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ORIGINAL RESEARCH

Assessment of prevalence of complications among patients with mandibular fixed retainer- A retrospective study

Nameeta Kaur

Assistant Professor, Department of Orthodontics, Government Dental College, Srinagar

ABSTRACT:
Background: Fixed retainers have been shown to be effective in maintaining an esthetic result in the anterior region without the patient's compliance. The present study was conducted to evaluate complications of mandibular fixed retainers. **Materials & Methods:** The present retrospective study was conducted on 68 patients undergoing orthodontic treatment of both genders. During the recall visit, the patients were screened for unexpected complications of the mandibular fixed retainer. The prevalence and types of unexpected complications were determined by intraoral examination, and by evaluation and comparison of the study models. **Results:** Out of 68 patients, males were 32 and females were 36. Common complication was gingival recession seen in 15, buccally tipped canine in 7, tooth decay in 5, higher mandibular plane angles in 3 and breakage of retainer in 2. The difference was significant (P< 0.05). **Conclusion:** Complications with fixed mandibular retainer are rare. However, few may occur. Authors found gingival recession seen, buccally tipped canine, tooth decay, higher mandibular plane angles and breakage of retainer.
Key words: Canine, gingival recession, retainer

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Corresponding author: Dr. Nameeta Kaur, Assistant Professor, Department of Orthodontics, Government Dental College, Srinagar

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INTRODUCTION

Stabilizing the occlusion achieved by means of orthodontic therapy is one of the main treatment goals. Occlusion instability can be divided into two categories: 1. Changes related to growth, maturation and ageing of dentition and occlusion. 2. Changes produced by the orthodontic treatment. Contact and pressure by soft tissues can be another factor influencing stability. Bonded retainers in the mandible are today a standard of care.[1]

Fixed retainers have been shown to be effective in maintaining an esthetic result in the anterior region without the patient's compliance. They have been reported to be safe and predictable, and acceptable and compatible with periodontal health. However, regular checkups are required, since occasional failures caused by wire fractures or bond failures can occur. The reported failure rates of bonded retainers vary widely between 0.1% and 53%. According to some studies, long-term use of fixed retainers may also be associated with greater plaque and calculus accumulation, which can lead to a higher risk of gingival recession and increased probing depth.[2]

These retainers make oral hygiene more difficult as the lingual surface becomes more susceptible to the formation of calculus. In addition, they may produce gingival recessions, loss of insertion, gingivitis, and the subsequent periodontal destruction. Tooth decay may also appear on the lingual surfaces adjacent to the retainer.[3] The present study was conducted to evaluate complications of mandibular fixed retainers.

MATERIALS & METHODS

The present retrospective study was conducted in the department of Orthodontics. It comprised of 68 patients undergoing orthodontic treatment of both genders. The study design was approved from institutional ethical committee. All patients were informed and written consent was obtained.

Patient data such as name, age, gender etc. was recorded in case history performa. During the recall visit, the patients were screened for unexpected complications of the mandibular fixed retainer. The prevalence and types of unexpected complications were determined by intraoral examination, and by evaluation and comparison of the

study models. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 68		
Gender	**Males**	**Females**
Number	32	36

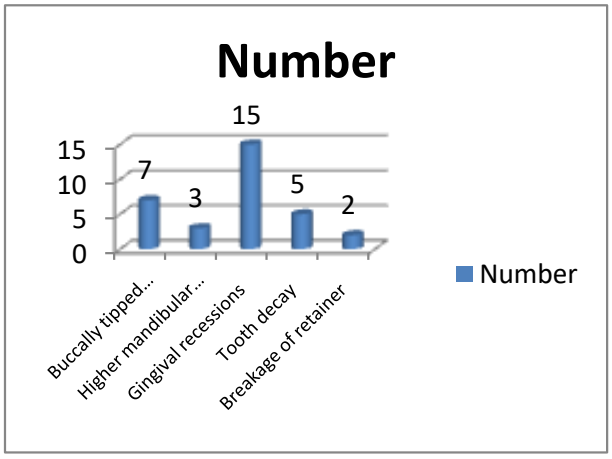
Table I shows that out of 68 patients, males were 32 and females were 36.

