

WEST AFRICAN JOURNAL OF ORTHODONTICS

VOLUME 8, NUMBER 2

ISSN 2315-9502

DECEMBER 2019

**Dental Arch Dimensions in Sickle
Cell Anaemia**



**Tooth Movement in the resolution
of Crowding**



**Oral Ornaments and Orthodontic
Treatment**



Management of Midline Diastema



**Orthodontic Management of
Anterior Crowding**

Orthodontic Management of a Bilaterally Missing Lower Incisors with Moderate Upper Anterior Crowding.

Adeyemi TE^a, Otuyemi OD^b

Abstract

Background: Hypodontia is also known as tooth agenesis and it refers to a situation whereby one or more teeth are absent due to lack of formation of one or more teeth. This shows how a case of bilaterally missing mandibular lateral incisors was managed.

Methods: The case was managed with the use of fixed orthodontic appliance therapy and crown reshaping.

Results: The maxillary anterior crowding was resolved; the space created by the missing mandibular lateral incisors; over malocclusion traits identified were resolved satisfactorily.

Conclusion:

The malocclusion was successfully treated with upper and lower fixed orthodontic appliance therapy.

An aesthetic and stable occlusion was achieved at the completion of treatment. Hawley's retainers were used to ensure stability of treatment outcome.

Keywords: Hypodontia, Lateral incisors, mandibular incisors, Crowding, Crown conversion

Authors' Affiliation(s):

^aOrthodontic Unit, Department of Child Dental Health, Aminu Kano Teaching Hospital, Kano/ Bayero University, Kano. ^bOrthodontic Unit, Department of Child Dental Health, Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Osun state.

Correspondence:

Adeyemi TE
Orthodontic Unit, Department of Child Dental Health, Aminu Kano Teaching Hospital, Kano/
Bayero University, Kano.
topmost007@yahoo.com;
teadeyemi.cdh@buk.edu.ng
08060152099

Introduction

Hypodontia is also known as tooth agenesis and it refers to a situation whereby one or more teeth are absent due to lack of formation of one or more teeth. It is the most common craniofacial malformation in humans which can occur as part of a known genetic syndrome or as a non-syndromic isolated trait.¹

The mandibular second premolars, maxillary lateral incisors, followed by the mandibular incisors and maxillary premolars are the most affected teeth.²

Hypodontia may affect the speech, aesthetics, chewing and balance of the occlusion due to unfavorable occlusal contacts as a result of the supra-eruption of the opposing teeth or how the teeth adjacent to it is inclined, thereby affecting the quality of life too.^{3,4}

A number of treatment options are available for hypodontia which includes: space closure with the repositioning of the canines mesially, followed by teeth recontouring; or space opening followed by prosthetic replacement of the missing lateral incisor.^{5,6}

This manuscript discusses the treatment options available for hypodontia and reports the orthodontic treatment given to a 33-year-old female with bilateral hypodontia of the mandibular lateral incisors.

Case report

A 33-year-old female with chief complaint of not liking the arrangement of her teeth. She was very

concerned about the overlapping of the upper front teeth and the spaces in the lower front jaw.

She was willing to undergo treatment to correct the arrangement of her upper teeth and to close the spaces in the lower teeth in order to improve her appearance and self-esteem. She had no known systemic disease. Extraoral evaluation revealed a concave profile with facial symmetry and normal vertical proportions. Lips were potentially competent with a Jackson's lip pattern of 2 over 1; intraoral evaluation revealed a bilaterally missing lower lateral incisors with other complement of teeth present in both jaws from the central incisors to the third molar in all quadrants. The molar relationships were Angle's Class I on both sides with skeletal pattern 2 complicated by: bilaterally missing mandibular lateral incisors, increased overjet of 8mm, deep and traumatic overbite, disto-labial rotation of maxillary central incisors; moderate upper anterior crowding; lower midline deviation to the left by 1mm, mild lower anterior segment spacing, bilaterally impacted mandibular third



Figure 1: Pre treatment photographs

molars. (Figures 1 and 2)

The panoramic radiograph showed the presence of all the teeth except the mandibular lateral incisors; it also shows impacted third molars in all quadrants; cephalometric analysis showed values as presented in Figure 3 and Table 1.

Treatment objectives: The objectives of treatment in this patients were to: To level and align upper and lower arches, correct overbite, correct midline deviation, correct overjet, close spaces, crown conversion of the mandibular canines to laterals and mandibular first premolars to canines bilaterally, Surgically extract impacted molars, maintain angle's class I relationship and retention of the achieved treatment outcomes.

