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UNIVERSIDADE ESTADUAL PAULISTA
"JÚLIO DE MESQUITA FILHO"

ANA PAULA VELOSO DE LINHARES

**Avaliação dos efeitos da movimentação dentária
induzida sobre molares de ratos submetidos à
luxação extrusiva**

**Araçatuba - SP
2021**

ANA PAULA VELOSO DE LINHARES

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Dissertação de Mestrado apresentada à Faculdade de Odontologia de Araçatuba, da Universidade Estadual Paulista “Júlio de Mesquita Filho”, como parte dos requisitos para obtenção do título de Mestre em Odontologia, área de concentração em Clínica Integrada.

Orientador: Prof. Dr. Marcos Rogério de Mendonça

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Dedico este trabalho aos meus pais e às minhas irmãs, pilares da minha formação como ser humano, meus maiores incentivadores e fonte de amor. Dedico também ao meu namorado, Gabriel, com carinho e gratidão por toda sua compreensão e carinho. Obrigada por tudo. Amo vocês.

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À Faculdade de Odontologia de Araçatuba, Universidade Estadual Paulista “Júlio de Mesquita Filho” – UNESP

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*O conhecimento é um copo que nunca enche,
sábio é aquele que permanece tentando.*

Thales de Oliveira Gomes

Linhares APV. Avaliação dos efeitos da movimentação dentária induzida sobre molares de ratos submetidos à luxação extrusiva [dissertação]. Araçatuba: Faculdade de Odontologia da Universidade Estadual Paulista; 2021.

RESUMO

A luxação extrusiva é caracterizada pela separação parcial ou total entre raiz e ligamento periodontal (LPD), podendo causar danos ao cemento por meio da compressão radicular contra o osso alveolar, além da ruptura do feixe vasculo-nervoso apical. A movimentação dentária induzida (MDI) é uma resposta de caráter inflamatório do conjunto LPD e osso alveolar, mesmas estruturas envolvidas na luxação extrusiva, a um estímulo provocado por uma força ortodôntica. Uma informação escassa na literatura é o efeito provocado pela movimentação dentária induzida em dentes que foram submetidos à luxação extrusiva (LE). O objetivo deste trabalho foi avaliar o efeito da movimentação dentária induzida sobre dentes submetidos à luxação extrusiva. Para a realização deste pesquisa, foram utilizados 40 ratos machos Wistar divididos em 4 grupos: o grupo controle (GC); o grupo Luxação Extrusiva (LE); o grupo Movimentação Dentária Induzida (MDI); e o grupo LEMDI. A LE foi exercida por uma força de 1.500Cn e a MDI por uma força de 50Cn por um período de 7 dias, após o qual os animais foram eutanasiados, as peças submetidas ao processamento laboratorial e obtidas lâminas que foram coradas por meio de hematoxilina e eosina. Foi realizada uma análise descritiva considerando-se quatro áreas ao redor da raiz méso-vestibular: A1 região da crista óssea mesial, A2 região médio- cervical da face mesial, A3 região médio-apical da face distal e A4 região cervical da face. Em cada uma destas áreas foram observados os evento: reabsorção óssea frontal e à distância, reabsorção radicular, infiltrado infamatório e hemorragia no LPD. Os resultados mostraram que a associação entre MDI e LE provocou grande destruição óssea na crista óssea na A1, moderadas reabsorções radiculares na A3, ausência de infiltrado inflamatório em todas as áreas e hemorragia exuberante do LPD nas áreas 2 e 3. Nos demais grupos, tais observações foram ausentes ou quando presentes consideradas muito discretas. Conclui-se que, uma vez que a MDI em dentes submetidos a LE aumenta as áreas de hemorragia no LPD, provoca grande perda óssea frontal na crista alveolar, a MDI deveria ser interrompida, aguardando-se o período de reparo do LPD.

Palavras-chave: Avulsão dentária. Técnicas de movimentação dentária.
Traumatismos dentários.

Linhares APV. Evaluation of the effects of induced tooth movement on rat molars submitted to extrusive dislocation [dissertation]. Araçatuba: School of Dentistry, Paulista State University; 2021.

