UNIVERSIDADE FEDERAL DE CAMPINA GRANDE
CENTRO DE SAÚDE E TECNOLOGIA RURAL
BACHARELADO EM ODONTOLOGIA

JOSÉ MURILO BERNARDO NETO

USO DE ENXERTO ÓSSEO DE PAREDE ANTERIOR DO SEIO MAXILAR PARA FECHAMENTO DE FÍSTULA BUCO-SINUSAL

Patos-PB
2015

JOSÉ MURILO BERNARDO NETO

USO DE ENXERTO ÓSSEO DE PAREDE ANTERIOR DO SEIO MAXILAR PARA FECHAMENTO DE FÍSTULA BUCO-SINUSAL

Trabalho de conclusão de curso (TCC) apresentado a coordenação do curso de odontologia da Universidade Federal de Campina Grande-UFCG, como parte dos requisitos para obtenção do título de Bacharel em Odontologia.

Orientador: Prof. Dr. Julierme Ferreira Rocha

Patos-PB
2015

JOSÉ MURILO BERNARDO NETO

USO DE ENXERTO ÓSSEO DE PAREDE ANTERIOR DE SEIO MAXILAR PARA FECHAMENTO DE FÍSTULA BUCO-SINUSAL.

Trabalho de Conclusão de Curso (TCC) apresentado à coordenação do curso de Odontologia da Universidade Federal de Campina Grande – UFCG, como parte dos requisitos para obtenção do título de Bacharelado em Odontologia.

Aprovado em ___/___/______

BANCA EXAMINADORA

____

Prof. Dr. Julierme Ferreira Rocha
Universidade Federal de Campina Grande

____

Prof. Msc. José Cadmo Wanderley Peregrino de Araújo Filho
Universidade Federal de Campina Grande

____

Prof. Dr. José Wilson Noleto Ramos Júnior
Universidade Federal de Campina Grande

Dedico este trabalho a minha família, que sempre me apoiou nos momentos difíceis e acreditou na minha conquista, em especial a meu pai, minha mãe e meu irmão. E, também, dedico aos meus amigos e professores.

AGRADECIMENTOS

Gostaria de agradecer, primeiramente, a Deus por ter me iluminado, me dando forças nos momentos de fraquezas e discernimento para escolher o caminho certo. Aos meus pais, Francisco Lamartine de Formiga Bernardo e Maria do Ceó Dantas Nóbrega, os quais me deram a melhor educação que puderam tanto na vida pessoal como na vida estudantil. E, também, por estarem sempre presentes nos momentos de dificuldade e de felicidade, me incentivando a ser uma pessoa melhor. A Matheus Dantas, meu irmão e amigo, que eu tanto amo. E, a minha irmã, a qual não pude conhecer, mas sei que ela iria ser bem feliz ao nosso lado e estaria bastante realizada por essa minha conquista.

A meus avôs e avós por terem me dado forças e ensinamentos para conseguir vencer na vida. A meus tios e tias, em especial a Tia Remmy, por me tratar sempre como um filho e nunca medir esforços para fazer o máximo por mim. E a meu tio e padrinho, João de Deus, que apesar de não estar mais presente nessa vida, sei que ele deve está muito orgulhoso por eu ter chegado aqui.

A meu orientador, Prof. Dr. Julierme Ferreira Rocha, o qual teve compreensão e me deu todo apoio necessário nesse trabalho, como também os professores José Wilson Noleto Ramos Júnior, José Cadmo Wanderley Peregrino de Araújo Filho

A todos os primos e primas, em especial a Ruy Dantas, que sempre me incentivou a seguir o caminho certo, me ajudou nas diversas dificuldades e me tratou como um irmão. E, também, a minha prima Ariella Dantas, que deu uma grande contribuição nessa minha estória, pois sem os conselhos dela eu não estaria onde estou hoje. Muito obrigado, prima.

A todos os meus amigos de colégio e de vida, em especial a Ramon Rocha, Michel Oliveira, Luan Alencar, Vinicius Bernardo, Lucas Pires e José Mendes Neto, os quais sempre me apoiaram na vida acadêmica e pessoal. Aos meus amigos e amigas que tive o prazer de conhecer na faculdade, em especial a Tarlysson Inácio, Lucas Richter, Jessica Gomes, Kaio Andrade, Israel Lima, Thassio Oliveira, Sammir Oliveira, Valdir Filho, João Paulo Gomes, Igor Sousa e Adilson Tiuba, que são muito especiais.

A minha dupla de clínica e de faculdade, Felipe Figueiredo Rosas, o irmão que a faculdade me presenteou e que tanto me estimulou, compartilhando comigo todos os momentos dessa jornada.

A todos os meus professores dos colégios Nossa Senhora Auxiliadora, Monteiro Lobato, GEO Tambaú e Motiva, como também aos professores da faculdade que me ensinaram tudo o que puderam. Devo muito a todos vocês, pois o profissional que estou me

tornando será inspirado em cada um de vocês e farei valer os valores éticos e morais que foi tão reforçado por todos.

A minha namorada, amiga e companheira, Kerlianne Gomes, por me ajudar em todos os momentos, sejam ruins ou bons, como também por estar em minha vida. Por me incentivar a ser sempre mais e acreditar na minha capacidade, como também, por compreender meus defeitos e falhas.

Aos funcionários e meus pacientes os quais confiaram em mim para que eu colocasse em prática todos os meus conhecimentos científicos a favor deles, muito obrigado a todos.

Cada um tem sua devida importância e valor e gostaria de expressar minha gratidão a todos. Portanto, sem cada um de vocês eu não teria vencido essa batalha. Muito obrigado.