Treatment options: Based on the complaints of the patient and evidence from available literature, the following options were considered possible:

1. Interdisciplinary management with restorative dentist for crown conversion of the mandibular canines to laterals and mandibular first premolars to canines bilaterally together with Upper and lower fixed appliance with

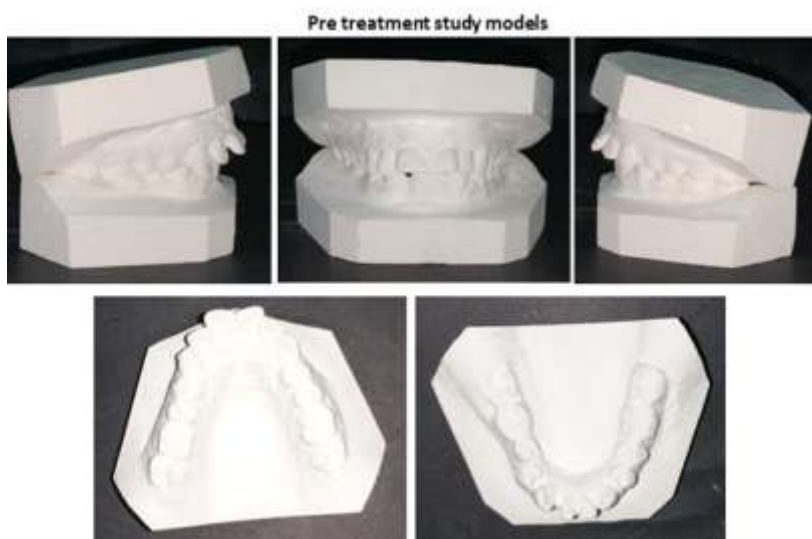


Figure 2: Pre treatment study models

extractions of the maxillary first premolars.

- Interdisciplinary management with restorative dentist to replace missing lateral incisors bilaterally together with Upper and lower fixed appliance with extractions of the maxillary first premolars.

Treatment plan

Interdisciplinary management with a restorative dentist for crown conversion of the mandibular canines to laterals and mandibular first premolars to canines bilaterally, with Upper and lower fixed appliance with extractions of the maxillary first premolars was adopted for the patient for the correction of her malocclusion.

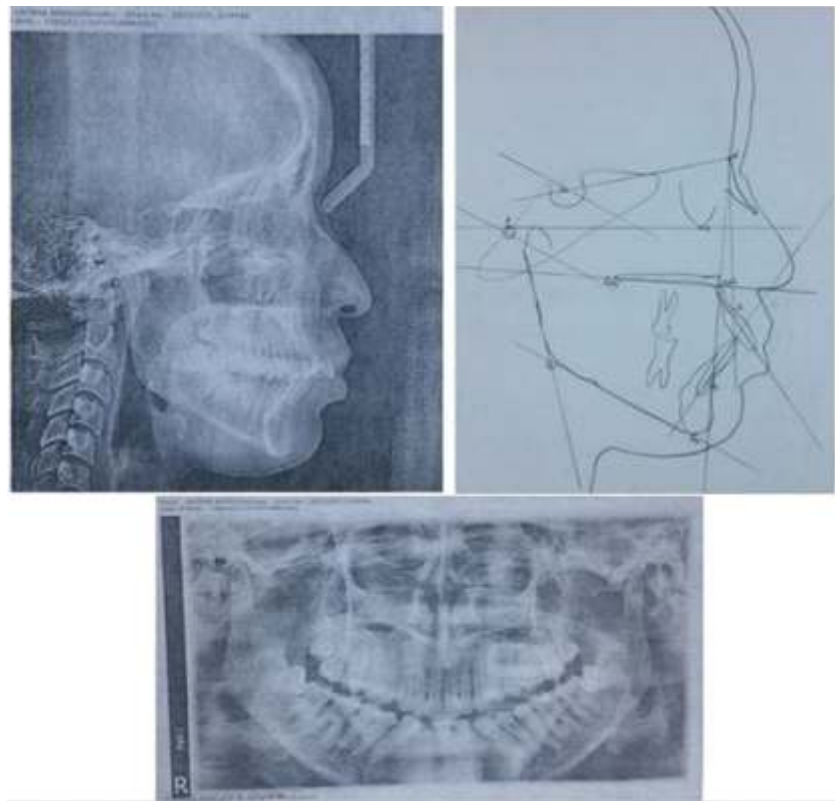


Figure 3: Pre treatment radiographs

Table 1: Pre treatment Cephalometric Analysis

Parameter	Obtained values	Normal Value	Analysis
SNA	80°	85.3 ±2.7°	Decreased
SNB	74,5°	82.5±3.5 °	Decreased
ANB	5.5°	2-4 °	Increased
SKP	2		
U1-MXP	128°	119-127 °	Increased
L1-MDP	96.5°	96-104 °	Normal
U1-L1	113°	108-116 °	Normal
MMPA	23°		
FMPA	26.5°	24-26 °	
LFHP	54.5%		

Treatment progression: Treatment began with oral hygiene prophylaxis and extraction of impacted third molars in all quadrants and maxillary first premolars.