ABSTRACT

Extrusive dislocation is characterized by partial or complete separation of the root and periodontal ligament (PDL), which can cause damage to the cementum by compressing the root against the alveolar bone, and rupture of the apical nerve-vascular bundle. Induced tooth movement (ITM) is an inflammatory response of the whole of the SMP and alveolar bone, the same structures involved in extrusive dislocation, to a stimulus caused by an orthodontic force. Little information is available in the literature on the effect caused by induced tooth movement in teeth that underwent extrusive luxation (EL). The aim of this study was to evaluate the effect of induced tooth movement on teeth submitted to extrusive dislocation. For this research 40 male Wistar rats were used, divided into 4 groups: The control group (CG); the Extrusive luxation group (EL); the Induced Tooth Movement group (ITM); and the LEMDI group. The LE was exerted by a force of 1,500Cn and the ITM by a force of 50Cn for a period of 7 days, after which the animals were euthanized, the specimens were submitted to laboratory processing and slides were obtained and stained using hematoxylin and eosin. A descriptive analysis was performed considering four areas around the mesial vestibular root: A1 mesial bone crest region, A2 mesial face mid-cervical region, A3 distal face mid-apical region and A4 face cervical region. In each of these areas the following events were observed: frontal and distal bone resorption, root resorption, inflammatory infiltrate and hemorrhagia in the PDL. The results showed that the association between MDI and LE caused great bone destruction in the bone crest in A1, moderate root resorption in A3, absence of inflammatory infiltrate in all areas, and exuberant hemorrhage of the PDL in areas 2 and 3. In the other groups, such observations were absent or when present considered very discrete. We conclude that, since ITM in teeth submitted to EL increases the areas of hemorrhage in the PDL, causes great frontal bone loss in the alveolar ridge, ITM should be interrupted, waiting for the period of repair of the PDL.

Keywords: Tooth avulsion. Tooth movement techniques. Dental trauma.

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LISTA DE SIGLAS

cm Centímetro.

cN Centinewton.

H.E. Técnica de coloração das lâminas com hematoxilina e eosina.

LE Luxação extrusiva.

LEMDI Grupo luxação extrusiva com movimentação dentária induzida.

LPD Ligamento periodontal.

MDI Movimentação dentária induzida.

mm Milímetro, equivalente a milésima parte do metro.

RR Reabsorção radicular.

TDA Traumatismo dentoalveolar.

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1 INTRODUÇÃO

O traumatismo dentoalveolar (TDA) é considerado um problema de saúde pública entre crianças e adolescentes por todo o mundo.¹⁻⁴ Além de ser, seguido da cárie dental, a segunda condição bucal de ocorrência mais comum em diversos países⁵, o TDA resulta em significativos custos financeiros e sociais para crianças, suas famílias e financiadores de serviços públicos.^{6,7} Sua prevalência pode variar entre 4% e 33%⁸⁻¹⁷, de acordo com o tipo de lesão e a população estudada.⁹

Os TDAs podem se definir como lesões dos tecidos periodontais, englobando as fraturas radiculares, fratura do processo alveolar, luxações extrusiva, intrusiva e lateral, e avulsão.¹⁵

As luxações ocorrem com frequência tanto na dentição decídua quanto na permanente.^{18,19} A luxação extrusiva é caracterizada pela separação parcial ou total entre raiz e ligamento periodontal (LPD), causando um afrouxamento e deslocamento do dente na direção axial. Nos casos mais severos o movimento extrusivo pode causar danos ao cemento por meio da compressão radicular contra o osso alveolar causando uma perda óssea marginal, reabsorção radicular (RR), além da ruptura do feixe vasculo-nervoso apical, necrose pulpar e obliteração do canal radicular, podem ocorrer com o evoluir do tempo, piorando o prognóstico do elemento dental.^{15,20-22}

Dependendo da extensão da lesão na superfície radicular, em casos de luxações extrusivas mais severas, pode lesar uma área maior, e nessa área pode ter ausência do ligamento periodontal e cementoblastos, e assim ocorrer uma reabsorção por substituição, mesmo com o tempo.¹⁵