`` É exatamente disso que a vida é feita, de momentos. Momentos que temos que passar, sendo bons ou ruins, para o nosso próprio aprendizado. Nunca esquecendo do mais importante: Nada nessa vida é por acaso. Absolutamente nada. Por isso, temos que nos preocupar em fazer a nossa parte, da melhor forma possível. A vida nem sempre segue a nossa vontade, mas ela é perfeita naquilo que tem que ser. ´´

(Chico Xavier)

RESUMO

A fístula buco-sinusal consiste na comunicação persistente entre o seio maxilar e a cavidade oral, sendo uma complicação decorrente de traumas, patologias ou extrações dentárias, ocorrendo mais frequentemente após a exodontia dos molares superiores devido a sua proximidade com o seio maxilar. Cefaléia, sinusite maxilar, dor, transtornos na deglutição e tosse noturna são alguns dos sinais e sintomas relatados. A comunicação buco-sinusal menores que 2mm de diâmetro, tendem a fechar espontaneamente, na grande maioria dos casos, sem a necessidade de abordagem cirúrgica. Casos de comunicação buco-sinusal maiores que 3 mm necessitam de intervenção cirúrgica. Técnicas cirúrgicas que utilizam retalhos (palatino, vestibular ou combinado), enxerto ósseo e o enxerto pediculado do corpo adiposo da bochecha têm sido empregadas para esse propósito. Este trabalho teve por objetivo descrever um caso clínico de fístula buco-sinusal utilizando-se a técnica de enxerto ósseo da parede anterior do seio maxilar e discutir as vantagens e limitações com relação às técnicas mais utilizadas. A técnica descrita é relativamente simples, oferecendo resultado satisfatório, com o mínimo de desconforto para o paciente e tempo cirúrgico reduzido.

Palavras-chave: Fístula bucal. Extração dentária. Sinusite maxilar.

ABSTRACT

The oro-antral fistula (OAF) consists of a persistent communication between the maxillary sinus and the oral cavity, and it is a complication resulting from traumas, pathologies or dental extractions, occurring more frequently after the extraction of the superior molars due to their proximity to the maxillary sinus. Headache, maxillary sinusitis, pain, deglutition disorders and nocturnal cough are some of the reported signs and symptoms. The communication oro-antral smaller than 2mm of diameter, tend to close spontaneously, in the majority of cases without the need of a surgical approach. Cases of OAF larger than 3mm need surgical intervention. Surgical techniques which use flaps (palatine, vestibular or combined), bone graft and the pedicled buccal fat pad graft have been used for this purpose. This work aimed to describe a clinical case of OAF using the bone graft technique of the anterior sinus wall and discuss the advantages and limitations in relation to the most used techniques. The technique described is relatively simple, offering a satisfactory result, with minimum discomfort for the patient and reduced surgical time.

Keywords: Buccal fistula, Dental extraction, Maxillary sinusitis.

LISTAS DE ILUSTRAÇÕES

Figura 1	Aspecto clínico inicial	Página 21
Figura 2	Aspecto trans-operatório após fistulectomia	Página 22
Figura 3	Enxerto ósseo fixado na área do defeito	Página 23
Figura 4	Aspecto radiográfico 5 anos	Página 23
Figura 5	Aspecto clínico pós operatório 5 anos	Página 24

LISTA DE ABREVIATURAS E SIGLAS

FBS	Fístula Buco-Sinusal

SUMÁRIO

1 INTRODUÇÃO 12
2 FUNDAMENTAÇÃO TEÓRICA 13
REFERÊNCIAS 15
3 ARTIGO 17
ANEXOS 28
ANEXO A 28
ANEXO B 29

1 INTRODUÇÃO

A comunicação buco-sinusal pode ser definida como uma solução de continuidade entre o seio maxilar e a cavidade oral. Quando o trajeto é revestido por epitélio, devido a falhas no processo de reparo ósseo, a definição fístula buco-sinusal (FBS) é mais adequada. Os fatores etiológicos mais comuns são: exodontias, ressecção de cistos e tumores, trauma e infecção (MARTÍN-GRANIZO et al., 1997; YILMAZ et al., 2003; ANAVI et al., 2003; POESCHL et al., 2009; JAIN et al., 2012). O uso de retalhos locais (palatino, bucal) (AMARATUNGA, 1986; ANAVI et al., 2003), retalhos distantes (língua, temporal) (VISSCHER et al., 2010) combinação das técnicas (VISSCHER et al., 2011), enxerto pediculado do corpo adiposo da bochecha (HANAZAWA et al., 1995; POESCHL et al., 2009; JAIN et al., 2012) e enxertos ósseos (VISSCHER et al., 2010) são as técnicas cirúrgicas mais utilizadas para o fechamento das fístula buco-sinusal.

O primeiro relato de enxerto ósseo autógenos foi descrito por Proctor (1969). Os sítios doadores de enxerto ósseo são: crista ilíaca, calota craniana, tíbia, fíbula (Áreas Extras Orais), linha oblíqua, processo zigomático e mento (Áreas Intra Orais). Os sítios intraorais são utilizados para reconstrução de áreas limitadas, em virtude da proximidade do sítio doador e da pouca morbidade (HAAS et al., 2003).

São poucos os relatos do uso de enxerto ósseo para fechamento de fístula buco-sinusal, não havendo nenhum relato na literatura do uso da parede anterior do seio maxilar para essa finalidade (VISSCHER et al., 2010; PEÑARROCHA-DIAGO et al., 2007).

Este trabalho teve como objetivo reportar o uso da técnica de enxerto ósseo da parede anterior do seio maxilar para o fechamento de fístula buco-sinusal.

2 FUNDAMENTAÇÃO TEÓRICA

Para determinar tratamento da fístula buco-sinusal, dois fatores devem ser avaliados: o tamanho da comunicação e a presença ou ausência de infecção sinusal. Além disso, deve-se levar em consideração a condição do tecido disponível para reparação e a possível reabilitação protética com implantes ou outros tipos de próteses (VISSCHER et al,. 2010).

Geralmente uma comunicação buco-sinusal menor que 2mm de diâmetro é autolimitante, porém quando o defeito ultrapassa os 3mm deve-se utilizar algumas técnicas especificas (HANAZAWA et al,. 1995).

Na literatura foram descritos vários métodos para o tratamento cirúrgico de fístula buco-sinusal. (Killey & Kay, 1975). Três métodos são os mais freqüente e com resultados favoráveis: o retalho deslizante bucal, o retalho rotatório palatino e o uso do enxerto pediculado do corpo adiposo da bochecha (HANAZAWA et al,. 1995).

