



LOSS OF SPACE ACCORDING TO THE TIME AND THE TYPE OF THE PREMATURE EXTRACTED DECIDUOUS TEETH

Radosveta S. Andreeva¹, Hristina I. Arnautska², Ani B. Belcheva³, Milena T. Georgieva¹, Evgeni Vl. Dimitrov¹

1) Department of pediatric dentistry, Faculty of Dental Medicine, Medical University, Varna, Bulgaria

2) Department of prosthetic dentistry and orthodontics, Faculty of Dental Medicine, Medical University, Varna, Bulgaria

3) Department of pediatric dentistry, Faculty of Dental Medicine, Medical University, Plovdiv, Bulgaria.

ABSTRACT:

There is a difference of space loss depending on the time of premature extraction and the type of the prematurely extracted teeth. The aim of the study is to determine the space loss according to the time and the type of the extracted teeth. Material and methods: We studied 90 children 6 to 9 years old with premature loss of one or more primary teeth divided into three groups according to the severity of the orthodontic deformation. We used two biometric methods – the Moyers method and measured the mesial and distal movement of the adjustment teeth by drawing perpendicular lines towards the middle line. Results: The average amount of space lost is 0,033 mm for the first group, 2,2 for the second and 3,16 for the third group. The lack of space when the first primary molars are extracted is 0,37 mm in the upper jaw and is due to medicalization of the second primary molar. In the lower jaw the loss of space is – 1,12mm. The lack of space when the second primary molars are prematurely extracted is 1,2 for the upper and 1,45 for the lower jaw. Conclusion: The time is a significant factor for the loss of space. The reduction of space increases when the premature extraction is done before more than two months and when second primary molars are extracted.

Key words: premature extraction, prophylactics, deciduous teeth, loss of space

INTRODUCTION:

Temporary teeth are a determining factor for the development of occlusion. The early loss of deciduous teeth can lead to a temporary movement of adjacent teeth and loss of space for the permanent teeth, whereby it is necessary to use space maintainers in order to continue the normal development of the dental arches and the occlusion [1].

A number of authors that study space loss problem

agree that there is a difference in the loss of space depending on the time of premature extraction and the type of the prematurely extracted teeth in children with mixed dentition [1, 2, 3, 5, 6]. Some authors found, that the space loss is more significant when first molars are lost [5, 6], others, considered just the opposite – that the space loss is more significant when second molars are lost [1, 2].

The aim of the study is to determine the space loss in the both dental arches according to the time and the type of premature extracted deciduous teeth.

METHODS AND MATERIALS:

We studied 90 children 6 to 9 years old with premature loss of one primary tooth divided into three groups of 30 patients according to the time of the premature extraction and the severity of the malocclusions if there are such deformations.

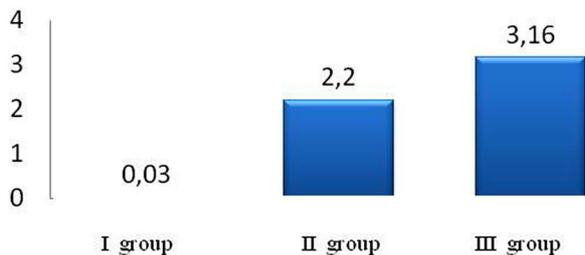
- Patients that have lost one or more tooth extracted, that come to the clinic during the first 2 month after the extraction and have no orthodontic problems.
- Patients with prematurely temporary teeth extracted before 6 or more months with mild orthodontic problems.
- Patients with prematurely temporary tooth lost before 6 or more month and have severe orthodontic problems (II and III class Angle).

We used two biometric methods for the purpose of the study - the Moyers method and measured the mesial and distal movement of the adjustment teeth by drawing perpendicular lines towards the middle line.

RESULTS:

We determined that the average amount of space lost is 0,033 mm for the first group, 2,2 for the second and 3,16 for the third group (Fig. 1.).

Fig. 1. Comparing the average loss of space between the three surveyed groups with prematurely lost deciduous teeth calculated in millimeters

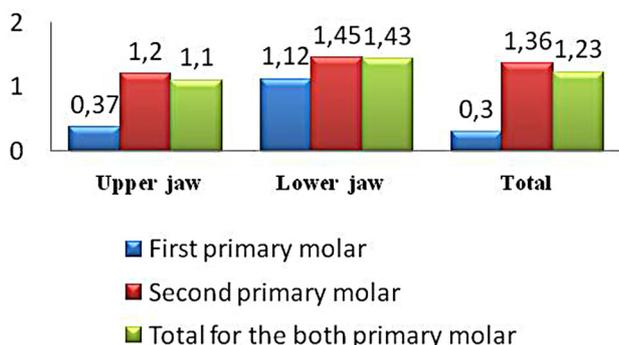


There is statistically significant difference between all three groups.