A movimentação dentária induzida (MDI) é uma resposta do conjunto LPD e osso alveolar a um estímulo provocado por uma força ortodôntica. Esta resposta é de caráter inflamatório pois envolve todo o mecanismo biológico envolvido na inflamação em busca do reparo dos tecidos agredidos.²³

A aplicação de forças ortodônticas sobre dentes que já apresentam um histórico de traumatismo dentoalveolar, tal como uma luxação extrusiva, induz ao raciocínio de que este TDA pode deixar o osso alveolar e a raiz mais susceptíveis às respostas inflamatórias.²⁴

Na clínica odontológica, aproximadamente 10% de crianças indicadas ao tratamento ortodôntico já sofreram TDA²⁵, pois a faixa etária para indicação de tratamento ortodôntico e do TDA coincidem, e estudos mostram uma susceptibilidade maior à reabsorção radicular inflamatória decorrente de forças ortodônticas em dentes previamente traumatizados.²⁶⁻³⁰ Esta relação ainda não está totalmente esclarecida, o que é demonstrado pela escassez de trabalhos científicos, o que justifica novos estudos para auxílio no esclarecimento dos eventos biológicos presentes nesta situação.

O conhecimento destes efeitos é fundamental para orientar o clínico em relação aos riscos de reabsorção radicular, e assim orientá-lo sobre o plano de tratamento a ser elaborado frente aos possíveis riscos.

6 CONCLUSÃO

Nas condições experimentais deste trabalho, e com base nos resultados obtidos, pode-se concluir que a MDI em dentes previamente submetidos à LE promove alterações morfológicas no LPD, aumentando as áreas de hemorragia no LPD, sendo portanto estas alterações, predominantemente de natureza vascular.

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ANEXOS

ANEXO A – Aprovação do Comitê de Ética no Uso de Animais da Faculdade de Odontologia de Araçatuba

	UNIVERSIDADE ESTADUAL PAULISTA "JÚLIO DE MESQUITA FILHO"	
CAMPUS ARAÇATUBA FACULDADE DE ODONTOLOGIA FACULDADE DE MEDICINA VETERINÁRIA		
CEUA - Comissão de Ética no Uso de Animais CEUA - Ethics Committee on the Use of Animals		
CERTIFICADO		
<p>Certificamos que o Projeto de Pesquisa intitulado "Avaliação histopatológica e imunoistoquímica do reparo em dentes submetidos à luxação extrusiva e da movimentação dentária induzida em dentes traumatizados". Processo FOA nº 2014-00815, sob responsabilidade de Marcos Rogério de Mendonça apresenta um protocolo experimental de acordo com os Princípios Éticos da Experimentação Animal e sua execução foi aprovada pela CEUA em 02 de Setembro de 2014.</p>		
VALIDADE DESTE CERTIFICADO: 30 de Setembro de 2016, DATA DA SUBMISSÃO DO RELATÓRIO FINAL: até 30 de Outubro de 2016.		
CERTIFICATE		
<p>We certify that the study entitled "Histopathological and immunohistochemical evaluation of repair in teeth submitted to extrusive luxation and of induced tooth movement in traumatized teeth", Protocol FOA. nº 2014-00815, under the supervision of Marcos Rogério de Mendonça presents an experimental protocol in accordance with the Ethical Principles of Animal Experimentation and its implementation was approved by CEUA on September 02, 2014.</p>		
VALIDITY OF THIS CERTIFICATE: September 30, 2016. DATE OF SUBMISSION OF THE FINAL REPORT: October 30, 2016.		
 Prof. Dra. Maria Gisela Laranjeira Coordenadora da CEUA CEUA Coordinator		
CEUA - Comissão de Ética no Uso de Animais Faculdade de Odontologia de Araçatuba Faculdade de Medicina Veterinária de Araçatuba Rua José Bonifácio, 1185 - Vila Mendonça, CEP: 16015-050 - ARAÇATUBA - SP Fone: (16) 3606-3204 E-mail: CEUA@uepa.unesp.br		

ANEXO B – Normas do Periódico “Dental Traumatology”

Author Guidelines

Sections

- [1. Submission](#)
- [2. Aims and Scope](#)
- [3. Manuscript Categories and Requirements](#)
- [4. Preparing the Submission](#)
- [5. Editorial Policies and Ethical Considerations](#)
- [6. Author Licensing](#)
- [7. Publication Process After Acceptance](#)
- [8. Post Publication](#)
- [9. Editorial Office Contact Details](#)

1. SUBMISSION

Authors should kindly note that submission implies that the content has not been published or submitted for publication elsewhere except as a brief abstract in the proceedings of a scientific meeting or symposium.

