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REVIEW

EFFICACY OF TREATMENT OF CLASS II FURCATION LESIONS USING MEMBRANE ASSOCIATED WITH BONE GRAFTING IN MANDIBULAR MOLARS COMPARED TO MEMBRANE ONLY: A SYSTEMATIC REVIEW AND META-ANALYSIS.

Eficacia del tratamiento de lesiones de furca grado II utilizando membrana asociada con injerto óseo en molares mandibulares en comparación con solamente membrana: revisión sistemática y metanálisis.

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ABSTRACT

Objective: The objective of the present systematic review and meta-analysis was to compare treatment with membrane associated with bone grafting and treatment exclusively with membrane in the approach of Class II furcation defects in mandibular molars.

Materials and Methods: The Preferred Reporting Items for Systematic Reviews and Meta-analyses statement was followed. Searches were conducted in five databases (PubMed, Web of Science, Scopus, Ovid, and Lilacs), in Septem-ber 2021, without restriction regarding publication year or language. Studies comparing membranes associated with bone grafting and membranes exclusively in the treatment of Class II furcation lesions were included. Cross-sectional, case-control studies, and reviews were excluded. Study selection, data extraction, and risk of bias assessment (MINORS) were performed by two review authors. The certainty of the evidence (GRADE) was evaluated and meta-analysis was performed. Mean difference (MD) and 95% confidence interval (CI) were provided.

Results: Four hundred eighty-six references were identified and four studies were included. Greater reduction in probing depth [MD = 0.32 (CI = 0.09, 0.56)] and greater clinical attachment level gain [MD = 0.41 (CI = 0.24, 0.57)] were observed when membrane and bone grafting were used. The risk of bias of included studies was low.

Conclusions: This present systematic review and meta-analysis demonstrated that treatment of Class II furcation defects in mandibular molars using membrane and bone grafing is significantly more efficacious than treatment with the exclusive use of membrane.

Keywords: *Periodontitis; Bone grafting; Membranes; Guided tissue regeneration; Furcation defects; Systematic review*

RESUMEN

Objetivo: El objetivo de la presente revisión sistemática y metanálisis fue comparar el tratamiento con membrana asociado a injerto óseo y el tratamiento exclusivamente con membrana en el abordaje de lesiones de furca grado II en molares mandibulares.

Materiales y Métodos: Se siguió la declaración de elementos de informe preferidos para revisiones sistemáticas y metanálisis (PRISMA). Las búsquedas se realizaron en cinco bases de datos (*PubMed, Web of Science, Scopus, Ovid y Lilacs*), en septiembre de 2021, sin restricción de año de publicación o idioma. Se incluyeron estudios que compararon membranas asociadas con injertos óseos y membranas exclusivamente en el tratamiento de lesiones de furca de grado II. Se excluyeron los estudios transversales, de casos y controles y las revisiones. Dos revisores realizaron la selección de estudios, la extracción de datos y la evaluación del riesgo de sesgo (MINORS). Se evaluó la certeza de la evidencia (GRADE) y se realizó un metanálisis. Se proporcionaron la diferencia de medias (DM) y el intervalo de confianza (IC) del 95%.

Resultados: Se identificaron 486 referencias y se incluyeron cuatro estudios. Se observó una mayor reducción en la profundidad de sondaje [DM = 0,32 (IC = 0,09, 0,56)] y una mayor ganancia en el nivel de inserción clínica [DM = 0,41 (IC = 0,24, 0,57)] cuando se utilizaron injertos de membrana y hueso. El riesgo de sesgo de los estudios incluidos fue bajo.

Conclusión: La presente revisión sistemática y metanálisis demostró que el tratamiento de los defectos de furca de grado II en molares mandibulares utilizando membrana e injertos de hueso es significativamente más eficaz que el tratamiento con el uso exclusivo de membrana.

