WEST AFRICAN JOURNAL OF ORTHODONTICS

Print ISSN: 2315-9634
E-ISSN: 3141-5822

VOLUME 7, NUMBER 2

DEC 2018

Separation Effects and Dislodgement of Orthodontic Separators.



Cranial Base Dimensions in Down Syndrome: A Comparative Cephalometric Study



Horizontal Reference Planes in the Cephalometric Assessment of Upper Incisor Angulation



Case report: Non-surgical Correction of Skeletal Anterior Open-bite.

Orthodontic Management of an Adult Patient



OFFICIAL PUBLICATION OF ORTHODONTIC ASSOCIATIONS IN THE WEST AFRICAN SUB-REGION
"DENTISTRY'S FIRST SPECIALTY JOURNAL IN SUB SAHARAN AFRICAN"

Orthodontic Management of an Adult with Severe Spacing, Bimaxillary Proclination and a Supernumerary Tooth

Nkwocha FG,[a] Ifesanya JU[b]

Abstract

A report of the orthodontic treatment of a young adult female who presented with Angle's class I malocclusion on skeletal pattern 3, severe upper and lower anterior segment spacing, bimaxillary proclination and a supernumerary tooth as an incidental finding. An 18-year-old female patient presented with the complaint of "too much spaces in her teeth". Orthodontic assessment revealed a case of Angle's class I malocclusion on skeletal pattern 3 complicated by Increased overjet of 8mm, proclined upper and lower central incisors, decreased overbite, severe upper arch spacing, moderate lower arch spacing, incompetent lip seal. An unerupted supernumerary tooth was also identified in the lower right quadrant.

The treatment objectives were to extract the supernumerary tooth, correct the proclination of upper and lower incisors, correct overjet and close spaces in the upper and lower arches. Her treatment was carried out with fixed appliances using Roth 0.022 prescription appliances and lasted for 24 months. The set out objectives for her treatment were achieved with a marked improvement in the overall esthetic appearance of the patient. One-year post treatment, the patient was still on retention, has a stable occlusion with no signs of relapse.

Affiliation(s):

[a] University College Hospital, Child Oral Health, Ibadan ,Oyo, Nigeria

[b] University of Ibadan, Nigeria, Child Oral Health Ibadan ,Oyo, Nigeria

Correspondence:
Dr F. G. Nkwocha
Department of Child Oral Health
University College Hospital, Ibadan,
Oyo, Nigeria.
fgnkwocha@gmail.com
08035847765

ORIGINAL ARTICLE

Introduction

In the permanent dentition, spacing occurs where the sum total of the mesio-distal width of the teeth present in the arch, are less than the total length of the arch. It is a dental malocclusion characterised by interdental spaces and lack of proximal contact. Spacing in the dental arch can be classified as mild, if the spaces are less than 3mm; moderate spacing where spaces are between 3-6mm and severe spacing in the presence of spaces more than 6mm.[1]

Generalised spacing refers to spacing occurring in both the anterior and posterior segments of the arch, in contrast to localised spacing where only two to four teeth are involved. The causes of generalised spacing may be hereditary, acquired or even functional. Localised spacing is usually due to local factors, such as missing teeth, supernumerary teeth, microdonts, retained primary teeth, sucking habits, periodontal disease and hypertrophic upper labial fraenum.

The prevalence of spaces in the permanent dentition varies from 10-33% of population with higher prevalence of spacing in the upper arch than in the lower arch.[2–4] The presence of spaces in the arch present stagnation areas that can lead to accumulation of plaque and calculus, increasing the risk of dental caries and periodontal disease and consequently, tooth mobility and tooth loss. Proclination of the incisors predisposes the affected incisors to trauma due to its forward position on the arch.[5,6]

These malocclusions, severe spacing and bimaxillary proclination, in addition to their poor influence on oral tissues, are unaesthetic with a negative impact on individuals physical, psychological and social life, thus adversely affecting the quality of life of young people.[7,8] This has been noted to be improved following orthodontic treatment.[9]

This report highlights a case of severe upper and lower arch spacing and bimaxillary proclination, treated with fixed appliance therapy in a young adult with stable results.