Table II Type of complications

Complications	**Number**	**P value**
Buccally tipped canine	7	0.01
Higher mandibular plane angles	3	
Gingival recessions	15	
Tooth decay	5	
Breakage of retainer	2	

Table II, graph I shows that common complication was gingival recession seen in 15, buccally tipped canine in 7, tooth decay in 5, higher mandibular plane angles in 3 and breakage of retainer in 2. The difference was significant (P< 0.05).

Graph I Type of complications



DISCUSSION

Unexpected complications may also appear in patients with fixed retainers. These complications were described as unwanted movement of the teeth included in the fixed retainer, even without wire fracture or bond failure.[4] Small spaces between incisors in intact retainer segments, unexpected torque changes between the maxillary central incisors, torque changes between adjacent mandibular incisors, and opposite inclinations of contralateral mandibular canines have also been reported.[5] Unexpected complications have been estimated to occur in 0.1% to 5% of patients; these are relatively small numbers. However, 50% of these patients may require retreatment.[6] In some, the complications can be quite severe, including buccal bone dehiscence. Consequently, gingival recessions may occur, posing both health and esthetic problems. In such cases, a demanding orthodontic and reconstructive surgical and periodontal treatment may be necessary.[7] The present study was conducted to evaluate complications of mandibular fixed retainers.

In present study, out of 68 patients, males were 32 and females were 36. We observed that common complication was gingival recession seen in 15, buccally tipped canine in 7, tooth decay in 5, higher mandibular plane angles in 3 and breakage of retainer in 2.

Al-Nimri et al[8] conducted a study to evaluate the periodontal effects of fixed retainers in the long term. A total of 405 patients were evaluated. All the studies were longitudinal and retrospective. There was a greater prevalence of gingival recessions, especially in mandibular incisors, which are more vulnerable. There were no significant changes in terms of alveolar bone index or calculus index. The survival rate of fixed retainers was 50% or higher. Due to the heterogeneity of the selected studies, including difference in study population, differences in methods to assess the intervention, and follow-up periods, it was impossible to quantify the variables to perform a meta-analysis.

Booth et al[9] found an opposite inclination of the contralateral canines (twist effect) was found in 21 subjects. In 89.5%, the left canines were tipped buccally. A torque difference of 2 adjacent incisors (X effect) was identified in 12 patients. In 5 subjects, nonspecific complications were noted. Subjects in the unexpected complications group were significantly younger at debonding (P- 0.03) and had higher mandibular plane angles (P-0.0001) and increased pretreatment ventral positions of the mandibular incisors (P- 0.029). No differences were found between the groups with regard to treatment duration, wire type, failure rate, treatment changes in incisor proclination, or intercanine distance.

Pazera et al[10] stated that bonding a flexible spiral wire retainer to the lingual surfaces of all 6 anterior mandibular teeth is a commonly used type of retention. Complications are rare but can be serious enough to produce biologic damage. Four years after the orthodontic treatment, a 20-year-old man sought treatment for a broken flexible spiral wire retainer. The clinical examination showed about 35° of buccal root torque of that tooth. A cone-beam computed tomography image showed that the root and the apex of the tooth were almost completely out of the bone on its buccal side. Surprisingly, the tooth's vitality was preserved. The tooth was moved back, nearly to its original position; clinically, only a gingival recession remained. Orthodontists and dentists should be aware of possible complications of bonded retainers. Patients should be clearly informed how to detect problems at an early stage.

CONCLUSION

Complications with fixed mandibular retainer are rare. However, few may occur. Authors found gingival recession seen, buccally tipped canine, tooth decay, higher mandibular plane angles and breakage of retainer.

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