O tratamento realizado com retalho deslizante bucal é muito usado, representando um procedimento padrão e com alta taxa de sucesso. No entanto, apesar da simplicidade e segurança do procedimento, ele possui algumas limitações: diminuição da profundidade do sulco vestibular (dificultando a reabilitação protética do paciente), em áreas de tecido gengival comprometido e em comunicações de grande diâmetro (POESCHL et al,. 2009).

O método de tratamento conhecido como técnica do retalho rotatório palatino foi primeiramente descrito por Ashley (1939) (ASHLEY,.1939). Em um retalho rotatório palatino anterior usado para fechamento de fístula buco-sinusal de grande diâmetro e em pacientes desdentados total, contém a artéria palatina maior que vai garantir o suprimento sanguíneo necessário para o retalho. Por ser mais espesso ele é menos vulnerável á ruptura quando comparamos com o retalho deslizante vestibular, como também mantém a profundidade do sulco vestibular. Como desvantagens têm a exposição da área palatina do sitio doador e um aumento de volume de tecido mole no eixo de rotação do retalho, onde a exposição da área doadora permanecerá até secundaria epitelização, causando desconforto para o paciente (VISSCHER et al,. 2010).

O corpo adiposo da bochecha foi primeiramente descrito por Egyedi em 1977 (EGYEDI, 1977). Foi descrito como uma massa lobulada simples constituído por um corpo central e quatro extensões: bucal, pterigóide, temporal superficial e temporal profundo que se localiza no interior da bochecha sendo responsável parcialmente pelo contorno da mesma e possui a possível função de manter a prevenção de pressão negativa em recém-nascidos ao

sugar, separando os músculos da mastigação entre si como das estruturas ósseas, proteção neurovascular. O corpo adiposo tem seu próprio mecanismo de lipólise onde pode ser utilizado inclusive por pacientes com pouco peso corporal. Devido ao seu rico suprimento sanguíneo ele pode ser considerado como um enxerto com um pedículo padrão axial e sua vascularização é devido as artéria temporal profunda, ramos da artéria temporal superficial, ramos da artéria maxilar, facial transversa, ramos da artéria facial (POESCHL et al,. 2009).

Segundo Jain et al,.(2012) o rico suprimento de sangue pode explicar a alta taxa de sucesso dessa técnica como também pode ser uma razão para a rápida epitelização.

As vantagens que essa técnica possui estão na simplicidade, versatilidade, excelente suprimento sanguíneo, baixo índice de complicações, técnica cirúrgica simples (JAIN et al,.2012).

A sua principal desvantagem é a possibilidade de só poder ser usada uma única vez e existem limitações quanto ao tamanho potencial dos defeitos a serem cobertos. Porém, tendo em vista as suas recomendações e limitações, a sua aplicação éum procedimento seguro e bem sucedido para o tratamento dessa patologia (POESCHL et al,. 2009).

O primeiro relato de enxerto ósseo autógeno foi descrito por Proctor (1969) onde a área doadora do enxerto seria na crista ilíaca para fechamento de grandes fistulas buco-sinusal, porém esse tipo de procedimento necessita de um procedimento cirúrgico adicional para a coleta do tecido ósseo. Contudo essa técnica aumenta o tempo de cirurgia, como também uma morbidade associada (JOSHI; KOSTAKIS., 2004).

Áreas doadoras intrabucais reduzem a morbidade relatada pelos pacientes no pós-operatório e pode ser realizadas sobre anestesia local (NKENKE et al,. 2001). Portanto áreas doadoras intra bucais foram investigadas entre elas a área retromolar, processo zigomático e na região anterior de mento (HAAS et al., 2003).

O uso de um bloco ósseo monocortical da região anterior de mento é usado para o fechamento de uma fístula bucossinusal nos casos em que o paciente possui uma atrofia maxilar. (HAAS et al., 2003).

Enxerto de área de osso zigomático para fechamento de uma fístula bucossinusal tem como vantagem a proximidade da área doadora com a área receptora, o que minimiza o tempo cirúrgico e o desconforto gerado ao paciente, como também pode ser usado quando a quantidade de tecido doador da área retromolar for insuficiente. A principal desvantagem é a perfuração acidental da membrana do seio maxilar (PEÑARROCHA-DIAGO et al., 2007).

REFERÊNCIAS

AMARATUNGA NAS. Oro-antral fistulae - A study of clinical, radiological and treatment aspects. **Br J Oral Maxillofac Surg** ;**v.**24 **pp.**433-437 1986

ANAVI Y, GAL G, SILFEN R, CALDERON S. Palatal rotation-advancement flap for delayed repair of oroantral fistula: A retrospective evaluation of 63 cases. **Oral Surg Oral Med Oral Pathol Oral Radiol Endod** ;**v.** 96:**pp.** 527-34. 2003

ASHLEY, R. E. Method of closing antro-alveolar fistula. Annuls of Otology, Rhinology. **Laryngology**, **v.**48, **pp.**632. 1939

EGYEDI P. Utilization of the buccal fat pad for closure of oro-antral and/or oro-nasal communications. **J Maxillofac Surg**; **v.** 5: **pp.** 241–4. 1977

HAAS R, WATZAK G, BARON M, et al: A preliminary study of monocortical bone grafts for oroantral fistula closure. **Oral Surg Oral Med Oral Pathol Oral Radiol Endod v.** 96:**pp.** 263, 2003.