Diagnosis

An 18-year-old female undergraduate presented to the orthodontic unit of the University College Hospital Ibadan with the complaint of "too large spaces in her teeth" which she noticed about 7 years prior to presentation. She was previously treated unsuccessfully with upper and lower removable appliances. Patient admitted to not using the appliances faithfully as they were uncomfortable. She had no known systemic illness nor allergies.

Extra oral examination revealed a symmetrical face, normal Temporomandibular joints, a convex profile and an incompetent lip seal evidenced by a Jackson's score of 2/0 (Fig 1)

Intra oral examination showed the presence of all permanent teeth except the third molar in all quadrants as well as a normal tongue and labial frenae. Patient had an Angles Class I molar relationship and a Class II incisal relationship. Overjet was recorded as 8mm while the overbite was observed to be decreased. There was also a lower midline shift to the Right and Proclined upper incisors. The tooth bone relationship was noted as severe spacing in the upper arch, and moderate spacing in the lower arch (Fig 2).

Available radiographs, the Cephalometric x-ray and tracing confirmed a retrognathic maxilla, class 3 skeletal pattern, upper and lower incisor proclination (bimaxillary proclination) with a tendency to open bite (Fig 3). The orthopantomogram showed the presence of a supernumerary tooth located on the lower right quadrant between the first and second premolar (Fig 4)

Her pretreatment study models were also made and articulated as shown in Fig 5 and a problem list was drawn up as follows:

- Angle's class I malocclusion on skeletal Pattern 3 complicated by:
- Severe spacing in upper arch
- Moderate spacing in lower arch
- Increased overjet = 8mm
- Proclined upper incisors
- Bimaxillary Proclination
- Incompetent lip seal
- Unerupted Supernumerary in relation to 45, 44

Treatment Plan

Extraction of Supernumerary teeth.

Correction of inclination of upper and lower incisors.

Correction of Overjet

Closing spaces in upper and lower arches

Improve the lip competence

Plan for Appliance:	Fixed appliance therapy using Roth 0.022 Prescription appliance.
Plan for Space:	Utilize available spaces.
Plan for Anchorage:	Simple anchorage using standing teeth.
Plan for Retention:	Upper Hawley's retainer.
Plan for Time:	24 Months

Treatment progress (Figure 6)

Set up appointment - Roth 0.022 Prescription attachments placed on
654321123456
654321123456
And 0.014 NiTi arch wires placed on upper and lower arches.
Review visits were set up to be done 6 weekly

6 weeks	UAW and LAW changed to 0.016 NiTi
12 weeks	UAW and LAW changed to 0.020NiTi
18 weeks	UAW changed to 0.018 X 0.018 NiTi; LAW changed to 0.017 X 0.025 SS.
24 weeks	UAW changed to 0.017 X 0.025 SS; Upper anterior segment retraction commenced using crimpable hooks and closed coil springs.
34 weeks	UAW and LAW changed to 0.019 x 025 SS. Elastic chain placed from 16 to 26
42 weeks	Upper Anterior segment retraction continued
50 weeks	Space closure continued in the upper arch using closed coil springs.
60 weeks	Space closure is almost complete. Elastic chain placed from 46 to 36
72 weeks	Debonding of appliance done and an Upper Hawley's retainer and lower fixed lingual retainer delivered.

Total treatment time – 18 months See Fig 6

mm that extended from the canine to canine.