Once the submission materials have been prepared in accordance with the Author Guidelines, manuscripts should be submitted online at <https://mc.manuscriptcentral.com/dt>

[Click here](#) for more details on how to use ScholarOne.

Data protection

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Preprint policy

[Please find the Wiley preprint policy here.](#)

This journal does not accept articles previously published on preprint servers.

For help with submissions, please contact: EDToffice@wiley.com

2. AIMS AND SCOPE

Dental Traumatology is an international peer-reviewed journal which aims to convey scientific and clinical progress in all areas related to adult and pediatric dental traumatology. It aims

to promote communication among clinicians, educators, researchers, administrators and others interested in dental traumatology. The journal publishes original scientific articles, review articles in the form of comprehensive reviews or mini reviews of a smaller area, short communication about clinical methods or techniques, Letters to the Editor and case reports. The journal focuses on the following areas *as they relate to dental trauma*:

- Epidemiology and Social Aspects
- Periodontal and Soft Tissue Aspects
- Endodontic Aspects
- Pediatric and Orthodontic Aspects
- Oral and Maxillofacial Surgery / Transplants/ Implants
- Esthetics / Restorations / Prosthetic Aspects
- Prevention and Sports Dentistry
- Epidemiology, Social Aspects, Education and Diagnostic Aspects.

3. MANUSCRIPT CATEGORIES AND REQUIREMENTS

Original Research Articles in all areas related to adult and pediatric dental traumatology are of interest to Dental Traumatology. Examples of such areas are Epidemiology and Social Aspects, Periodontal and Soft Tissue Aspects, Endodontic Aspects, Pediatric and Orthodontic Aspects, Oral and Maxillofacial Surgery/Transplants/Implants, Esthetics/Restorations/Prosthetic Aspects, Prevention and Sports Dentistry, Epidemiology, Social Aspects, Education and Diagnostic Aspects.

Review Papers: *Dental Traumatology* commissions specific topical review papers and mini reviews of small areas of interest. The journal also welcomes uninvited reviews. Reviews should be submitted via the online submission site and are subject to peer-review.

Comprehensive Reviews should be a complete coverage of a subject discussed with the Editor-in-Chief prior to submission. Comprehensive review articles should include a description of the search strategy of the relevant literature, the inclusion criteria, exclusion criteria, method for evaluation of papers, level of evidence, etc.

Mini Reviews cover a smaller area and may be written in a more free format.

Case Reports: Dental Traumatology may accept Case Reports that illustrate unusual and clinically relevant observations or management. Case reports should demonstrate something new or unique, and they should not present common clinical scenarios. Case reports should be kept brief (within 3-4 printed pages) and need not follow the usual division into Material and Methods etc. There should be an Abstract written as a short paragraph. The Abstract should not be structured with specific sections (i.e. do not use aims, methods, results, conclusions). The Introduction should be kept short. Thereafter the case is described followed by a short Discussion. Case reports should have adequate follow-up to demonstrate the outcome of the treatment provided or the long-term prognosis of the presented problem. Typically, cases with treatment should have at least 4-5 years follow-up radiographs, photographs, etc. to show the outcome. Case reports are subject to peer review.

Short Communications of 1–2 pages may be accepted for publication. These papers need not follow the usual division into Material and Methods, etc., but should have an Abstract. They should contain important new information to warrant publication and may reflect improvements in clinical practice such as introduction of new technology or practical approaches. They should conform to high scientific and high clinical practice standards. Short communications are subject to peer review.

Letters to the Editor may be considered for publication if they are of broad interest to dental traumatology. They may deal with material in papers already published in Dental Traumatology or they may raise new issues, but they should have important implications for dental traumatology.