HANAZAWA Y, ITOH K, MABASHI T, SATO K. Closure of oroantral communications using a pedicled buccal fat pad graft. **J Oral Maxillofac Surg. v.**53: **pp.** 771-775. 1995

JAIN MK, RAMESH C, SANKAR K, LOKESH BABU KT. Pedicled buccal fat pad in the management of oroantral fistula: a clinical study of 15 cases. Int. **J. Oral Maxillofac. Surg. v.** 41: **pp.**1025–1029. 2012

JOSHI A, KOSTAKIS GC: An investigation of post-operative morbidity following iliac crest graft harvesting. **Br Dent J. v.**196:**pp.**167, 2004

KILLEY, H. C. & KAY, L. W. The Maxillary Sinus and its Dental Implications. **Bristol. John Wright**, **v.** 40-70, **pp.**143-148. 1975

MARTIN-GRANIZO R, NAVAL L, COSTAS A, GOIZUETA C, RODRIGUEZ F, MONJE F et al.Use of buccal fat pad to repair intraoral defects: Review of 30 cases. **Br J Oral Maxillofac Surg v.**35: **pp.**81-84,1997

NKENKE E, RADESPIEL-TROGER M, WILTFANG J, et al: Morbidity of harvesting of retromolar bone grafts: A prospective study. Clin **Oral Implants Res v.**13: **pp.**514,2002

POESCHL PW, BAUMANN A, RUSSMUELLER G, POESCHL E, KLUG C, EWERS R. Closure of oroantral communications with Bichat's buccal fat pad. **J Oral Maxillofac Surg v.**67: **pp**.1460, 2009.

PEÑARROCHA-DIAGO M, GARCIA B, GOMEZ D, et al: Zygomatic boné graft for oral-antral communication closure and implant placement.**J Oral Implantol v.**33: **pp.**305, 2007

PROCTOR B: Bone graft closure of large or persistent oromaxillary fistula. **Laryngoscope**. **v.**79:**pp.**822, 1969

PEÑARROCHA-DIAGO M, GARCIA B, GOMEZ D, et al: Zygomatic boné graft for oral-antral communication closure and implant placement.**J Oral Implantol v.**33:**pp.**305, 2007

VISSCHER SH, van MINNEN B, BOS RRM. Closure of oroantral communications: A review of the literature. **J Oral Maxillofac Surg**;**v.**68: **pp.**1384-1391, 2010

VISSCHER SH, VAN ROON MRF, SLUITER WJ, VAN MINNEN B, BOS RRM. Retrospective study on the treatment outcome of surgical closure of oroantral communications. **J Oral Maxillofac Surg**; **v.**69:**pp.**2956-2961,2011

YILMAZ T, SUSLU AE, GURSEL B. Treatment of oroantral fistula: Experience with 27 cases. **Am J Otolaryngol**;**v.**24:**pp.**221-223, 2003

3 ARTIGO

Título: Uso de enxerto ósseo de parede anterior de seio maxilar para fechamento de fístula buco-sinusal

Title: Use of bone graft of the anterior wall of the maxilliary sinus for the closure of an oro-antral fistula

José Cadmo Wanderley Peregrino de Araújo Filho[1], José Murilo Bernardo Neto[2]; Julierme Ferreira Rocha[1], Eduardo Hochuli-Vieira[3]

1- Professor de Cirurgia e Traumatologia Bucomaxilofacial da Faculdade de Odontologia da Universidade Federal de Campina Grande, Campus-Patos, Patos-Paraíba.

2- Aluno do curso de odontologia da Universidade Federal de Campina Grande (UFCG), Patos-Paraíba.

3- Professor de Cirurgia e Traumatologia Bucomaxilofacial da Faculdade de Odontologia da Universidade Paulista "Júlio de Mesquita Filho", Campus Araraquara.

Correspondência:

Julierme Ferreira Rocha

Departamento de Cirurgia e Traumatologia Bucomaxilofacial da Universidade Federal de Campina Grande, Campus Patos, Rodovia Patos- Teixeira, Km 1.
Santa Cecília- CEP: 58700-970- Patos/PB, Brasil. Telefone: 83 35113045.

E-mail: juliermerocha@hotmail.com

RESUMO

A fístula buco-sinusal (FBS) consiste na comunicação persistente entre o seio maxilar e a cavidade oral, sendo uma complicação decorrente de traumas, patologias ou extrações dentárias, ocorrendo mais frequentemente após a exodontia dos molares superiores devido a sua proximidade com o seio maxilar. Cefaléia, sinusite maxilar, dor, transtornos na deglutição e tosse noturna são alguns dos sinais e sintomas relatados. A comunicação buco-sinusal menor que 2mm de diâmetro, tendem a fechar espontaneamente, na grande maioria dos casos, sem a necessidade de abordagem cirúrgica. Casos de fístula buco-sinusal maiores que 3 mm necessitam de intervenção cirúrgica. Técnicas cirúrgicas que utilizam retalhos (palatino, vestibular ou combinado), enxerto ósseo e o enxerto pediculado do corpo adiposo da bochecha têm sido empregadas para esse propósito. Este trabalho teve por objetivo descrever um caso clínico de FBS utilizando-se a técnica de enxerto ósseo da parede anterior do seio maxilar e discutir as vantagens e limitações com relação às técnicas mais utilizadas. A técnica descrita é relativamente simples, oferecendo resultado satisfatório, com o mínimo de desconforto para o paciente e tempo cirúrgico reduzido.

Palavras-chave: Fístula bucal. Extração dentária. Sinusite maxilar.

ABSTRACT

The oro-antral fistula (OAF) consists of a persistent communication between the maxillary sinus and the oral cavity, and it is a complication resulting from traumas, pathologies or dental extractions, occurring more frequently after the extraction of the superior molars due to their proximity to the maxillary sinus. Headache, maxillary sinusitis, pain, deglutition disorders and nocturnal cough are some of the reported signs and symptoms. The communication oro-antral smaller than 2mm of diameter, tend to close spontaneously, in the majority of cases without the need of a surgical approach. Cases of OAF larger than 3mm need surgical intervention. Surgical techniques which use flaps (palatine, vestibular or combined), bone graft and the pedicled buccal fat pad graft have been used for this purpose. This work aimed to describe a clinical case of OAF using the bone graft technique of the anterior sinus wall and discuss the advantages and limitations in relation to the most used techniques. The technique described is relatively simple, offering a satisfactory result, with minimum discomfort for the patient and reduced surgical time.

Keywords: Buccal fistula, Dental extraction, Maxillary sinusitis.

