

(REVIEW ARTICLE)



Pre-orthodontic periodontal treatment: An undeniable necessity

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Abstract

Introduction: Orthodontics and periodontics are two closely related disciplines, as they both affect the periodontium. An upstream analysis can reduce the risk of periodontal pathologies appearing or worsening. The aim of our study was to determine the risks of orthodontic forces on pathological periodontium.

Methodology: This is a systematic review of articles evaluating the need for pre-orthodontic periodontal treatment using the PRISMA method. A total of 11 recent articles were selected. The study was carried out from January to March 2023.

Results: The articles asserted a high risk of aggravation of pre-existing periodontal pathologies (54.5%). The 27.2% mentioned risks of gingivopathy, periodontitis, plaque accumulation, increased inflammation and loss of attachment. Nine percent of articles predicted a risk of increased bone dehiscence, gingival recession, alveolysis and root resorption.

Discussion: Orthodontic therapy can be considered a risk factor for the periodontium through two phenomena: difficulty in meticulous hygiene practice; and osteoclasia caused by the infectious agents responsible for periodontal disease. One study showed that orthodontic treatment can transform gingivitis into periodontitis and/or aggravate pre-existing periodontitis.

Conclusion: Periodontal treatment is essential before orthodontic treatment to optimize periodontal support and improve orthodontic therapy.

Keywords: Pathology, Periodontics; Orthodontics; Risk; Treatment

1. Introduction

Orthodontics and periodontics are two closely related disciplines, because of their common action on the periodontium [1]. Orthodontics enables teeth and their supporting tissues to be moved under certain conditions, while periodontics helps to clean up and treat the environment [2]. Periodontal therapy supports orthodontic treatment by facilitating treatment, preventing pre- and postorthodontic periodontal complications and correcting these complications [3]. The consequences of orthodontic treatment on a diseased or weakened periodontium are irreversible for the long-term

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prognosis of teeth [4]. A prior analysis can reduce the risk of periodontal pathologies appearing or worsening. The aim of our study was to determine the risks of orthodontic forces on a pathological periodontium.

2. Methodology

- **Type of study:** Study based on a systematic review.
- **Study duration:** The study ran from January to March 2023.
- **Study population:** The study focused on articles evaluating the need for pre-orthodontic periodontal treatment using the PRISMA method.
- **Inclusion criteria:** We included all articles on pre-orthodontic periodontal treatment from 2007 to 2023, in English and French.
- **Sampling:** A total of 11 articles were selected.

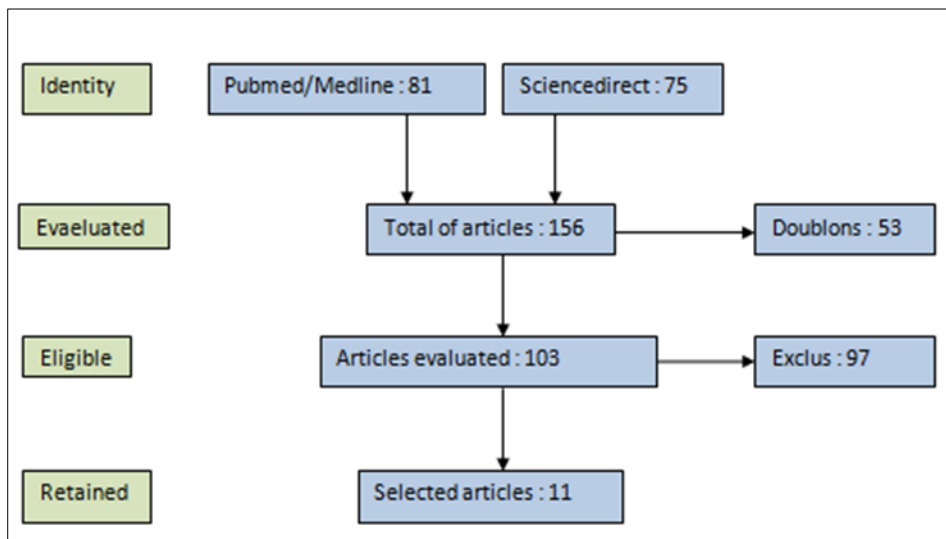


Figure 1 Selection of articles

2.1. Search strategy

The search engines used were PubMed and Sciences Direct using the keywords: "periodontie, orthodontie, periodontal, orthodontics" indicated in Mesh Bilingue and the search operators used were: "And, Or, Not".