Meetings: advance information about and reports from international meetings are welcome, but should not be submitted via the online submission site – these should be sent directly to the Editorial Office: EDToffice@wiley.com

4. PREPARING THE SUBMISSION

Cover Letters

Cover letters are not mandatory; however, they may be supplied at the author's discretion.

Parts of the Manuscript

The manuscript should be submitted in separate files: title page; main text file; figures.

Title Page

The title page should contain:

1. A short informative title containing the major key words. The title should not contain abbreviations (see [Wiley's best practice SEO tips](#)) and should not be a question about the aim. The title should not be a statement of the results or conclusions;
2. A short running title of less than 60 characters;
3. The full names of the authors;
4. The author's institutional affiliations where the work was conducted, with a footnote for the author's present address if different from where the work was conducted;
5. Acknowledgments.

Authorship

Please refer to the journal's authorship policy the [Editorial Policies and Ethical Considerations section](#) for details on eligibility for author listing.

Acknowledgments

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section. Financial and

material support should also be mentioned. Thanks to anonymous reviewers are not appropriate.

Conflict of Interest Statement

Authors will be asked to provide a conflict of interest statement during the submission process. For details on what to include in this section, see the section 'Conflict of Interest' in the [Editorial Policies and Ethical Considerations section](#) below. Submitting authors should ensure they liaise with all co-authors to confirm agreement with the final statement.

Main Text File

As papers are double-blind peer reviewed, the main text file should not include any information that might identify the authors.

The main text file should be presented in the following order:

1. Title, abstract, and key words;
2. Main text;
3. References;
4. Tables (each table complete with title and footnotes);
5. Figure legends.

Do not use any sub-headings within the above sections.

The text in the main document should be double-spaced.

Figures and supporting information should be supplied as separate files.

Abstract

The abstract is limited to 300 words in length and should contain no abbreviations. The abstract should be included in the manuscript document uploaded for review as well as inserted separately where specified in the submission process. The abstract should convey a brief background statement plus the essential purpose and message of the paper in an abbreviated form. For Original Scientific Articles, the abstract should be structured with the following headings: Background/Aim, Material and Methods, Results, and Conclusions. For other article types (e.g. Case Reports, Reviews Papers, Short Communications) headings are not required and the Abstract should be in the form of a paragraph that briefly summarizes the paper.

Keywords

Please provide 3–6 keywords. Keywords should be carefully chosen to ensure they reflect the content of the manuscript.

Main Text of Original Articles

- As papers are double-blind peer reviewed, the main text file should not include any information that might identify the authors.
- The main text should be divided into the following sections: Introduction, Material and Methods, Results and Discussion.

- **Introduction:** This section should be focused, outlining the historical or logical origins of the study. It should not summarize the results and exhaustive literature reviews are inappropriate. Give only strict and pertinent references and do not include data or conclusions from the work being reported. The introduction should close with an explicit, but brief, statement of the specific aims of the investigation or hypothesis tested. Do not include details of the methods in the statement of the aims.
- **Materials and Methods:** This section must contain sufficient detail such that, in combination with the references cited, all clinical trials and experiments reported can be fully reproduced. As a condition of publication, authors are required to make materials and methods used freely available to academic researchers for their own use. Describe your selection of observational or experimental participants clearly. Identify the method, apparatus and procedures in sufficient detail. Give references to established methods, including statistical methods, describe new or modified methods. Identify precisely all drugs used by their generic names and route of administration. If a method or tool is introduced in the study, including software, questionnaires, and scales, the author should state the license this is available under and any requirement for permission for use. If an existing method or tool is used in the research, the authors are responsible for checking the license and obtaining the permission. If permission was required, a statement confirming permission should be included in the Methods and Materials section.
- **Results** should clearly and simply present the observations/results without reference to other literature and without any interpretation of the data. Present the results in a logical sequence in the text, tables and illustrations giving the main or most important findings first. Do not duplicate data in graphs and tables.
- **Discussion** usually starts with a brief summary of the major findings. Repetition of parts of the Introduction or of the Results sections should be avoided. Statements and interpretation of the data should be appropriately supported by original references. A comment on the potential clinical relevance of the findings should be included. The Discussion section should end with a brief conclusion, but the conclusion should not be a repeat of the results and it should not extrapolate beyond the findings of the study. Link the conclusions to the aim of the study.
Do not use sub-headings in the Discussion section, The Discussion should flow from one paragraph to the next in a cohesive and logical manner.
- **Randomised control clinical trials** should be reported using the Preferred Reporting Items for Randomized Trials in Endodontics (PRIRATE) 2020 guidelines. A PRIRATE checklist and flowchart (as a Figure) should also be completed and included in the submission material. The PRIRATE 2020 checklist and flowchart can be downloaded from: <http://pride-endodonticguidelines.org/prirate/>

