated variables according to Duncan's test. She reviewed the literature on the subject, searching for epidemiological data worldwide, designed the study methodology, classified the research, processed the information, and limited the bibliographic references according to Vancouver standards. He drafted the document.

Conflict of Interests

The authors declare that does not exist an interest conflict.

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