This was followed two weeks later by cementing molar bands on all the first molar teeth, using glass ionomer cement and bonding Roth 022 prescription

brackets, using orthodontic composite. Lacebacks were put in all quadrants from canine to first molar; Levelling and alignment was achieved by the sequential use of nickel titanium wires (014, 016, 018, 020 inches) and stainless steel wires (020, 0.016 X 0.025, 0.019 X 0.025 inches).

The intra-arch spaces were closed by the use of elastic chains on 019 by 025 inches stainless steel wire; the midline deviation was corrected by use of

Class II elastics on the left and class III elastics on the right side. (Figure 4)

Conversion of mandibular canine to lateral incisor and premolar to canine, bilaterally done by the restorative dentist and the brackets repositioned thereafter.

Active treatment took 15 months. Hawley's retainers were used to maintain the positions of the teeth after treatment.

Treatment progress



Figure 4: Treatment progress photographs



Figure 5: Post treatment photographs



Figure 6: Post treatment Hawley's retainers



Figure 7: Post treatment study models

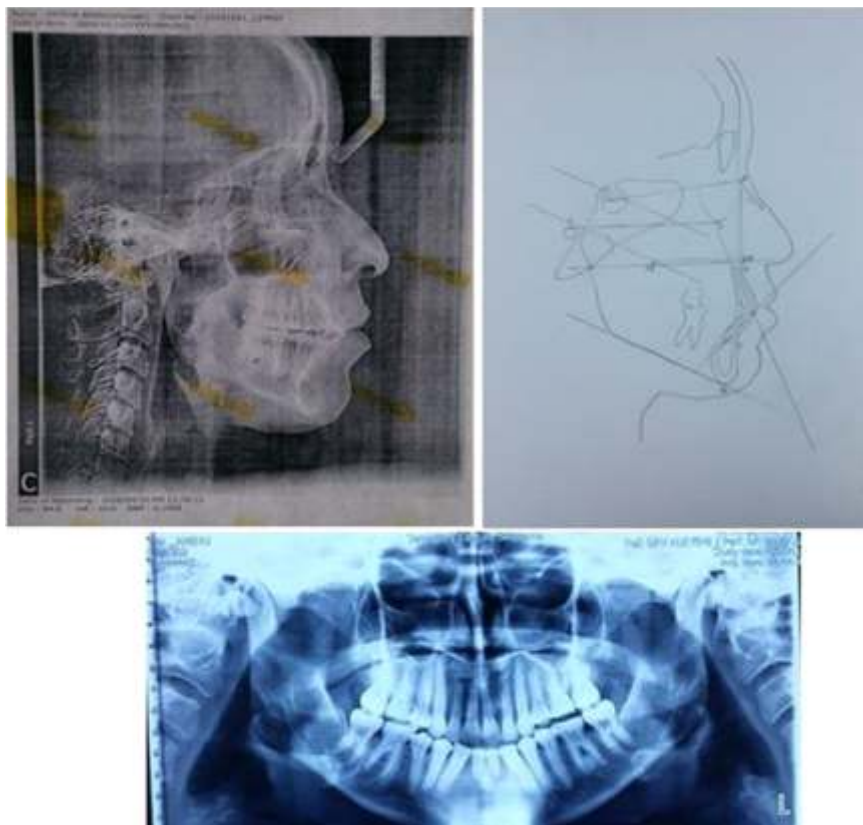


Figure 8: Post treatment radiographs

Table 2: Pre treatment Cephalometric Analysis

Parameter	Post treatment	Pre treatment	Normal Value	Analysis
SNA	83	80°	85.3 ±2.7°	Normal
SNB	80	74,5°	82.5±3.5 °	Normal
ANB	3	5.5°	2-4 °	Normal
SKP	1	2		
U1-MXP	112	128°	119-127 °	Decreased
L1-MDP	112	96.5°	96-104 °	Increased
U1-L1	112	113°	108-116 °	Normal
MMPA	26.5	23°		
FMPA	25.5	26.5°	24-26 °	
LFHP	60	54.5%		



Figure 9: Pre and Post treatment photographs

Treatment results

The teeth were well aligned and leveled at the end of treatment. The Class I molar and canine relationships were maintained. Lip competence was achieved with a satisfactory consonant smile; the mandibular midline was corrected; overjet and overjet reduced; spaces closed; crown conversions of mandibular canines to lateral incisors and mandibular first premolars to canines (Figures 5, 6, 7 and 9)

The post treatment cephalometric analysis showed that the normal mandibular and maxillary incisal angles were achieved with satisfactory soft tissue balance; root parallelism was also achieved. (Figure 8, Table 2).

Discussion

We treated a case of moderate crowding of the maxillary anterior with bilaterally missing mandibular lateral incisors amongst other malocclusion traits.

In order to create space for the resolution of the maxillary anterior crowding and also have space to reduce the overjet, extractions of the first maxillary premolars were carried out.