INTRODUÇÃO

A comunicação buco-sinusal pode ser definida como uma solução de continuidade entre o seio maxilar e a cavidade oral. Quando o trajeto é revestido por epitélio, devido a falhas no processo de reparo ósseo, a definição FBS é mais adequada. Os fatores etiológicos mais comuns são: exodontias, ressecção de cistos e tumores, trauma e infecção (MARTÍN-GRANIZO et al., 1997; YILMAZ et al., 2003; ANAVI et al., 2003; POESCHL et al., 2009; JAIN et al., 2012). O uso de retalhos locais (palatino, bucal) (AMARATUNGA, 1986; ANAVI et al., 2003), retalhos distantes (língua, temporal) (VISSCHER et al., 2010), combinação das técnicas (VISSCHER et al., 2011), enxerto pediculado do corpo adiposo da bochecha (HANAZAWA et al., 1995; POESCHL et al., 2009; JAIN et al., 2012) e enxertos ósseos (VISSCHER et al., 2010) são as técnicas cirúrgicas mais utilizadas para o fechamento das FBS. São poucos os relatos de enxerto ósseo para fechamento de FBS , não havendo nenhum relato na literatura do uso da parede anterior do seio maxilar para essa finalidade. (VISSCHER et al., 2010; PEÑARROCHA-DIAGO et al., 2007)

Este trabalho teve como objetivo reportar o uso da técnica de enxerto ósseo da parede anterior do seio maxilar para o fechamento de fístula buco-sinusal.

RELATO DE CASO

Paciente gênero feminino, fumante, 41 anos, ASA I, compareceu a clínica escola de odontologia da Universidade Federal de Campina Grande, relatando dor moderada em terço médio de hemiface esquerda e extravasamento de líquidos pela narina durante as refeições.

Durante anamnese a mesma relatou exodontia traumática em região de molares superiores do lado esquerdo há cerca de 4 meses. Ao exame clínico, verificou-se orifício em crista de rebordo alveolar maxilar esquerdo, sugestivo de FBS respondendo positivamente a manobra Valsalva.

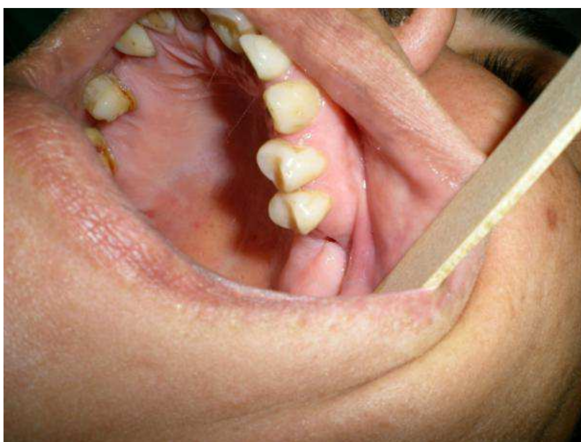

Figura 1. Aspecto clínico inicial

Foi solicitado radiografia panorâmica onde evidenciou a solução de continuidade entre a cavidade oral e o seio maxilar esquerdo, o qual se apresentava com velamento, sugestivo de sinusite maxilar aguda do lado esquerdo. Foi prescrito Clavulin® (GlaxoSmithKline Brasil Ltda- Rio de Janeiro-RJ, Brasil), (Amoxicilina 500mg e ácido clavulânico 125mg), de 08 em 08 horas durante 15 dias associado, nimesulida 100mg, de 12 em 12 horas durante 03 dias, Desalex® (Mantecorp Indústria Química e Farmacêutica LTDA- Rio de Janeiro-RJ, Brasil), um comprimido uma vez ao dia durante 15 dias e Rinosoro® (Famasa Laboratório Americano de Farmacoterapia S.A- São Paulo-SP, Brasil) uso tópico durante 15 dias.

A paciente foi reavaliada e apresentou-se assintomática, momento este em que foi planejado o procedimento cirúrgico para fechamento de FBS, sob anestesia geral devido solicitação do paciente, com enxerto ósseo de parede anterior do seio maxilar.

Descrição do procedimento cirúrgico:

Foi realizado anti-sepsia intra oral com Digluconato de Clorexidina 0,12% sem álcool (PerioGard® - Colgate®) e extra-oral com Digluconato de Clorexidina 2% (RioHex® - RioQuímica® Indústria Farmacêutica Ltda. Em seguida anestesia local do nervo alveolar superior posterior, nervo alveolar superior médio e o nervo palatino maior com três tubetes de 1,8mL contendo a solução anestésica de Cloridrato de Articaína 4% + Epinefrina 1:100.000 (ARTICAINE® - DFL Indústria e Comércio Ltda, Rio de Janeiro-RJ, Brasil). Foi confeccionado o retalho em crista óssea e túber da maxila até a região do defeito onde foi realizado uma incisão relaxante anterior(Newmann), expondo a área da fístula e a área doadora no mesmo acesso.

Em seguida a exposição do defeito, foi feita a fistulectomia onde o defeito ósseo tinha tamanho de 6mm.

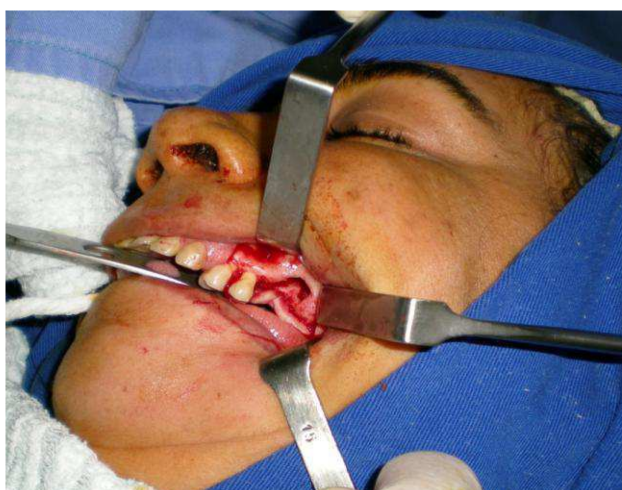

Figura 2. Aspecto trans-operatório após fistulectomia

O Enxerto ósseo de tamanho compatível com o defeito foi removido através de caneta de baixa rotação acoplada a broca carbide esférica cirúrgica nº 6 (KG Sorensen© - Medical Burs Ind. e Com. de Pontas e Brocas Cirúgicas Ltda. Cotia-SP, Brasil) sob irrigação abundante com solução fisiológica 0,9% cuidadosamente para manter a integridade da mucosa do seio maxilar. Para completa remoção do enxerto foi utilizado o cinzel de Wagner curvo. O enxerto ósseo foi estabilizado na área do defeito através de placa de titânio do sistema de fixação (1.5mm- Engeplam®), com quatro parafusos de 5mm monocorticais.