It is recommended that authors consult the following papers, which explains the rationale for the PRIRATE 2020 guidelines and their importance when writing manuscripts:

-
- Nagendrababu V, Duncan HF, Bjørndal L, Kvist T, Priya E, Jayaraman J, Pulikkotil SJ, Pigg M, Rechenberg DK, Vaeth M, Dummer P. PRIRATE 2020 guidelines for reporting randomized trials in Endodontics: a consensus-based development. *Int Endod J.* 2020 Mar 20. doi: 10.1111/iej.13294. (<https://onlinelibrary.wiley.com/doi/abs/10.1111/iej.13294>)
- Nagendrababu V, Duncan HF, Bjørndal L, Kvist T, Priya E, Jayaraman J, Pulikkotil SJ, Dummer P. PRIRATE 2020 guidelines for reporting randomized trials in Endodontics: Explanation and elaboration. *Int Endod J.* 2020 April 8. doi: 10.1111/iej.13304 (<https://onlinelibrary.wiley.com/doi/abs/10.1111/iej.13304>)

Main Text of Review Articles

- As papers are double-blind peer reviewed, the main text file should not include any information that might identify the authors.
- The main text should comprise an introduction and a running text structured in a suitable way according to the subject treated. A final section with conclusions may be added.
- The main text should be double-spaced.

Main Text of Case Studies

Case reports should be written using the Preferred Reporting Items for Case reports in Endodontics (PRICE) 2020 guidelines. A PRICE checklist and flowchart (as a Figure) should also be completed and included in the submission material. The PRICE 2020 checklist and flowchart can be downloaded from: <http://pride-endodonticguidelines.org/price/>.

It is recommended that authors consult the following papers, which explains the rationale for the PRICE 2020 guidelines and their importance when writing manuscripts:

- Nagendrababu V, Chong BS, McCabe P, Shah PK, Priya E, Jayaraman J, Pulikkotil SJ, Setzer FC, Sunde PT, Dummer PMH. PRICE 2020 guidelines for reporting case reports in Endodontics: a consensus-based development. *Int Endod J.* 2020 Feb 23. doi: 10.1111/iej.13285. (<https://www.ncbi.nlm.nih.gov/pubmed/32090342>)
- Nagendrababu V, Chong BS, McCabe P, Shah PK, Priya E, Jayaraman J, Pulikkotil SJ, Dummer PMH. PRICE 2020 guidelines for reporting case reports in Endodontics: Explanation and elaboration. *Int Endod J.* (<https://onlinelibrary.wiley.com/doi/abs/10.1111/iej.13300>)

References

All references should be numbered consecutively in order of appearance and should be as complete as possible. In text citations should be superscript numbers. Journal titles must be abbreviated; correct abbreviations may be found in the following: [MEDLINE](#), [Index Medicus](#), or [CalTech Library](#).

Submissions are not required to reflect the precise reference formatting of the journal (use of italics, use of capital letters, bold etc.). However it is important that all key elements of each reference are included. Please see below for examples of reference content requirements.

For more information about this reference style, please see the [Vancouver Reference Style Guide](#).

Reference examples follow:

Journal Articles

Lam R, Abbott PV, Lloyd C, Lloyd CA, Kruger E, Tennant M. Dental trauma in an Australian Rural Centre. *Dent Traumatol* 2008; 24: 663–70.

Text book chapters

Andreasen J, Andreasen F. Classification, etiology and epidemiology. IN: Andreasen JO, Andreasen FM, eds. *Textbook and Color Atlas of Traumatic Injuries to the Teeth*. 3rd Edn. Munksgaard, Copenhagen. 1994;151–80.