Palabras Clave: *Periodontitis; Injerto óseo; Membranas; Regeneración tisular dirigida; Defectos de furcación; Revisión sistemática*

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INTRODUCTION

Periodontitis is an inflammatory disease of the dental support tissues with bacterial origin. Clinically, it is characterized by bleeding on probing, periodontal pocket, and loss of clinical attachment level. Dental mobility, halitosis, and gingival recession may also be in place.[1]

Additionally, furcation involvement in multiradicular teeth often appears with the progression of periodontitis.[2] Bone loss in the furcation area impairs hygiene and the possibility of biofilm disorganization, making the area vulnerable to bacterial colonization. Over time, furcation defects represent a risk factor for the loss of additional clinical insertion with an adverse impact on the prognosis and response to treatment.[3]

Regarding interventions, treatment of furcation defects is challenging due to the complicated anatomy and morphology of the furcation region, making debridement, adequate hygiene, and professional maintenance very difficult.[4] However, furcation defects are responsive to treatment and can have a favorable prognosis depending on the extent and under conditions of adequate control and hygiene.[5,6] The horizontal extent of furcation involvement is the parameter for classification of these lesions.[7]

Different strategies to treat furcation involvement have been used.[8-10] Subgingival instrumentation has been shown to be effective in Class I furcation defects.[11,12] However, this approach has limitations for cases of Class II or Class III involvement.[13] In these cases, other modalities, including open flap debridement, odontoplasty, tunneling, resective techniques, and periodontal regeneration have been employed.[14]

Guided tissue regeneration (GTR) has provided favorable outcomes in the treatment of Class II furcation involvement; However, it has a limited indication for Class III furcation defects.[15] In this technique, it is highly recommended the use of a physical barrier, precluding the migration of epithelial cells from the gingival tissue to the furcation area, allowing for the predominance of cells with regenerative capabilities.[10,16]

Based on this knowledge, different membranes have been evaluated and promising results have been disclosed,[14] with a reduction in furcation defects by means of the formation of periodontal ligament and new bone.[17-19]

The association of bone grafting with membranes lays the groundwork for periodontal regeneration.[19,20] However, the literature on the benefits of associating the bone grafting with the GTR technique is controversial. Therefore, the objective of the present systematic review and meta-analysis was to synthesize the literature on this issue and compare the treatment of bone grafting associated with membrane and the treatment only with membrane in the management of Class II furcation defects in mandibular molars.

MATERIALS AND METHODS

Protocol and registration

The reporting of the present systematic review and meta-analysis followed the set of guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-analyzes (PRISMA).[21]

The number CRD42021249102 was assigned to the protocol registered in the International Prospective Register of Systematic Reviews (PROSPERO).

Eligibility criteria

The following clinical question (PICO question) has been applied: Is the treatment of Class II furcation defects in lower molars with bone grafting and membrane more effective than the treatment with membrane exclusively?

Patients: Individuals with periodontitis and furcation defects Class II in mandibular molars.

Intervention: Membranes and bone grafting

Comparison: Membranes

Outcome: Reduction in probing depth and clinical attachment gain.

Clinical trials evaluating the treatment of Class II furcation defects comparing membranes associated with bone grafting and membranes exclusively with a minimum follow-up of six months were included. Cross-sectional, case-control studies, literature reviews, systematic reviews, published studies in the form of congress annals, and editor's comments were excluded.

Information sources

Two reviewers (GLCB and ACCS) conducted a search in the electronic databases *PubMed* (National Library of Medicine), *Web of Science* (Clarivate Analytics), *Scopus* (Elsevier), *Ovid* (Wolters Kluwer), and *Lilacs* in September 2021. The references of the studies included in this systematic review and meta-analysis and in narrative reviews available in the literature were also manually searched.

A search of the gray literature was conducted in OpenGrey.

No restriction was imposed in relation to language or year of publication.

Search

The following search strategy was deployed for the electronic searches in the databases used:

Pubmed, Web of Science, Medline Ovid, and Lilacs: ((“*furcation defects*” OR “*furcation*” OR “*furca*” OR “*furca involvement*”) AND (“*bone*” OR “*bone grafting*” OR “*bone transplantation*”) AND (“*molar tooth*” OR “*mandibular molars*” OR “*lower molars*”)).

Scopus: ((“*furcation defects*” OR “*furcation*” OR “*furca*” OR “*furca involvement*”) AND (“*bone*” OR “*bone grafting*” OR “*bone transplantation*”) AND (“*molar tooth*” OR “*mandibular molars*” OR “*lower molars*”)).