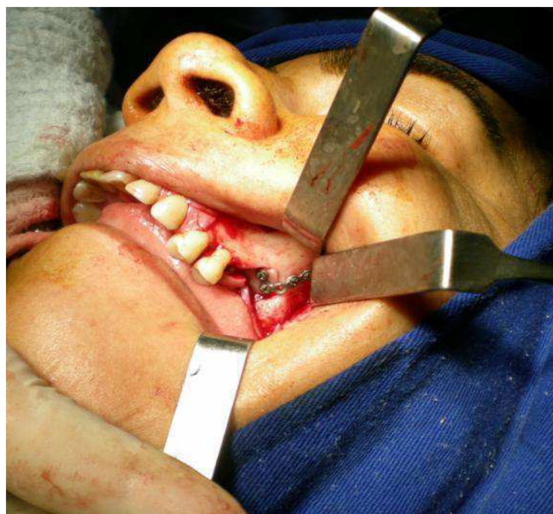

Figura 3. Enxerto ósseo fixado na área do defeito.

Em sequência foi feita sutura por ponto simples com fio de sutura absorvível 4.0 Vicryl® - Poliglactina 910 – (Ethicon – São José dos Campos, SP, Brasil). No pós- operatório de 15 dias as suturas foram removidas e a paciente apresentava sem eventualidades.

A Paciente foi acompanhada durante 4 meses em que permaneceu assintomática quando então surgiu a necessidade de remoção da placa de fixação com a finalidade de reabilitação protética por meio de prótese parcial removível.

Durante o procedimento de remoção da placa foi constatado a completa incorporação do enxerto e completo fechamento da comunicação. Após 5 anos do procedimento a paciente encontra-se em acompanhamento ambulatorial clínico e radiográfico permanecendo sem queixas clínicas.

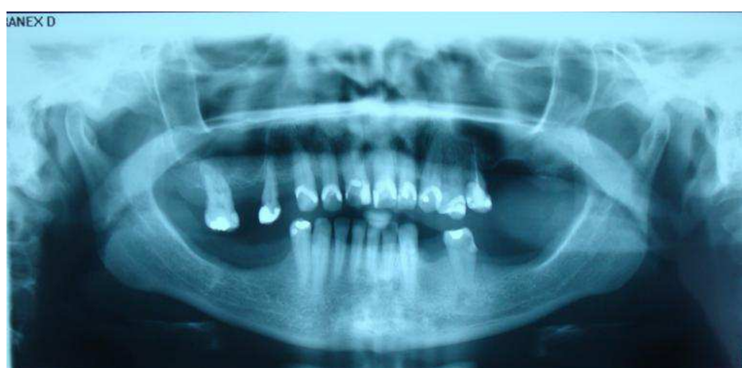

Figura 4 . Aspecto radiográfico 5 anos

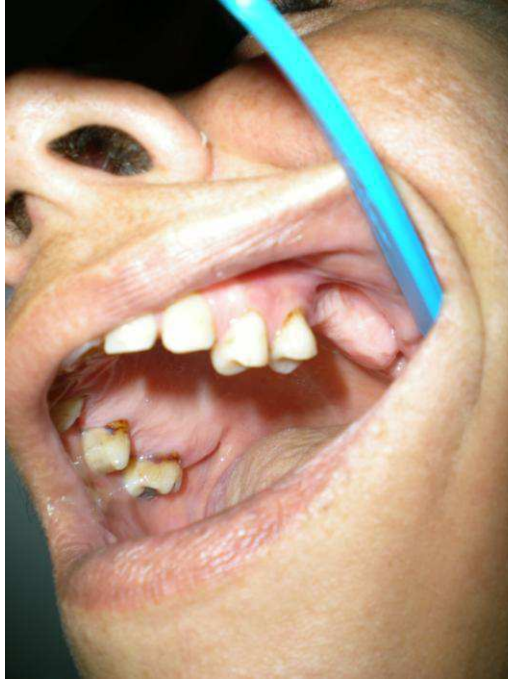

Figura 5. Aspecto clínico pós operatório 5 anos

CONSIDERAÇÕES FINAIS

A técnica descrita é relativamente simples, oferecendo resultado satisfatório, com o mínimo de desconforto para o paciente e tempo cirúrgico reduzido.

Não influenciando na profundidade do fundo de sulco vestibular, permitindo reabilitação protética e necessidade de um procedimento cirúrgico adicional para remoção das miniplacas.

REFERÊNCIAS

Martin-Granizo R, Naval L, Costas A, Goizueta C, Rodriguez F, Monje F et al.Use of buccal fat pad to repair intraoral defects: Review of 30 cases. Br J Oral Maxillofac Surg 1997;35:81-84.

Yilmaz T, Suslu AE, Gursel B. Treatment of oroantral fistula: Experience with 27 cases. Am J Otolaryngol 2003;24:221-223.

Poeschl PW, Baumann A, Russmueller G, Poeschl E, Klug C, Ewers R. Closure of oroantral communications with Bichat's buccal fat pad. J Oral Maxillofac Surg 67:1460, 2009.

Jain MK, Ramesh C, Sankar K, Lokesh Babu KT. Pedicled buccal fat pad in the management of oroantral fistula: a clinical study of 15 cases. Int. J. Oral Maxillofac. Surg. 2012; 41: 1025–1029.