Results

Extraction of Supernumerary teeth.	Achieved
Correction of inclination of upper and lower incisors.	Achieved
Correction of Overjet.	Achieved
Closing spaces in upper and lower arches.	Achieved
Improve lip competence.	Achieved
Pre-Treatment PAR Index	25
Post Treatment PAR Index	0
PAR Index Reduction/Percentage	25/100%

See Fig 7 and 8



Figure 1. Pretreatment extra oral photographs



Figure 2. Pretreatment Intraoral photographs



	Normal Values (Degrees)	Pre-treatmentValues (Degrees)	Interpretation
SNA	85.5±3.5	80	Retrognathic Maxilla
SNB	82.7±3.0	80	Normal Mandible
ANB	2 - 4	0	Class 3 Skeletal pattern
1FP	119 - 127	140	Upper incisor Proclination
1MP	96 - 104	109	Lower incisor Proclination
1/1	108 - 116	74	Bimaxillary Proclination
FMPA	24 - 28	38	Tendency to Open bite

Figure 3. Pretreatment Cephalogram and tracing values

Table 1

Pre-treatment Soft Tissue Analysis	Patient Values	Normal Values
Lower Lip H Line	10 MM	-1 TO 2MM
	8MM	2.54MM
Lower Lip E Line	13MM ANTERIOR	5.88MM
Nasolabial Angle	64^0	
Mentolabial Angle	103^0	



Figure 4. Pretreatment OPG



Figure 5. Pretreatment study models



Figure 6. Mid treatment photographs



Figure 7. Post-treatment extra oral photographs



Figure 8. Post-treatment intraoral photographs



	Normal Values (Degrees)	Pre-treatment Values (Degrees)	Post-treatment Values (Degrees)	Interpretation
SNA	85.5±3.5	80	78	Retrognathic Maxilla
SNB	82.5±3.0	80	80	Normal Mandible
ANB	2 - 4	0	-2	Class 3 Skeletal pattern
U1FP	119 - 127	140	130	Upper incisor Proclination
L1MP	96 - 104	109	108	Lower incisor Proclination
INTERNCISAL	108 - 116	74	93	Bimaxillary Proclination
FMPA	24 - 28	38	30	Tendency to Open bite

Figure 9. Post-treatment Cephalometric x-ray and tracing values

Table 2

Pre-treatment Soft Tissue Analysis	Patient Values	Normal Values
Lower Lip H Line	10 MM	-1 TO 2MM
Upper Lip E Line	8MM	2.54MM
Lower Lip E Line	13MM ANTERIOR	5.88MM
Nasolabial Angle	64^0	
Mentolabial Angle	103^0	



Figure 10. Post-treatment OPG



Figure 11. Post-treatment study models



Figure 12. Result comparison



Figure 13. Patient in retention



Figure 14. One year post-treatment

Discussion

A spaced arch, in the primary and mixed dentition, is necessary to provide adequate space on the arch to accommodate the larger, developing succedaneous teeth in the permanent dentition[10]. However, with full transition to permanent dentition the normal occlusion should have no spaces as indicated by Andrews' six keys to normal occlusion.[11] The presence of spacing in the permanent dentition is sometimes considered beautiful among Africans. Nevertheless, where the spaces are too large, their esthetic appeal is lost even to lay people. Proclined teeth equally have such an unaesthetic appearance. Thus it is not surprising that patients with these malocclusions would experience negative social effects such as bullying and taunting along with their negative psychological impacts.[12–14]

The unerupted supernumerary tooth found in the dental arch was an incidental finding and underscores the need to carry out pretreatment investigations such as radiography to exclude the presence of such otherwise undetected anomalies. An unerupted tooth can impede orthodontic tooth movement and can cause root resorption. Also, such impacted teeth are associated with odontogenic cysts[15] and have been implicated in odontogenic tumours.[16] Hence it is essential to exclude their presence or have them extracted prior to commencement of orthodontic therapy.