References

1. Al-Ani AH, Antoun JS, Thomson WM, Merriman TR, Farella M. Hypodontia an update on its etiology, classification, and clinical management. *Biomed Res Int*. 2017;2017:9378325–9378325
2. Polder BJ, Van't Hof MA, Van der Linden FP, Kuijpers-Jagtman AM. A meta-analysis of the prevalence of dental agenesis of permanent teeth. *Community Dent Oral Epidemiol*. 2004;32(3):217–226
3. Redua RB, Redua PC, Ferreira CE, Ortega AO. Orthodontic approach to treat complex hypodontia using miniscrews in a growing patient. *Dental Press J Orthod*. 2015;20(4):82–90
4. Kotecha S, Turner PJ, Dietrich T, Dhopatkar A. The impact of tooth agenesis on oral health-related quality of life in children. *J Orthod*. 2013;40(2):122–129
5. Kinzer GA, Kokich Jr VO. Managing congenitally missing lateral incisors part 1: canine substitution. *J Esthet Restor Dent*. 2005;17:5–10
6. De-Marchi LM, Pini NIP, Hayacibara PM, Silva RS, Pascotto RC. Congenitally missing maxillary lateral incisors Functional and periodontal aspects in patients treated with implants or space closure and tooth recontouring. *Open Dent J*. 2012;6:248–254
7. Werther, R and Rothenber. F. Anodontia: A review of its aetiology with presentation of a case. *Am J Orthod* 1939. 25:61-81
8. Endo, T, Ozoe R, Kubota M, Akiyama and Shimooka S. A survey of hypodontia in Japanese orthodontic patients. *Am J Orthod Dentofacial Orthop* 2006. 129:29-35

The mandibular lateral incisors were bilaterally missing and after discussing treatment options with the patient, we agreed that the best option for the patient was to close the space orthodontically and carry out crown conversions accordingly. Among the Caucasians,⁷ the maxillary lateral incisors are the most commonly missing teeth while the mandibular incisors are the most commonly missing among the Japanese.⁸

The treatment of this patient progressed according to plan starting with surgical extractions of impacted teeth, routine extractions of the maxillary first premolar teeth, fixed orthodontic appliance therapy, crown conversion and finally retention. The objectives of treatment were achieved as shown in the steps outlined.

Conclusion

This shows that the malocclusion in the 33 year old female was successfully treated with upper and lower fixed orthodontic appliance therapy.

An aesthetic and stable occlusion was achieved at the completion of treatment. Hawley's retainers were used to ensure stability of treatment outcome.

Instructions for Authors

West African Journal of Orthodontics is a peer-reviewed journal published by affiliated Orthodontic Groups and Associations in the West African Sub region. The journal gives priority to reports of outstanding clinical and experimental and epidemiological works on malocclusion, dento-facial defects as well as important contributions related to common orthodontic problems in children, adolescents and adults worldwide.

Submission

Manuscripts and registered letters should be sent to: the Editor, West African Journal of Orthodontics, Department of Child Dental Health, Faculty of Dentistry, College of Health Sciences Obafemi Awolowo University, Ile-Ife, Osun State. Nigeria.

Manuscripts in MS word attachments may also be submitted via Email to wajoeditorinchief@yahoo.com, in addition to hard copies. Tables, figures and text should be included in the same file if possible. Authors may submit their research works by email only; such manuscripts need not be simultaneously sent by post.

However, photographs and/or figures need to be sent separately as hard copy (under figures and illustrations).

Acceptance

Manuscripts should meet the following criteria: original material, clear writing, appropriate study methods, valid data, and reasonable conclusions supported by the data, in short, they should contain important information on topic of general orthodontic interest.

Peer-review Process

All the manuscripts that adhere to its style and Instructions for Authors are referred to peer-review. Some of them are rejected immediately after an inhouse review. The rejection at this stage is due to insufficient originality, serious scientific flaws or absence of message. The remaining articles are sent to at least two reviewers who are experts in the subject. Manuscripts are reviewed with due respect for authors' confidentiality, and the identity of peer reviewers is also kept confidential. A decision is made from 6 to 12

weeks according to the response from reviewers, revision by the author(s) and reappraisal on the revision.

The accepted manuscripts are subjected to editorial revision to comply with the requirements on language and style of the journal. The rejected manuscript is not returned to authors but its copies are kept for 3 months to answer any queries. The copyright of the accepted and published articles is held by the journal and all the published materials cannot be reproduced or published elsewhere, in whole or part, without the written permission from the editor.

Duplicate Submission

Manuscripts are considered with the understanding that they have not been published previously and are not under consideration by another publication. The author should alert the editor if the work includes subjects about which a previous report has been published. A research paper submitted to this journal should not overlap by more than 10% with the previously published material or work submitted elsewhere, which would be considered as duplicate publication. If in doubt, authors may forward copies of the published work or material submitted elsewhere to this journal for decision making.

Proofs and Reprints

The corresponding author of the accepted article shall be supplied with the proof. Corrections on the proof should be restricted to errors only and no substantial additions/deletions should be made. No addition or deletion in the names of the authors is permissible at this stage. A copy of the issue carrying the article is supplied free of charge to the authors.