Thesis or Dissertation

Lauridsen, E. Dental trauma – combination injuries. Injury pattern and pulp prognosis for permanent incisors with luxation injuries and concomitant crown fractures. Denmark: The University of Copenhagen. 2011. PhD Thesis.

Corporate Author

European Society of Endodontology. Quality guidelines for endodontic treatment: consensus report of the European Society of Endodontology. *Int Endod J* 2006;39;921–30.

American Association of Endodontists. The treatment of traumatic dental injuries. Available at: URL:

'http://www.aae.org/uploadedfiles/publications_and_research/newsletters/endodontics_colleagues_for_excellence_newsletter/ecfe_summer2014%20final.pdf'. Accessed September 2015.

Tables

Tables should be self-contained and complement, not duplicate, information contained in the text. They should be supplied as editable files, not pasted as images. Legends should be concise but comprehensive – the table, legend, and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

Figure Legends

Legends should be concise but comprehensive – the figure and its legend must be understandable without reference to the text. Include definitions of any symbols used and define/explain all abbreviations and units of measurement.

Figures

Although authors are encouraged to send the highest-quality figures possible, for peer-review purposes, a wide variety of formats, sizes, and resolutions are accepted.

[Click here](#) for the basic figure requirements for figures submitted with manuscripts for initial peer review, as well as the more detailed post-acceptance figure requirements.

Color Figures. Figures submitted in color will be reproduced in colour online. Please note, however, that it is preferable that line figures (e.g. graphs and charts) are supplied in black and white so that they are legible if printed by a reader in black and white.

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The journal does not publish material such as Appendices. They should be submitted as Figures or Tables.

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Note: if data, scripts, or other artefacts used to generate the analyses presented in the paper are available via a publicly available data repository, authors should include a reference to the location of the material within their paper.

General Style Points

The following points provide general advice on formatting and style.

- **Use double spacing for all text.**
- **Abbreviations, Symbols and Nomenclature:** Abbreviations should be kept to a minimum, particularly those that are not standard. Non-standard abbreviations must be used three or more times – otherwise they should not be used. The full words should be written out completely in the text when first used, followed by the abbreviation in parentheses. Consult the following sources for additional abbreviations: 1) CBE Style Manual Committee. Scientific style and format: the CBE manual for authors, editors, and publishers. 6th ed. Cambridge: Cambridge University Press; 1994; and 2) O'Connor M, Woodford FP. Writing scientific papers in English: an ELSE-Ciba Foundation guide for authors. Amsterdam: Elsevier-Excerpta Medica; 1975.
- As *Dental Traumatology* is an international journal with wide readership from all parts of the world, the **FDI Tooth Numbering system** MUST be used. This system uses two digits to identify teeth according to quadrant and tooth type. The first digit refers

to the quadrant and the second digit refers to the tooth type – for example: tooth 11 is the maxillary right central incisor and tooth 36 is the mandibular left first molar. Alternatively, the tooth can be described in words. Other tooth numbering systems will not be accepted.

- **Numbers:** Numbers under 10 are spelt out as words, and not shown as numerals, except for: measurements with a unit (8mmol/l); age (6 weeks old), or lists with other numbers (11 dogs, 9 cats, 4 gerbils).
- **When referring to a figure,** spell the word out (e.g. Figure 2 shows the patient's injuries on initial presentation). When referring to a figure at the end of a sentence, enclose it in parentheses – e.g. *The patient's maxillary central incisor was repositioned and splinted* (Figure 5).
- **Page numbering:** During the editorial process, reviewers and editors frequently need to refer to specific portions of the manuscript, which is difficult unless the pages are numbered. Hence, authors should number all of the pages consecutively at the bottom of the page.
- Scientific papers should not be written in the 1st person – that is, avoid using “we”, “our”, etc. As examples, use words such as the ‘current study’, “the results”, “samples were tested”, instead of “our study”, “our results”, “we tested”, etc.
- Care must be taken with the use of tense (usually the past tense is the most appropriate).
- Care must be taken with the use of singular and plural words.
- **Trade Names:** Chemical substances should be referred to by the generic name only. Trade names should not be used. Drugs should be referred to by their generic names. If proprietary drugs have been used in the study, refer to these by their generic name, mentioning the proprietary name and the name and location of the manufacturer in parentheses.