The results show that in the first study group (patients who have premature extracted teeth no more than two months before the visit to the dental office) there is a slight loss of space – 0,03 mm, compared to the second and third group, where this loss is more significant, especially in children with severe orthodontic deformations is respectively – 2,2 millimeters and 3,16 millimeters.

The lack of space when the first primary molars are extracted is 0,37 mm in the upper jaw and is due to medicalization of the second primary molar. In the lower jaw the loss of space is greater – 1,12 mm and it is related to the distal movement of the primary canines. The lack of space when the second primary molars are prematurely extracted is 1,2 for the upper and 1,45 for the lower jaw and it is related to the medialisation of the first permanent molars (Fig. 2.).

Fig. 2. Average loss of space in millimeters, depending on the type of prematurely lost tooth and position in the jaw (upper or lower jaw)



DISCUSSION:

The results show that there is a significant loss of space six and more months after the premature extraction of primary teeth, if any adequate measures are not taken. It means that the usage of space maintainers is obligatory. The aim is keeping enough place for the eruption of the permanent teeth and to prevent malocclusions. The difference between the second and the third group is smaller but statistically significant. It means that the time as a factor of space loss is more significant than the lack or the presence of malocclusions. Our results are similar to Park’s and all in 2009 [7] and differ from Kumari and all [4] and Lin [5] studies. We study the differences in the space loss, when the different types of teeth are extracted prematurely. The results show that the type of the teeth is another significant factor for the space loss. Our results that when second primary molar is prematurely extracted, more space is lost are similar to another authors results [1, 2, 8, 9, 10, 11].

CONCLUSION:

The time is a significant factor for the loss of space. The reduction of space increases when the premature extraction is done before more than two months, especially in children with severe orthodontic deformations. The type of the premature extracted tooth is another significant factor for the loss of space. The lack of space is bigger when second primary molars are extracted, because of the medial movement of the first permanent molars. This analysis leads to the conclusion that the use of space maintainers must be considered according to the time and the Type of the prematurely extracted teeth. The space maintainer should be used less than 2 month after tooth extraction. This will maintain the correct occlusal relationship.

REFERENCES:

1. Mutafchiev V, Krumova V, Jordanov V. [Orthodontia for general practitioners.] [In Bulgarian] *Nemezida Sofia*. 2003; pp.311-314.
2. Petrunov V. [Epidemiological research of malocclusions and the need of orthodontic treatment among the Bulgarians in the mixed to permanent dentition period.] [In Bulgarian] Dissertation, Sofia, 2012, p.62.
3. Prabhu N, Alexander S, Wong P, Cameron A. Erythromelalgia presenting with premature exfoliation of primary teeth: a diagnostic dilemma. *Pediatr Dent*. 2012 Sep-Oct;34(5):422-6. [PubMed]
4. Padma Kumari BP, Retnakumari NR. Loss of space and changes in the dental arch after premature loss of the lower primary molar: A longitudinal study. *J Indian Soc Pedod Prev Dent*. 2006 Jun;24(2):90-6. [PubMed]
5. Lin YT, Chang LC. Space changes after premature loss of mandibular primary first molar. *Int J Pediatr Dent*. 1998 Summer;22(4):211-315. [PubMed]
6. Northway WM, Wainright RL, Demerjian A. Effects of premature loss of deciduous molars. *Angle Orthod*. 1984 Oct;54(4):295-329. [PubMed]
7. Park K, Jung DW, Kim JY. Three dimensional space changes after premature loss of maxillary primary first molar. *Int J Pediatr Dent*. 2009 Nov;19(6):383-9. [PubMed]
8. Posen AL. The effect of premature loss of deciduous molars on premolar eruption. *Angle Orthod*. 1965 Jul;35:249-252. [PubMed]
9. Barberia E, Lucavechi T, Cardenas D, Maroto M. Free-end space maintainers: design, utilization and advantages. *J Clin Pediatr Dent*. 2006 Fall;31(1):5-8. [PubMed]
10. Alessandri Bonetti G, Zanarini M, Incerti Parenti S, Marini I, Gatto MR. Preventive treatment of ectopically erupting maxillary permanent canines by extraction of deciduous canines and first molars: A randomized clinical trial. *Am J Orthod Dentifacial Orthop*. 2011 Mar;139(3):316-23. [PubMed]
11. Laing E, Ashly P, Naini FB, Gill DS. Space maintenance. *Int J Pediatr Dent*. 2009 May;19(3):155-62. [PubMed]

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Address for correspondence:

Radosveta Andreeva
Faculty of Dental Medicine,
Medical University of Varna
55 Marin Drinov Str. 9002 Varna, Bulgaria
email: doctor_ra@abv.bg