Reprints may be ordered on payment in advance.

Categories of Articles

Articles can be sent as editorials, original articles, review articles, special communications, brief reports, case reports, letters to editor, commentaries, or for images section.

address. They are mostly included under Events of Interest free of cost. This journal reserves the right to be selective in publishing these announcements.

Preparing Manuscripts

Manuscripts should be prepared in accordance with the Uniform Requirements for Manuscripts submitted to Biomedical Journals. 2 A summary of technical requirements for preparing the manuscript is provided below:

- Three copies of the manuscript should be submitted.
- Use 1 side of standard size 21.6x27.9 cm A4, white bond paper, with margins of at least 2.5 cm on each side.
- Double-space throughout including title page, abstract, text, acknowledgements, references, tables and figure legends. Start each of these sections (in same order) on a new page, numbered consecutively in the upper right hand corner, beginning with the title page.
- Use at least 12 point font size (Times New Roman or Arial).
- Submit photographs and transparencies in a separate heavy paper envelope (enclosed in cardboard, to prevent bending during mail handling).
- Conventional units are preferred with SI units in parenthesis, if available. The metric system is preferred for the expression of length, area, mass and volume.
- Use nonproprietary names of material rugs, devices and other products.
- All manuscripts should be accompanied by a signed statement by all authors regarding authorship, responsibility, financial disclosure and acknowledgements, as per standard format (Appendix J)[23 1 Those sending their manuscript through email are also required to submit this form by post with original signatures.

Manuscripts not fulfilling the technical requirements shall be returned to the authors without initiating the peer-review process.

Title Page

The page should contain (i) the title of the article: which should be concise but informative (simpler the title the better; preferably it should contain all the key words to help electronic retrieval reliably); (ii) a short

running title of less than 40 characters placed at the foot end of the title page; (iii) initials and surname of each author with the highest academic degree(s) and designation at the time when the work was done; (iv) details of the contribution of each author; (v) name of department(s) and institution(s) to which the work should be attributed; (vi) disclaimers, if any; (vii) name, address, telephone, fax, email address of the corresponding author, (viii) source(s) of support in the form of grants, equipment, drugs or all of these; and (ix) declaration on competing interests.

Authorship

All persons designated as authors should qualify for the authorship. Authorship credit should be based on substantial contributions to (i) concept and design, or acquisition of data, or analysis and interpretation of data; (ii) drafting the article or revising it critically for important intellectual content; and (iii) final approval of the version to be published. Conditions 1, 2 and 3 must all be met. Participation solely in the acquisition of funding or the collection of data does not justify authorship. All such people who contributed to the work but do not satisfy all the conditions should be listed in the acknowledgements.

Authors are responsible for obtaining written permissions from everyone acknowledged by name. One of the authors shall act as guarantor of the paper and he/she should take the responsibility for the integrity of the work as a whole, from its inception to published article.

Authors should provide a description of what each author contributed on the title page. Subsequently, no names can be added or deleted without written permission of the editor. Written consent of authors whose names are being deleted should be obtained.

This journal reserves the right to satisfy itself regarding the specific role of each listed author to justify authorship. All authors must give signed consent to publication (Appendix 1).

Competing Interest

Competing interest for a given manuscript exists when the author has ties to activities that could inappropriately influence his or her judgment, whether or not judgment is in fact affected. Financial relationships with industry for example, through employment, consultancies, stock ownership, honoraria, expert testimony, either directly or through immediate family, are usually considered to be the most important competing interests. However, conflicts can

Original Article

Original articles should report original research relevant to basic and clinical orthodontics including randomized trials, intervention studies, studies of screening and diagnostic tests, cohort studies, cost effectiveness analyses and case control studies. While reporting randomized controlled trials (RCT), authors must attempt to be in conformity with the consolidated standards of reporting trial.

(CONSORT) statements

Each manuscript should be accompanied with a structured abstract (divided into background, methods, results and conclusions) in no more than 250 words. Four to five key words to facilitate indexing should be provided in alphabetical order along with the abstract. The text should be divided in sections on introduction, methods, results, discussion and conclusion.

Acknowledgment section may be included where necessary. Number of tables and figures should be limited to the very relevant ones and may be compressed if necessary. The typical text length for such contributions is 2500-3 500 words (excluding title page, abstract, tables, figures, acknowledgments and references).

Brief Report

Short accounts of original studies are published as brief reports. The text should be divided into sections, i.e., abstract, introduction, methods, results and discussion.

Abstract should be of 100-150 words highlighting the aims, methods and main results along with 3-4 key words.

The text should contain no more than 1500 words, 3 illustrations or tables and up to 20 references, preferably recent publications.

Review Article

State-of-the-art review articles or systematic, critical assessments of literature are also published. Normally a review article on a subject already published in the West African Journal of Orthodontics is not accepted for a period of 3 years.

The typical length for review articles is 2000-3000 words, excluding tables, figures, and references.