In case of missing relevant data or when the article had not been published yet, contact was made with the primary authors to request additional information or to retrieve the complete article.

Selection of studies

The references retrieved across the electronic searches were carefully scrutinized by two independent reviewers (GLCB and ACCS), who applied the inclusion and exclusion criteria. Initially, the titles/abstracts of the references were read and those meeting the eligibility criteria were included right away.

For references whose titles/abstracts did not provide enough information for determination of inclusion or exclusion, the same two reviewers obtained and read the full text applying the same eligibility criteria.

Those meeting such criteria were also in-

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cluded. Disagreements between reviewers in the selection of studies were resolved by discussion and consensus.

Data extraction process and extracted items

Data extracted from each included study were as follows: name of author(s) and year of publication, country, period evaluated (follow-up), parameters evaluated (outcomes), number of furcation defects, groups, and results of the included studies comparing membrane associated with bone grafting and membrane exclusively. Data collection was performed by two independent reviewers (GLCB and ACCS). Disagreements between reviewers were resolved by consensus.

Evaluation of the risk of bias of the studies

The Methodological Index for Non-Randomized Studies (MINORS) was the tool for risk of bias assessment of the included studies.[22] This qualitative evaluation tool is composed of eight items. Each item was scored from 0 to 2:
0, indicating that the item had not been reported in the article evaluated;
1, indicating that the item had been reported but inadequately;
and 2, indicating that the item had been reported adequately. Two reviewers (GLCB and ACCS) independently performed data extraction and the risk of bias evaluation of the studies. Divergences were resolved by consensus.

Measures used in the studies to report the results

The measures used in the included studies to assess the treatment of Class II furcation defects comparing membranes associated with bone grafting and membranes exclusively were mean and median.

Synthesis of results

Meta-analyses of continuous outcomes were conducted with the Reviewer Manager software (RevMan) [Computer program]. Version 5.4.
The Cochrane Collaboration, 2020. Mean difference (MD) and pooled Standard Deviation (SD) of the two groups (membrane associated with bone grafting and membrane exclusively) were used. For studies in which the pooled SD was unavailable, the following formula was used:
SDpooled = the square root of $(SD1)^2 + (SD2)^2$ /2.23 The results of the meta-analyses were provided in MD and confidence interval (CI).

Evaluation of the certainty of the evidence

The certainty of the evidence was evaluated with the Grading of Recommendations Assessment, Development and Evaluation (GRADE). The software GRADEpro was used. In each meta-analysis, the risk of bias, inconsistency, indirectness, imprecision, and publication bias were assessed.

For each item the certainty of the evidence could be downgraded by one or two levels depending on the existence of serious or very serious concerns. For each meta-analysis, the number of studies incorporated, the study design, the number of participants in each group, and the effect were also assessed. The certainty of the evidence could range from very low to high.[24]

RESULTS

Selection of studies

Six hundred and thirty-eight references were retrieved in the electronic search. From this total, nine studies were selected for evaluation of the text in its entirety. After reading the full texts, four studies[25-28] were included in this systematic review and meta-analysis.

Appendix 1 displays the list of the five excluded studies after assessment of the full texts and the reasons for exclusion. During the search, no study was identified throughout the references of the included articles or in any literature review retrieved. In Open Grey no additional reference was retrieved as well. Figure 1 displays a flow chart with all the steps of the systematic review and meta-analysis.

Characteristics of the studies

The characteristics of the four included studies[25-28] are described in Table 1. Two studies[25,26] were conducted in the United States, one in Egypt,[27] and the other in Yugoslavia.[28] All included studies were published in English.

In each study, the participants were distributed into two groups: a group treated with membrane associated with bone grafting and a group treated with membrane exclusively. In all studies, 103 furcation defects were submitted to regenerative therapy.

The follow-up time of the sample in the included studies was at least six months after the regenerative intervention. Three studies[25-28] had a follow-up of six months, while in one study, this time was six, nine, and twelve months.

In each study, participants were treated with a barrier membrane, which could be a vascularized marginal periosteal barrier membrane (MPM),[27] a barrier of Goretex® periodontal material (PTF),[28] a Guidor barrier,[25] and a graft/barrier of pure calcium sulfate.[26] Regarding bone grafting, three studies[25-27] used a demineralized freezedried bone allograft (DFDBA), while a single study[28] used granular porous hydroxyapatite (PHA) as bone grafting.