The orthodontic treatment for this case was carried out using fixed appliance therapy, bringing about effective resolution of her complaint . This would not have been possible with the use of removable appliances as was previously attempted in an earlier consultation. This brings to light the need for proper patient assessment and specialist orthodontic diagnosis; to produce the best possible treatment plan for each patient, bearing in mind the patient's age, stage of dental development, medical condition, and current socio-economic situation. The Roth prescription appliances used in treatment of this case, have lower torque values than other prescriptions available, for example the MBT and Damon prescription brackets. The outcome of treatment was esthetically pleasing, and the inclination of the upper incisors largely improved though it remained 3^0 higher than the cephalometric range for Nigerians. This may be because of the lower torque values of the

Roth brackets or the torque in the brackets not being expressed fully; thus, one may consider the use of bracket prescriptions with higher torque values in future. This is important as appropriate torque of the maxillary central incisors is necessary to establish an esthetic smile line, maintain class I incisal relationship and prevent loss of arch length.[17,18]

In orthodontics, clinical "torque" refers to the correct buccolingual inclination of teeth.[19] It is the 3rd key to normal occlusion which Andrews describes as "the angle formed by a line perpendicular to the occlusal plane, and another line drawn parallel to and tangent to the long axis of the clinical crown of a tooth at its midpoint".[20] Furthermore, in orthodontic biomechanics, torque refers to the interplay or torsion of a rectangular arch wire within the bracket slot.[21] When a smaller sized arch wire is inserted into a bracket slot, it can rotate clockwise or anticlockwise- this degree of freedom is known as 'play'; and it increases as the arch wire size decreases. On insertion of rectangular wires, the arch wire contacts the walls of the bracket slot and undergoes further torsion or twisting. This generates a moment or force couple through which the torque programmed into the bracket is expressed.[22]

The higher the value of the torque programmed into the bracket at manufacture, the more the moments are expressed and the better bucco-lingual position the tooth will assume, when the archwire slot is fully engaged with a rectangular wire. It is worthy to note that the effective torque expressed by a bracket is not only affected by the 'play' between the archwire and bracket slot, but also by other factors such as variation in tooth anatomy, variations in the bracket base, inaccuracies in the bracket slot and arch wire dimensions, mode of archwire ligation, and the stiffness of the wire.[17,23–26]

At the end of the treatment for this patient, all set out objectives were achieved. However, there was a residual mesial rotation of the lower right first molar, as a result of loss of anchorage on the lower arch. Though a lower lingual holding arch was not used for this patient, it should be prescribed and used to prevent loss of anchorage in patients with bimaxillary proclination, as its treatment has a high anchorage demand. Lower lingual holding arches are made of 1.0mm hard stainless steel wires soldered onto the lower molar bands.

The retention protocol employed ensured that the alignment achieved at the end of treatment remained. This means that the teeth were moved to a neutral zone on the arch. A position whereby the tooth is in equilibrium with the forces from the tongue and cheeks/lips. This will ensure stability of the movement achieved and prevent relapse as shown in Fig 14, 1-year post debonding. Long term follow-up of the patient will be required as this will ensure compliance with the use of retention appliances and detect relapse early to mitigate against it .

Conclusion

This case report describes the successful treatment of a patient with Angle's class I malocclusion on skeletal pattern 3, severe upper and lowers anterior segment spacing, bimaxillary proclination and a supernumerary tooth as an incidental finding; using Roth '022 prescription fixed appliance orthodontic therapy.