Authors submitting review manuscripts should include a structured abstract of around 200 words describing the need and purpose of review, methods used for selection, extraction and synthesis of data, and main conclusions.

Clinical cases highlighting uncommon malocclusion condition, orthodontic treatment techniques are published as case reports. Single case reports are usually not accepted, unless some new or unusual aspect regarding aetiopathogenesis, diagnosis or management is brought out that adds to the existing body of knowledge. The text should not exceed 1000 words and is divided into sections, i.e., abstract, introduction, case report and discussion. The number of tables/figures should be limited to 2. Ten recent references are acceptable. A maximum of 3 or 1 author is permitted from the principle and each of the associated departments respectively. Thus, case reports from only one investigative department can have a maximum of 3 authors.

Letter to Editor(s)

Letters commenting upon a recent article in the West African Journal of Orthodontics are welcome.

Such letters should be received within 6 months of the article's publication. At the editorial board's discretion, a letter may be sent to authors! experts for comments and both letter and reply may be published together. Letters may also relate to other topics of interest to orthodontists and others, and/or useful clinical observations. Letters should not be more than 400 words. The number of authors should not exceed 2, including the authors' reply in response to a letter commenting upon an article published in this journal.

Images Section

A short text of about 150 words depicting the condition with color photographs (vide infra) is needed.

Normally only clinical photographs are accepted but accompanying skiagrams or pathological images could also be considered for publication.

Photographs should be of high quality, clearly identify the condition and preferably add to the existing knowledge.

Personal Viewpoint

Such articles are published on topical orthodontic issues including social aspects. It is expected that the authors have sufficient credible experience on the subject for giving viewpoints. These should not exceed 1500 words.

Notes, News and Events of Interest

Announcements for conferences, symposia, meetings or courses may be sent for publication in advance. The announcements should provide title, date(s) and place of the event and contact address, telephone, and email

occur for other reasons, such as personal relationships, academic competition and intellectual passion. If any of the authors have accepted reimbursement for attending symposium, a fee for speaking, fee for organizing educational reach, funds for a member of the staff of consultation fees from an organization that may in: way gain or lose financially from the result of the study, review, editorial or letter, a competing interest would be deemed to exist. If any of the authors had been employed by an organization that may in any way gain or lose financially from the publication, or if any of them hold stocks or shares in such an organization, competing interest would be deemed to exist. If competing interest exists, the author(s) must disclose them while submitting the manuscript.

Abstract and Key Words

The second page should carry an abstract in case of original article (250 words), review article (200 words), brief report (100-150 words), and case report (50 words), respectively. For original article and reviews, the abstract should be structured as detailed earlier. For brief reports, the abstract should state the purpose of the study, basic methodology, main findings (giving specific data and statistical significance) and key conclusion(s). Below the abstract, authors should provide 3-5 key words for indexing; terms from the Medical Subject Headings (MESH) list of Index Medicus should be used. The basic structure of a paper follows the well known acronym IMRAD, which stands for Introduction (what questions was asked), Methods (how was it studied), Results (what was found) and Discussion⁴.

Introduction

The introduction must clearly state the question that the author(s) tried to answer in the study. It may be necessary to briefly review the relevant literature. Only cite those references that are essential to justify the proposed study.

Materials and Methods

The methods section should describe, in a logical sequence, how the study was designed (e.g., how randomization was done), carried out (e.g., how subjects were chosen or excluded, ethical considerations, accurate details of materials used, exact drug dosage and form of treatment, etc.) and data were analyzed (e.g., an estimate of the power of the study, exact test used for statistical analysis, etc.). For standard methods, appropriate references are sufficient, but if standard methods are modified these should be clearly brought out.

Authors should provide complete details of any new methods or apparatus used (manufacturer's name and address in parentheses).

Ethics

When reporting experiments on human subjects, authors should indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1964, as revised in 2000.

They should indicate whether the study was approved by the Institutions' Ethical Committee, and whether informed consent was obtained from the study participants. They should not use patients' names, initials, or hospital numbers, especially in illustrative material. This journal reserves the right to reject a manuscript on ethical grounds, on the basis of recommendations of its "Ethical Committee", even if the research has been cleared by the institutional ethical committee. Moreover, when reporting experiments on animals, authors should indicate whether the institutional and national guide for the care and use of laboratory animals was followed.

Statistics

Authors should describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, they meet to quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals). Actual P values are provided rather than stating as just <0.05 or >0.05 etc. References for the design of the study and statistical methods should be to standard works when possible (with pages stated) rather than to papers in which the designs or methods were originally reported. Any general-use computer programs used should be specified and statistical terms, abbreviations, and most symbols be defined.

Results

This section should include only relevant, representative data and not all information collected during the study. Major findings should be presented clearly and concisely. Text, tables, and illustrations should be used sensibly while avoiding repeating in the text all the data depicted in the tables or illustrations and emphasizing or summarizing only important observations. Tables and figures should be restricted to those needed to explain the argument of the paper and to assess its support. It is necessary to cite the tables in the text and type them on separate sheets. It may also be useful to mention what the study did not find.