Amaratunga NAS. Oro-antral fistulae - A study of clinical, radiological and treatment aspects. Br J Oral Maxillofac Surg 1986;24:433-437

Visscher SH, Van Minnen B, Bos RRM. Closure of oroantral communications: A review of the literature. J Oral Maxillofac Surg 2010;68:1384-1391.

Visscher SH, Van Roon MRF, Sluiter WJ, Van Minnen B, Bos RRM. Retrospective study on the treatment outcome of surgical closure of oroantral communications. J Oral Maxillofac Surg 2011;69:2956-2961

Hanazawa Y, Itoh K, Mabashi T, Sato K. Closure of oroantral communications using a pedicled buccal fat pad graft. J Oral Maxillofac Surg 1995;53:771-775.

Anavi Y, Gal G, Silfen R, Calderon S. Palatal rotation-advancement flap for delayed repair of oroantral fistula: A retrospective evaluation of 63 cases. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2003;96:527-34.

Haas R, Watzak G, Baron M, et al: A preliminary study of monocortical bone grafts for oroantral fistula closure. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 96:263, 2003

UNIVERSIDADE FEDERAL DE CAMPINA GRANDE
Centro de Saúde e Tecnologia Rural
Curso de Odontologia
Disciplina de Cirurgia e Traumatologia Bucomaxilofacial

PRONTUÁRIO Nº:

Nome...
RG:.................. CPF..................................
Data Nascimento.................. Idade........ Estado Civil..................
Naturalidade.................... Estado PB Nacionalidade Brasileira
Ocupação.. Gênero..............
Endereço residencial.................................... Nº S/N.......
Bairro.................... Cidade.......................... Estado PB
CEP.................. Tel.............. Tel. Recado..........................
Filiação: Pai...
Mãe...

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Por este instrumento de autorização por mim assinado, dou pleno consentimento à **Faculdade de Odontologia da Universidade Federal de Campina Grande** para, por intermédio dos seus professores, assistentes e alunos devidamente autorizados, fazer diagnóstico, planejamento e tratamento em minha pessoa, de acordo com os conhecimentos enquadrados no campo dessa especialidade e de áreas afins.

Concordo também, que todas as radiografias, fotografias, modelos, desenhos, históricos de antecedentes familiares, resultados de exames clínicos e de laboratório e quaisquer outras informações concernentes ao planejamento de diagnóstico e/ou tratamento, permaneçam sob guarda desta **FACULDADE**, à qual dou plenos direitos de uso para quaisquer fins de ensino, apresentações científicas e de divulgação em livros, jornais e/ou revistas científicas do país e do estrangeiro, respeitando os respectivos códigos de ética.

____
Assinatura do paciente ou responsável

ANEXO B- Normas da Revista British Journal of Oral And MaxilloFacial Surgery

BRITISH JOURNAL OF ORAL AND MAXILLOFACIAL SURGERY

AUTHOR INFORMATION PACK

TABLE OF CONTENTS

- **Description**
- **Impact Factor**
- **Abstracting and Indexing**
- **Editorial Board**
- **Guide for Authors**

p.1
p.1
p.1
p.2
p.4

ISSN: 0266-4356

DESCRIPTION

Journal of the British Association of Oral and Maxillofacial Surgeons:

- Leading articles on all aspects of **surgery** in the **oro-facial** and head and neck region
- One of the largest circulations of any international journal in this field
- Dedicated to enhancing surgical expertise.

Benefits to authors

We also provide many author benefits, such as free PDFs, a liberal copyright policy, special discounts
on Elsevier publications and much more. Please click here for more information on our author services.

Please see our Guide for Authors for information on article submission. If you require any further
information or help, please visit our support pages: http://support.elsevier.com

IMPACT FACTOR

2013: 1.133 © Thomson Reuters Journal Citation Reports 2014

ABSTRACTING AND INDEXING

BIOSIS
Current Contents
Medical Documentation Service
Medline/Index Medicus
Reference Update
Research Alert
Scisearch
Excerpta Medica
UMI Microfilms
Cochrane Center
Scopus
ISI Science Citation Index

EDITORIAL BOARD

Editor

D.A. Mitchell, MBBS, BDS, FDSRCPS, FRCS(ED), FRCS(ENG), FRCS(OMF), Bradford Teaching Hospitals NHS Foundation Trust and Calderdale and Huddersfield NHS Foundation Trust, England, UK

Deputy Editor

K. Shakib, Barnet General Hospital, Barnet, UK
Associate Editors
P. Brennan, Queen Alexandra Hospital, Portsmouth, England, UK
M. Ethunandan, Western Sussex Hospitals, Chichester, UK
S. Holmes, Royal London Hospital, Whitechapel, UK
N Kanatas, University of Leeds, Leeds, England, UK
D.J.W Keith, Sunderland Royal Hospital, Sunderland, UK
N.M.H McLeod, John Radcliffe Hospital, Oxford, England, UK
P. M. McLoughlin, Ninewells Hosp Med. School, Dundee, UK
A.J. Sidebottom, Queen's Medical Centre, Nottingham, England, UK

CPD Editor

P. Ramsay-Baggs

Technical Editor

C. Lester
M. Evans

Statistical Adviser
A. Smith

Expert Advisers

V. Ilankovan, Aesthetic Surgery
R. Oeppen, Radiology
C. Penfold, Cleft
R. Puxeddu, ENT
D. Richardson, Craniofacial
S.N. Rogers, Quality of Life
H. Spencer, Dentoalveolar Surgery

Editorial Advisory Board

R. Anand
G. Arakeri
C. Avery
A. Ayoub
A. W. Barrett
B. Bisase
I. Brook
A. Brown
C.-H. Chan
J. E. De Burgh Norman
B. Evans
M. Fardy
M. Foster
A. Gibbons
N. Goodger
W. Halfpenny
P. Hardee
J. Herold
A.S High
S. Hodder
D.C Howlett
V. Ilankovan