Variables: The subject variable was based on the risks involved.

Table 1 Distribution of variables used

Articles	Orthodontics et periodontics
Year of publication	Risks involved
Continent	
Language	
Types of articles	

2.2. Data collection and analysis

Data were then collected on a pre-tested and validated data extraction form and analyzed on SPSS 21.0.

3. Results

Table 2 Distribution of titles, authors and observed results

Titles and authors	Observed results
<i>Periodontal management during orthodontic treatment of mandibular incisors.</i> Popelut A, Medio M, Figue M	Gingival recession
<i>Interrelationships Orthodontics - Periodontics</i> Pougatch P, Boes D, Maujean E, Tarragano H	Gingivopathies, periodontitis
<i>Orthodontics and periodontics</i> Massif L, Frapier L	Gingivitis to periodontitis and/or aggravation of pre-existing periodontitis
<i>Periodontal diagnosis in orthodontics</i> Hourdin S, SorelDGO	Gingivitis
<i>Pre-orthodontic periodontal preparation of pathological migrations.</i> Zannini M	Gingivitis
<i>Mucogingival lesions and orthodontics</i> Mesmoudi YHE, Dehar B, Mokrani HM, Chikh W	Accumulation of plaque, recurrence of periodontal disease
<i>Plaque control : an essential component of successful of orthodontics treatment</i> Dersot JM	Accumulation of plaque, recurrence of periodontal disease
<i>Reciprocal relations between orthodontics and periodontics : The benefits of effective synergy</i> Ngom PI, Benoist HM, Soulier-Peigue D, Niang A	Accumulation of plaque, recurrence of periodontal disease
<i>Severe periodontics, conservative treatment: ortho-periodonal solutions</i> Boyer S, Fontanel F, Danan M, BrionM	Orthodontics contraindicated in patients with periodontitis
<i>Optimizing periodontal attachment prior to orthodontic treatment</i> Mouraret S, Forestier JP	Loss of attachment
<i>Orthodontic treatment of weakened periodontium: the contribution of orthodontics.</i> Sorel O, Glez D, Hourdin S	Loss of attachment

4. Discussion

The articles selected were mostly published before 2017, and consisted mainly of European articles and original types that were easy to grasp.

Orthodontic treatment causes gingival recession in pathological periodontium. The risk of recession linked to orthodontic movement only exists when the tooth is displaced outside the alveolar bone [1].

The risk of periodontal lesions is most often gingivopathy, but in some cases, periodontitis, which requires an investigation of the etiological role of orthodontics [3].

Orthodontic treatment can transform gingivitis into periodontitis and/or aggravate pre-existing periodontitis. This would depend on the type of anchorage (bacterial retention), the type of force used and the direction of orthodontic movement [2].

An inflammatory reaction is triggered by the presence of orthodontic material and aggravated by bacterial plaque. It is characterized by gingival hyperplasia without periodontal attachment migration [4,5].

Orthodontic appliances are a source of plaque buildup, resulting in the resurgence of periodontal disease. The placement of orthodontic appliances makes meticulous hygiene difficult [6,7,8].

Orthodontic treatment is contraindicated in patients with periodontitis; the application of orthodontic forces to periodontal tissues with bacterial inflammation can accelerate periodontal destruction when oral hygiene is poor [9].

The application of orthodontic force to a diseased periodontium can lead to loss of attachment. Strengthening the periodontal attachment prior to orthodontic treatment is necessary to optimize attachment quality and treatment durability [10,11].

5. Conclusion

A periodontal check-up prior to orthodontic treatment is essential to assess and prevent any risk of pathology.

Orthodontic movements must be controlled and adapted to the anatomical situation.

Periodontal treatments are essential prior to orthodontic treatment in order to optimize periodontal support and improve orthodontic therapy.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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