Discussion

Discussion ordinarily should not be more than one third of the total length of the manuscript. This section should include a summary of the major findings, their relationship to other similar studies, limitations of methods and implications of these findings in future research. Conclusions should be linked to the goals of the study. Unqualified statements and conclusions which are not completely supported by the data should be avoided. Authors should also refrain from making statements on economic benefits and costs unless their manuscript includes economic data and analyses.

Acknowledgements

In acknowledgements section, it is suitable to list all contributors who do not meet the criteria for authorship, such as a person who provided purely technical help, writing assistance, or a department head who provided only general support. Financial and material support should also be acknowledged.

Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under a heading such as "clinical investigators" or "participating investigators", and their function or contribution should be described, for example, "served as scientific advisers", "critically reviewed the study proposal", "collected data", or "provided and cared for study patients". A written consent is required from all the persons acknowledged, indicating their acceptance for the same.

Contributions to joint-authorship

In the case of multiple author-ship, authors are expected to state clearly their contributions to the paper being considered for publication in terms of study initiation, design including methodology, data collection, analysis and final write-up. The editorial board reserves the right to remove any author's name if the contribution is insignificant.

References

References should be numbered consecutively in the order in which they are first mentioned in the text.

References are identified in text, tables, and legends by Arabic numerals in parentheses. References cited only in tables or in legends to figures should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure.

The titles of journals should be abbreviated according to the style used in Index Medicus. Authors are required not to use abstracts, unpublished observations and personal communications as references. References to papers accepted but not yet published should be designated as "in press"; authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication.

The references must be verified by the author against the original documents. The Uniform Requirements style (the Vancouver style) is based largely on an American National Standards Institute (ANSI) standard style adapted by the NLM for its databases.

Journal Article

List all authors when 6 or less. When 7 or more, list only first six and add et al. Ngan P, Yiu C, Hu A, Hagg U, Ei SHY, Gunel E. Cephalometric and occlusal changes following maxillary expansion and protraction. *Eur J Orthod* 1998; 20: 237-254.

Organization as Author

Australian Dental Association Inc. An Australian Schedule of Dental Services and Glossary. 7th edn. Sydney: Australian Dental Association Inc., 1996.

Complete Book

Department of Health. Shifting the balance of power within the NHS: securing delivery. London: Doll, 2001.

Clayton D, Hills M. Statistical models in epidemiology. Oxford: Oxford University Press, 1993.

Farkas LG. Anthropometry of the Head and Face, 2nd Edn, New York; Raven Press; 1994

Book Chapter Lekholm U, Zarb GA. Patient selection and preparation. In: Branemark P1, Zarb GA, Albrektsson T, editors.

Tissue integrated Prostheses: Osseointegration in Clinical Dentistry, Chicago: Quintessence; 1988,199-209

Thesis and Dissertation

Yong SJ. Bone mineral density of normal Korean adults. Ph.D. Thesis. Seoul, Korea; 1989 Anozike, AN. Orthodontic treatment needs and its impact on oral health related quality of life in Lagos school children aged 12-16 years. FMCDs. Dissertation. Lagos, Nigeria; 2006

Conference Proceedings

Marshall SJ, Rixon RC, Whiteford DN, Cumming JT. The OrthoForm 3-Dimensional Clinical Facial Imaging System. Proceedings of the 15th IFHE Congress 1998; 15:83-87.

Dictionary and Similar References

Stedman's medical dictionary. 26th ed. Baltimore: Williams & Wilkins; 1995. Apraxia; p.11 9-120. Unpublished accepted material Leshner AI. Molecular mechanism of cocaine addiction. N Eng J Med. In Press 1996.

Material from Internet

World Health Organization, 2002.
www.who.int/mental-health/prevention/suicide (accessed August 1, 2004).

Tables

Each table should be typed in double-space on a separate sheet of paper. Tables not submitted as photographs must be numbered consecutively (Arabic numerals) in the order of their first citation in the text, with a brief but self explanatory title for each.

Each column should have a short or abbreviated heading. Explanatory matters are placed in footnotes, not in the heading. In footnotes all nonstandard abbreviations that are used in each table should be explained adequately. Statistical measures of variations should be identified such as standard deviation and standard error of the mean. Be sure that each table is cited in the text. If data are used from another published or unpublished source, it is necessary to obtain permission and acknowledge them fully.

Figures and Instructions

Figures should be professionally drawn and photographed; freehand or typewritten lettering is unacceptable. Instead of original drawings, X-ray films, and other material, sharp, glossy, black-and-white photographic prints of high quality are necessary, usually 127x 173 mm (5x7 in) but no larger than 203x254 mm (8x10 in) For color illustrations negatives or positive transparencies are provided, along with color prints. It is preferable to have the photograph in portrait form rather than in landscape form to fit easily into one column. Letters, numbers and symbols in photographs should be clearly legible.