All studies had data on PD (probing depth). Three studies[25,27,28] provided data on CAL (clinical attachment level). Two studies included data on GR (gingival recession).

Outcomes

In general, three studies[25,27,28] included demonstrated that the group with membrane barrier associated with bone grafting had an improvement in at least one clinical parameter. Two studies[25,26] showed that the reduction in PD among individuals who had the furcation defects treated with the membrane associated with the bone grafting was significantly higher than among those who had the furcation defects treated with the membrane exclusively.

In two studies,[27,28] no difference in relation to the reduction of PD between groups was observed. In relation to CAL, one study[27] demonstrated that the reduction of this parameter among individuals who had the furcation defects treated with membrane combined with bone grafting was significantly higher than among individuals who had the furcation defects treated only with the membrane. In two studies,[25,28] no difference between groups was observed.

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Table 1: Impact of oral health on the quality of life of individuals with *Sjogren's Syndrome* through Oral Health Impact Profile questionnaire

Authors	Country	Follow-up time	Parameters evaluated	Sample size (n)	Groups	Outcome
Lekovic et al. 1990	Yugoslavia	6 months	PD, GR, CAL.	30 furcation defects	**Group 1:** Granular porous hydroxyapatite + Barrier of Gore-tex® periodontal material. **Group 2:** Barrier of Gore-tex® periodontal material	**PD** G1: T0 = 6.80; T1= 2.8 G2: T0 = 6.87; T1= 2.53 G1 x G2 (T1): p > 0.05 **GR** G1: T0 = 4.60; T1= 5.20 G2: T0 = 4.33; T1= 5.27 G1 x G2 (T1): p > 0.05 **CAL** G1: T0 = 11.00; T1= 8.60 G2: T0 = 10.87; T1= 8.20 G1 x G2 (T1): p > 0.05
Luepke et al. 1997	United States	6 months	PD, GR, CAL	28 furcation defects	**Group 1:** Guidor® barrier alone. **Group 2:** Guidor® barrier in combination with DFDBA. Demineralized Freeze-Dried Bone Allograft.	**PD** G1: T0 = 5.07; T1= 3.70 G2: T0 = 5.67; T1= 3.70 G1 x G2 (T1): p < 0.05 **GR** G1: T0 = 0.70; T1= 0.77 G2: T0 = 0.67; T1= 0.80 G1 x G2 (T1): p > 0.05 **CAL** G1: T0 = 5.77; T1= 4.40 G2: T0 = 6.33; T1= 4.50 G1 x G2 (T1): p > 0.05
Maragos et al. 2002	United States	6, 9 and 1 2 months	PD	25 furcation defects	Group 1: graft/barrier of pure calcium sulfate. Group 2: calcium sulfate + DFDBA.	**PD** G1 x G2 (T1): p < 0.01 G1 x G2 (T2): p < 0.01 G1 x G2 (T3): p < 0.01 G2 showed better PD results in the evaluated times
Hazzaa, et al. 2015	Egypt	6 months	PD, CAL	20 furcation defects	Group 1: Vascularized mar-marginal periosteal barrier membrane; Group 2: Vascularized marginal periosteal barrier membrane + DFDBA	**PD** G1: T0 = 3.60; T1= 1.40 G2: T0 = 3.80; T1= 1.60 G1 x G2 (T1): p > 0.05 **CAL** G1: T0 = 3.80; T1= 1.30 G2: T0 = 4.00; T1= 1.00 G1 x G2 (T1): p < 0.05

PD: Probing Depth. **CAL:** Clinical Attachment Level. **GR:** Gingival Recession. **DFDBA:** Demineralized Freeze-Dried Bone Allograft.

Figure 1. Flowchart of the systematic review and meta-analysis depicting the search and the selection of the included articles.