References

1. Proffit WR. Orthodontic Diagnosis: The development of a problem list. In: Contemporary Orthodontics. 4th ed. Mosby Elsevier; 2007. p. 175.
2. Steigman S, Weissberg Y. Spaced dentition. An epidemiologic study. Angle Orthod. 1985;55:167–76.
3. Thilander B, Pena L, Infante C, Parada SS, de Mayorga C. Prevalence of malocclusion and orthodontic treatment needs in children and adolescents in Bogota, Colombia. An epidemiological study related to different stages of dental development. Eur J Orthod. 2001;23:153–67.
4. Ajayi EO. Prevalence of Malocclusion among school children in Benin City Nigeria. J Med Biomed Sci. 2008;7:58–65.
5. Ajayi MD, Denloye O, Abiodun Solanke FI. The unmet treatment need of traumatized anterior teeth in selected secondary school children in Ibadan, Nigeria. Dent Traumatol. 2010;26:60–3.
6. Otuyemi OD. Traumatic anterior dental injuries related to incisor overjet and lip competence in 12-year-old Nigerian children. Int J Paediatr Dent. 1994;4:81–5.
7. Gift HC, Reisine ST LD. The Social Effects of Dental Problems. Am J Public Heal. 1992;82:1663–8.
8. Fejerskov O. Concepts of dental caries and their consequences for understanding the disease. Community Dent Oral Epidemiol. 1997;25:5–12.
9. Kiyak HA. Does Orthodontic Treatment Affect Patients' Quality of Life? J Dent Educ. 2008;72:886–94.
10. Onyeaso CO, Isiekwe MC. Occlusal changes from primary to mixed dentitions in Nigerian children. Angle Orthod. 2008;78:64–9.
11. Andrews LF. The six keys to normal occlusion. Am J Orthod Dentofac Orthop. 1972;62:296–309.
12. Akinboboye B, Umesh D, Ajayi Y. Transcultural perception of maxillary midline diastema. Int J Esthet Dent. 2015;10:610–7.
13. Arigbede AO, Adesuwa AA. A case of quackery and obsession for diastema resulting in avoidable endodontic therapy. Afr Health Sci. 2012;12:77–80.
14. Kokich VO, Kokich VG, Kiyak HA. Perceptions of dental professionals and laypersons to altered dental esthetics: Asymmetric and symmetric situations. Am J Orthod Dentofac Orthop. 2006;130:141–51.
15. Chrysomali E, Leventis M, Titsinides S, Kyriakopoulos V, Sklavounou A. Odontogenic tumours . J Craniofac Surg. 2013;24:1521–5.
16. Adisa AO, Lawal AO, Effiom OA, Soyele OO, Omitola OG, Olawuyi A, et al. A retrospective review of 61 cases of adenomatoid odontogenic tumour seen in five tertiary health facilities in Nigeria. Pan Afr Med J. 2016;24.
17. Goroka C, Eliades T. Materials-induced variation in the torque expression of preadjusted appliances. Am J Orthod Dentofac Orthop. 2004;125:323–8.
18. O'Higgins EA, Kirschen RH, Lee RT. The Influence of Maxillary Incisor Inclination on Arch Length. Br J Orthod. 1999;26:97–102.
19. Papageorgiou SN, Sifakakis I, Doulis I, Eliades T, Bourauel C. Torque efficiency of square and rectangular archwires into 0.018 and 0.022 in. conventional brackets. Prog Orthod. 2016;17:4–9.
20. Andrews L. The concept and appliance. The concept and appliance. San Diego: L.A Wells Co; 1989.

21. Lacarbonara M, Accivile E, Abed MR, Dino MT, Monaco A, Marzo G, et al. Variable Torque Prescription: State of Art. Open Dent J. 2015;9:60–4.
22. Arreghini A, Lombardo L, Mollica F, Siciliani G. Torque expression capacity of 0.018 and 0.022 bracket slots by changing archwire material and cross-section. Stat Pap. 2014;15:1–18.
23. Sebanc J, Brantley WA, Pincsak JJ, Conover JP. Variability of effective root torque as a function of edge bevel on orthodontic archwires. Am J Orthod. 1984;86:43–51.
24. Germane N, Bentley BE, Isaacson RJ. Three biologic variables modifying faciolingual tooth angulation by straight-wire appliances. Am J Orthod Dentofac Orthop. 1989;96:312–9.
25. Badawi HM, Toogood RW, Carey JPR, Heo G, Major PW. Torque expression of self-ligating brackets. Am J Orthod Dentofac Orthop. 2008;133:721–8.
26. Archambault A, Major TW, Carey JP, Heo G, Badawi H, Major PW. A comparison of torque expression between stainless steel, titanium molybdenum alloy, and copper nickel-titanium wires in metallic self-ligating brackets. Angle Orthod. 2010;80:884–9.

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 Discussion[4].

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 Al. Molecular mechanism of cocaine addiction. N Eng J Med. In Press 1996.

Material from Internet

World Health Organization, 2002.
www .who.intlmental-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-andwhite 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 x10 /mc l and x10/ 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.orgl). 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. HaIl 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.netl. 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):