Each figure should have a label pasted on its back indicating the number of the figure, author's name, and an arrow to mark the top and left side of the figure.

It is unacceptable to write on the back of figures or scratch or mark them by using paper clips, and to bend figures or mount them on cardboard. If photographs of individual/people are used, either the subjects must not be identifiable or their pictures must be accompanied by written permission to use the photograph. It is advisable to cover the eyes unless specifically need to be shown. If a figure has been published, the original source should be acknowledged and written permission from the copyright holder be obtained to reproduce the material. Figures should be numbered consecutively (Arabic numerals) according to the order in which they have been first cited in the text.

Legends for Illustrations

Legends for illustrations should be typed or printed out in double-space, starting on a separate page, with Arabic numerals corresponding to the illustrations.

When symbols, arrows, numbers, or letters are used to identify parts of the illustrations, each of them must be identified and explained in the legend. The internal scale should be explained and the method of staining in photomicrographs be identified.

Units of Measurement

Measurements of length, height, weight, and volume should be reported in metric units, i.e., meter(m), gram(g), or liter(l) or their decimal multiples.

Milliliter or deciliter should be expressed as ml or dl.

Red and white blood cell counts are to be expressed as $63 \times 10^6 / \text{mc l}$ and $\times 10^6 / \text{mc}$ respectively. Temperatures should be given in degrees Celsius and blood pressures in millimeters of mercury (mmHg). All hematological and clinical chemistry measurements should be reported in the conventional system or in terms of the International System of Units (SI).

Abbreviations and symbols

Only standard abbreviations are used in the text while avoiding abbreviations in the title and abstract.

The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement. Year, month, day, hour, minute and second should be abbreviated as yr, mon, d, h, mm, and s in tables respectively.

References

1. Mother M, Schulz KF, Altman DG, for the CONSORT Group. The CONSORT statement Revised recommendations for improving the quality of reports of parallel group randomize Trials. *Lancet* 2001; 357: 1191-1194. (Also available from: URL: <http://www.consort-statement.org/>). Accessed June 28, 2002.
2. International Committee of Medical Journal Editors. Uniform Requirements for Manuscripts Submitted to Biomedical Journals. *Ann Intern Med* 1997;126:36-47. (Updated October 2001 version Available from: URL: <http://www.icmje.org/>). Accessed June 28,2002.
3. JAMA Instructions for Authors. Available from URL: <http://jama.ama-assn.org/>. Accessed June 28, 2002.
4. Hall GM. Structure of a scientific paper. In: Hall GM, ds. *How to write a paper*. London:BMJ Books, 2000.
5. 52nd WMA General Assembly. World Medical Association Declaration of Helsinki. Ethical principles for medical research involving human subjects. Available from: URL: <http://www.wma.net/>. Accessed June 28,2002.

Appendix 1:

Declaration of Originality and Transfer of Copyright

(Please download from Nigerian Association of Orthodontists (NAO) website <https://www.nao-ng.org/>)

This form is to be submitted with the initial copies of the manuscript to: West African Journal of Orthodontics, Department of Child Dental Health, Obafemi Awolowo University Ile-Ife, Osun State. Nigeria Manuscript No. (If known):

The author(s) hereby affirms that the submitted manuscript entitled:

I/We certify that the manuscript represents valid work and that neither this manuscript nor one with substantially similar content under my/our authorship has been published or is being considered for publication elsewhere. For papers with more than I author, we agree to allow the corresponding author to serve as the primary correspondent with the editorial office, to review the edited typescript and proof.

I/We have seen and approved the submitted manuscript. All of us have participated sufficiently in the work to take public responsibility for the contents. All the authors have made substantial contributions to the intellectual content of the paper and fulfill at least 1 condition for each of the 3 categories of contributions: i.e., Category 1 (conception and design, acquisition of data, analysis and interpretation of data), Category 2 (drafting of the manuscript, critical revision of the manuscript for important intellectual content) and Category 3 (final approval of the version to be published).

I/We also certify that all my/our affiliations with or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript are completely disclosed on the title page of the manuscript. My/our right to examine, analyze, and publish the data is not infringed upon by any contractual agreement.

I/We certify that all persons who have made substantial contributions to the work reported in this manuscript (e.g., data collection, writing or editing assistance) but who do not fulfill the authorship criteria are named along with their specific contributions in an acknowledgment section in the manuscript. If an acknowledgment section is not included, no other persons have made substantial contributions to this manuscript.

I/We also certify that all persons named in the acknowledgment section have provided written permission to be named.

The author(s) undersigned hereby transfer(s), assign(s), or otherwise convey(s) all copyright ownership, including any and all rights incidental thereto, exclusively to the West African Journal of Orthodontics, in the event that such work is published in the West African Journal of Orthodontics.

Authors name(s) in order of appearance in the manuscript; signatures (date):