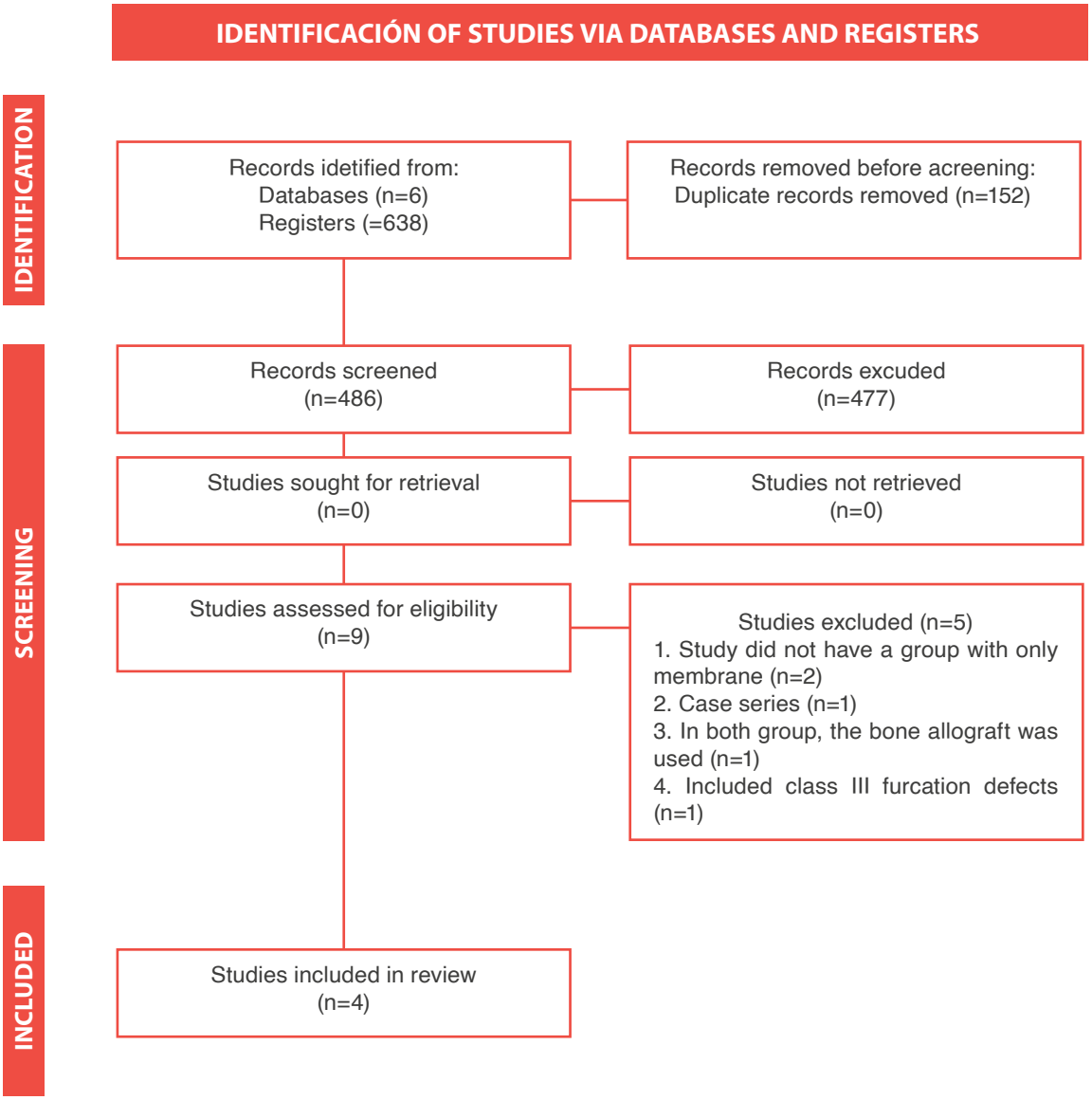

Figure 2. Meta-analysis comparing change in probing depth (PD) in cases treated with membrane and bone grafting and those treated with membrane only.