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The acceptance criteria for all papers are the quality and originality of the research and its significance to journal readership. Manuscripts are double-blind peer reviewed, hence, the names of the reviewers will not be disclosed to the author(s) who have submitted the paper and the name(s) of the author(s) will not be disclosed to the reviewers.

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Papers will only be sent to review if the Editor-in-Chief determines that the paper meets the appropriate quality and relevance requirements.

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Suppliers of materials should be named and their location (town, state/county, country) included.

Sequence Data

Nucleotide sequence data can be submitted in electronic form to any of the three major collaborative databases: DDBJ, EMBL, or GenBank. It is only necessary to submit to one database as data are exchanged between DDBJ, EMBL, and GenBank on a daily basis. The suggested wording for referring to accession-number information is: 'These sequence data have been submitted to the DDBJ/EMBL/GenBank databases under accession number U12345'. Addresses are as follows:

- DNA Data Bank of Japan (DDBJ): www.ddbj.nig.ac.jp
- EMBL Nucleotide Archive: ebi.ac.uk/ena
- GenBank: www.ncbi.nlm.nih.gov/genbank

Proteins sequence data should be submitted to either of the following repositories:

- Protein Information Resource (PIR): pir.georgetown.edu

- SWISS-PROT: expasy.ch/sprot/sprot-top

Conflict of Interest

The journal requires that all authors disclose any potential sources of conflict of interest. Any interest or relationship, financial or otherwise that might be perceived as influencing an author's objectivity is considered a potential source of conflict of interest. These must be disclosed when directly relevant or directly related to the work that the authors describe in their manuscript. Potential sources of conflict of interest include, but are not limited to: patent or stock ownership, membership of a company board of directors, membership of an advisory board or committee for a company, and consultancy for or receipt of speaker's fees from a company. The existence of a conflict of interest does not preclude publication. If the authors have no conflict of interest to declare, they must also state this at submission. It is the responsibility of the corresponding author to review this policy with all authors and collectively to disclose with the submission ALL pertinent commercial and other relationships.

Dental Traumatology requires Conflict of Interest forms from all authors. The corresponding author must upload completed Col forms for all authors when submitting the manuscript.

You can [download the Conflict of Interest Disclosure Form here](#).

Funding

Authors should list all funding sources in the Acknowledgments section. Authors are responsible for the accuracy of their funder designation. If in doubt, please check the Open Funder Registry for the correct nomenclature: <https://www.crossref.org/services/funder-registry/>

Authorship

The list of authors should accurately illustrate who contributed to the work and how. All those listed as authors should qualify for authorship according to the following criteria:

1. Have made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; and
2. Been involved in drafting the manuscript or revising it critically for important intellectual content; and
3. Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; and
4. Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section (for example, to recognize contributions from people who provided technical help, collation of data, writing assistance, acquisition of funding, or a department chairperson who provided general support). Prior to submitting the article all authors should agree on the order in which their names will be listed in the manuscript.

Additional Authorship Options. Joint first or senior authorship: In the case of joint first authorship, a footnote should be added to the author listing, e.g. 'X and Y should be considered joint first author' or 'X and Y should be considered joint senior author.'

Data Sharing and Data Accessibility

Dental Traumatology expects that data supporting the results in the paper will be archived in an appropriate public repository. Authors are required to provide a data availability statement to describe the availability or the absence of shared data. When data have been shared, authors are required to include in their data availability statement a link to the repository they have used, and to cite the data they have shared. Whenever possible the scripts and other artefacts used to generate the analyses presented in the paper should also be publicly archived. If sharing data compromises ethical standards or legal requirements then authors are not expected to share it.

See the [Standard Templates for Author Use](#) to select an appropriate data availability statement for your dataset.

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Accepted article received in production

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Once the paper is typeset, the author will receive an email notification with full instructions on how to provide proof corrections.

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8. POST PUBLICATION

Access and sharing

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- The corresponding author and co-authors can nominate up to ten colleagues to receive a publication alert and free online access to the article.

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9. EDITORIAL OFFICE CONTACT DETAILS

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