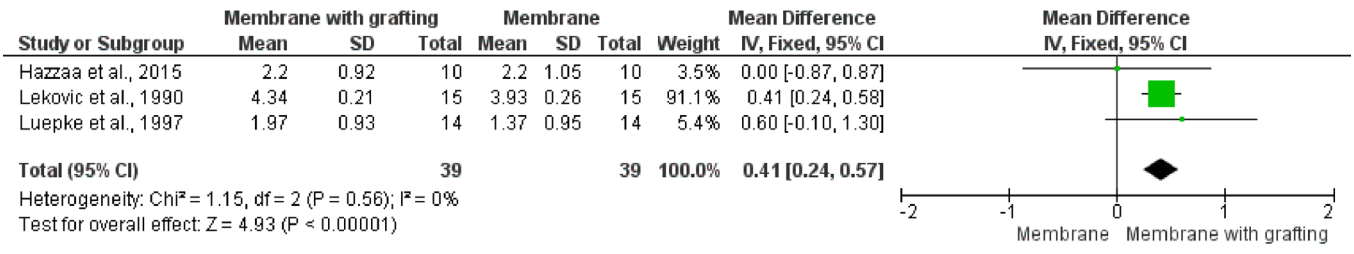

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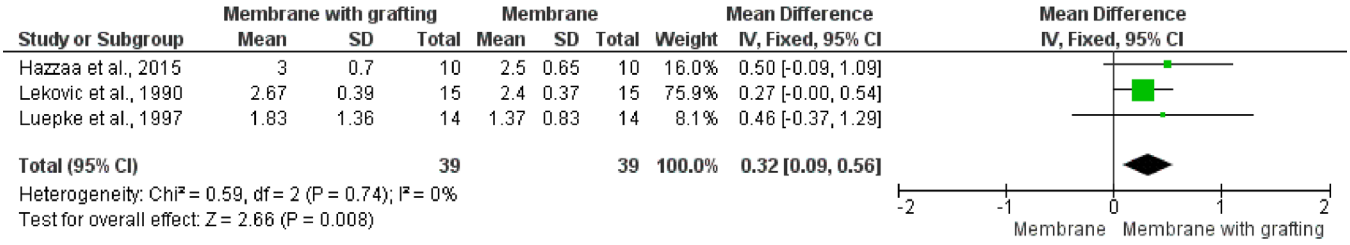
Figure 3. Meta-analysis comparing change in clinical attachment level (CAL) in cases treated with membrane and bone grafting and those treated with membrane only.



As regards GR, no difference between the group treated with membrane associated with bone grafting and the group treated with membrane exclusively was observed.[25,28]

Evaluation of the methodological quality of included studies

All studies included in the present systematic review and meta-analysis exhibited low risk of bias considering the critical appraisal tool used (Supplementary file 1).

The main deficiency identified was the unbiased assessment of the study endpoint and the lost to follow up less than 5%.

Meta-analyses

Figure 2 and Figure 3 displays the results of the meta-analyses. In the meta-analysis with which PD was evaluated, data of three studies[25,27,28] were aggregated. The result demonstrated that the reduction in PD in lower molars of individuals treated with membrane associated with bone grafting was significantly higher than in lower molars of individuals treated with membrane exclusively [MD = 0.41 (CI =0.24, 0.57)]. The fixed effect model was employed (Figure 2).

In the meta-analysis with which CAL was evaluated, data of three studies[25,27,28] were aggregated.

The result demonstrated that the improvement in CAL in lower molars of individuals treated with membrane associa-ted with bone grafting was significantly higher than in lower molars of individuals treated with membrane exclusively [MD = 0.32 (CI = 0.09, 0.56)]. The fixed effect model was employed (Figure 3).

Evaluation of the certainty of the evidence

In the meta-analysis assessing PD and in the meta-analysis assessing CAL, the certainty of the evidence was very low. The main issues were very serious concerns regarding risk of bias and serious concerns regarding imprecision (Supplementary file 2).

DISCUSSION

The present systematic review and meta-analysis compared the use of membrane associated with bone grafting and the use of membrane alone for treatment of Class

II furcation defects in mandibular molars. Satisfactory results in the treatment of Class II furcation involvement have been described in the literature for both techniques.[29-32]

However, the current scientific evidence on the benefits of the association of bone grafting with the membrane when compared to the use of the membrane alone has been a matter of debate.[20,33]

Our results demonstrated that the treatment of Class II furcation defects in mandibular molars using membrane associated with bone grafting is significantly more effective in comparison with the sole use of membrane. A greater reduction in PD and a greater insertion gain were observed when grafting and membrane were used. Similar results have been described in literature, corroborating the benefits of the association of grafting and membrane in the treatment of furcation defects.[30,33]

Several treatment modalities for furcation lesions have been proposed, including subgingival scaling, odontoplasty, tunneling, hemisection, and root resection.[34] In a retrospective study with a 107-month follow-up, non-surgical periodontal therapy and odontoplasty provided to teeth, for the most part, with Class I furcation defects a survival rate of 90.7%.

Treatment with tunneling in teeth, most of them with Class III furcation defects, also resulted in high levels of survival rate (92.9%).[35] Another retrospective study with a follow-up of 10 years demonstrated a survival rate of 93.1% for teeth with Class II and III furcation defects treated with rhizotomy or hemisection.[36] A recent systematic review demonstrated that, in class II and III furcation defects, non-surgical periodontal treatment and open flap debridement can present similar results in dental survival rates as root amputation/resection, root separation or tunneling.[7]

The study conducted by Eickholz *et al.*,[37] demonstrated a 100% survival rate at 6 months for teeth with Class II furcation involvement submitted to GTR. GTR is more effective in Class II furcation defects in mandibular molars and, therefore, is ade-quately indicated in these cases.[38]

It is important to emphasize that several factors, including the size of the root trunk, root conicity, and the divergence between roots must be carefully evaluated during treatment plan and definition of the prognosis.[39] Currently, polytetrafluoroethylene, enamel matrix derivative, and open-flap debridement barriers are the most commonly used treatments in cases of class II furcation defects, with no difference between them in terms of effectiveness.[40]

A recent systematic review and meta-analysis demonstrated that regenerative surgery of class II furcation is superior to open flap debridement, resulting in benefits regarding furcation improvement (closure/conversion), horizontal and vertical attachment level gain as well as probing depth reduction.[8]

The use of enamel matrix derived in the treatment of class II furcation defects does not seem to contribute to a clinical improvement that justifies its use associated with the therapies/biomaterials.[15] Despite the availability of different treatment modalities, furcation involvement is often a concern and is a complicating factor for the prognosis.[41]

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A recent retrospective cohort study[42] including 222 individuals with 1329 molars under a 10-year monitoring period in supportive periodontal care demonstrated that the risk of loss of molars with grade II furcation involvement is 2.63 times greater than molars without furcation involvement, while the risk of molars with grade III furcation involvement is 5.23 times greater.

Extraction is also an option for teeth with furcation lesions and should be carefully evaluated taking factors, such as patient expectations, smoking, bone loss, and others into account.[11,41] For those teeth that will inevitably be extracted, the placement of implants is an alternative strategy for rehabilitation with high chances of success and high survival rates.[43] However, history of periodontitis is an important risk factor for peri-implantitis,[44,45] a disease that has a complex approach, poor prognosis, increasing the risk of dental implant failure.[46-48]

Several materials have been used in GTR for the treatment of teeth with furca-tion involvement. The studies included in this systematic review and meta-analysis used different barrier materials, such as vascularized marginal periosteal barrier membrane, the barrier of Goretex® perio-dontal material,[28] Guidor® barrier,[25] and barrier of pure calcium sulfate.[26]

Resorbable and non-resorbable membranes, such as ex-panded polytetrafluoroethylene (e-PTFE) and highdensity polytetrafluoro-ethylene (d-PTFE), are available as a barrier in the GTR technique. Resorbable membranes may be either animalderived and synthetic, made from organic aliphatic polymers (poly-glycolide or polylactide)[49]

No significant dif-ferences between membrane types have been observed for most clinical procedures.[8] Factors, such as the nature of the defect and the grafting material must be taken into account when the type of membrane is chosen.

Biofilm control is also an important factor that must be considered in periodontal surgical planning, including GTR.[44] The presence of biofilm interferes with tissue healing, negatively impacting the results of the surgical procedure and, consequently, the prognosis.[50] Therefore, biofilm control is essential for restoring or maintaining periodontal tissue health.[4] Clinical studies that evaluate periodontal surgical procedures should include and report data on biofilm control in the assessed sample. The assessment of this variable is fundamental in the interpretation of the results.

Among the studies included in this systematic review and meta-analysis, two studies[25,28] reported data on participants' plaque index. No difference between groups at baseline for plaque index was observed. The small number of existing studies in the literature for inclusion and their reduced sample size are limitations of the present systematic review and meta-analysis.

However, we emphasize the comprehensive search and the careful process for selection of articles, with well-defined inclusion criteria, the evaluation of only Class II furcation defects, and a minimum clinical follow-up

time of 6 months. In addition, all included studies had low risk of bias. The evaluation of scientific evidence regarding the treatment of furcation lesions is important, as it influences the prognosis and the elaboration of the treatment plan.

Hypothesis

Treatment of Class II furcation defects in mandibular molars with membrane and bone graft has better clinical results than membrane alone, including greater reduction in probing depth and clinical attachment level.

Critical Evaluation

The association of the bone graft to the membrane should be considered in the treatment of furcation defects, instead of using only the membrane.

CONCLUSION

Considering the limitations of the present systematic review and meta-analysis, the treatment of Class II furcation defects in mandibular molars with bone graft associated with the membrane results in greater improvement of the clinical parameters PD and CAL, when compared to the treatment with membrane alone.

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CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest.

ETHICS APPROVAL

Not applicable.

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AUTHORS' CONTRIBUTIONS

Barcelos G: Conceived the ideas; Collected the data.

Santos A: Conceived the ideas; Collected the data.

Esteves Lima R: Conceived the ideas; Collected the data.

Barcelos G: Collected the data.

Esteves Lima R: Analysed the data; Did the meta-analysis data and all authors all authors wrote and approved the article.

Abreu L: Analysed the data; Did the meta-analysis data and all authors all authors wrote and approved the article.

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ANNEXES

Appendix 1 – Studies excluded after full text analysis and reasons for exclusion.

STUDY	REASON FOR EXCLUSION
ASIMUDDIN, S. et al. Effect of autologous platelet rich fibrin in human mandibular molar grade II furcation defects - A randomized clinical trial. Journal of Clinical and Diagnostic Research, v. 11, n. 4, p. ZC73–ZC77, 2017.	Study did not have a group treated with membrane-only.
CALONGNE, K. B. et al. Clinical comparison of microporous biocompatible composite of PMMA, PHEMA and calcium hydroxide grafts and expanded polytetrafluoroethylene barrier membranes in human mandibular molar Class II furcations. A case series. Journal of periodontology, v. 72, n. 10, p. 1451–1459, out. 2001.	Case series.
SCOTT, T. A. et al. Comparison of Bioabsorbable Laminar Bone Membrane and Non-Resorbable ePTFE Membrane in Mandibular Furcations. Journal of Periodontology, v. 68, n. 7, p. 679–686, 1997.	In both groups bone allograft (DFDBA) was used.
ANDEREGG, C. R. et al. Clinical evaluation of the use of decalcified freeze-dried bone allograft with guided tissue regeneration in the treatment of molar furcation invasions. Journal of periodontology, v. 62, n. 4, p. 264–268, 1991.	Included Class III furcation defects.
AGARWAL, A. et al. Platelet-rich fibrin in combination with decalcified freeze-dried bone allograft for the management of mandibular degree II furcation defect: A randomised controlled clinical trial. Singapore dental journal, v. 39, n. 1, p. 33–40, 2019.	Sample with both groups treated with bone grafting (PRF and DFDBA).

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ANNEXES

Appendix 2 – Risk of bias assessment of studies according to the Methodological Index for Non-Randomized Studies (MINORS).

	Lekovic et al. 1990	Luepke et al. 1997	Maragos et al. 2002	Hazza et al. 2015
1. A clearly stated aim	2	2	2	2
2. Inclusion of consecutive patients	1	0	2	2
3. Prospective collection of data	2	2	2	2
4. Endpoints appropriate to the aim of the study	2	2	2	2
5. Unbiased assessment of the study endpoint	1	0	0	2
6. Follow-up period appropriate to the aim of the study	2	2	2	2
7. Loss to follow up less than 5%	1	0	0	2
8. Prospective calculation of the study size	1	2	2	2
TOTAL	12	10	12	16