S. Langton
S. Laverick
R. Loukota
D. Lovelock
A. Lyons
D. Macpherson
A. Markus
J.A. McCaul
M. McGurk
A. McKechnie
S.P.R McLeod
I. McVicar
K. Moos
P. Morgan
M. Morton
C. Newlands
R.S Oeppen
C. Penfold
R. Puxeddu
P. Revington
D. Richardson
M. Robinson
S. Rogers
R. Shaw
A. Smyth
B. Speculand
A. V. Spedding
H. Spencer
D. G. Thompson
K. Webster
Editorial Office
Jacqui Merrison, BJOMS Editorial Office, Elsevier Ltd., The Boulevard, Kidlington, OX5 1GB, UK, Fax: +44
(0)1865 843992

GUIDE FOR AUTHORS

Official Journal of the British Association of Oral & Maxillofacial Surgeons

Types of paper

The following types of paper are published in the journal (please note that the abstract is included
in the word count):
Full length articles: maximum length 2500 words; abstract maximum 250 words, 25 references,
normally no more than 6 figures or tables (note that composite or multi-part figures are not accepted).
Short communications: maximum length 750 words; abstract maximum of 150 words, 10 references, 3 figures or tables (note that composite or multi-part figures are not accepted). Normally no more than 4 authors.

Technical notes: maximum length 500 words, 5 references, 4 figures or tables (note that composite or multi-part figures are not accepted), no abstract, no introduction or discussion. Normally no more than 4 authors.

Letters: Maximum length 400 words, 3 references, 1 figure or table. Letters about a published paper should be headed with the full reference to that paper. Original letters should have their own heading.

Review articles are usually commissioned by the editor.

Leading Articles - by invitation only: these are planned for each edition and will cover the whole remit of the specialty. They will provide up-to-date knowledge by a recognised expert in the field and are by invitation only from the editor. Length 2500 words, up to 40 references, maximum 6 figures or tables (note that composite or multi-part figures are not accepted). Please contact the Editor if
you are interested in writing a leading article.

Book reviews - by invitation only.

PLEASE STATE WHICH TYPE OF PAPER YOU ARE SUBMITTING IN YOUR COVER LETTER.

Contact

The contact details for the journal's editorial office are as follows:
Mrs Jacqui Merrison
Administrative Editor
BJOMS Editorial Office
Health Sciences, Elsevier Ltd
The Boulevard
Langford Lane
Kidlington
Oxford OX5 1GB
UK
Tel: +44 (0) 1865 843270
Fax: +44 (0) 1865 843992
Email: bjoms@elsevier.com<

BEFORE YOU BEGIN

Editorial policy

The editorial office will acknowledge receipt of all material. All submissions are subject to editorial review, and all research papers will be forwarded to at least two referees for peer review. An immediate reject decision may be given for papers that are not suitable for publication in the journal. These papers are not usually sent for further peer review, though comments may be provided for the reject
decision by the Editor. The Editor will not enter into any correspondence about papers not accepted.
AUTHOR INFORMATION PACK 20 May 2015 www.elsevier.com/locate/bjom 5

The editors reserve the right to make editorial and literary corrections. Any opinions expressed orpolicies advocated do not necessarily reflect the opinions or policies of the editors, the publisher or BAOMS.

Online-only publication

Owing to the high volume of submissions to the journal, the Editor reserves the right to select papers for online-only publication in the electronic version of the journal at http://www.sciencedirect.com and http://bjoms.com. Online-only papers will be listed in the contents page of the print journal; they are fully citable and are indexed in PubMed/Medline. Authors will be informed if their paper is
accepted to appear on-line only. The Editors decision in this regard is final.

Ethics in publishing

For information on Ethics in publishing and Ethical guidelines for journal publication seehttp://www.elsevier.com/publishingethics and http://www.elsevier.com/journal-authors/ethics.

Human and animal rights

If the work involves the use of animal or human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans http://www.wma.net/en/30publications/10policies/b3/index.html; EU Directive 2010/63/EU for animal experiments
http://ec.europa.eu/environment/chemicals/lab_animals/legislation_en.htm;
Uniform Requirements for manuscripts submitted to Biomedical journals
http://www.icmje.org. Authors should include a statement in the manuscript that informed consent was obtained for
experimentation with human subjects. The privacy rights of human subjects must always be observed.

Conflict of interest

All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. If there are no conflicts of interest then please state this: 'Conflicts of interest: none'. See also http://www.elsevier.com/conflictsofinterest.
Further information and an example of a Conflict of Interest form can be found at:
http://help.elsevier.com/app/answers/detail/a_id/286/p/7923.
British Journal of Oral & Maxillofacial Surgery requires full disclosure of all potential conflicts of interest. All authors must complete and upload the official *British Journal of Oral & Maxillofacial Surgery* conflict of interest form, which may be found here: conflict of Interest Form. Each and every author must disclose any potential conflict of interest as defined on the form itself. If this form is not provided upon submission, your submission will be returned to you with a request
that you provide this form. Your manuscript will not be considered for publication by editors or reviewers until the completed conflict of interest form has been received. Please note that the Conflict
of Interest and Ethics Statement/confirmation of patient permission statements must also be included in your manuscript text prior to the reference list.

Submission declaration

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see
http://www.elsevier.com/sharingpolicy), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere including electronically in the same form, in English or in any other language, without the written consent of the copyright-holder.

Authorship

All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.
Minor contributors and non-contributory clinicians who have allowed their patients to be used in the paper should be acknowledged at the end of the text and before the references. Normally no more than four authors should appear on a short communication and technical note. Full length articles may contain as many authors as appropriate. AUTHOR INFORMATION PACK 20 May 2015 www.elsevier.com/locate/bjom 6 Author Contribution Form.

Confirmation of Authorship

Before a paper is accepted all authors must sign the Confirmation of Authorship form (available here and at http://ees.elsevier.com/bjoms). Signing this form confirms that all the named authors agree to publication if the paper is accepted and that each has had significant input into the paper. The form can be downloaded and returned electronically if scanned, or the original may be posted to the Editorial Office (contact details above). It is advisable that to prevent delay this form is submitted early in the editorial process.

Changes to authorship

This policy concerns the addition, deletion, or rearrangement of author names in the authorship of accepted manuscripts: *Before the accepted manuscript is published in an online issue*: Requests to add or remove an author, or to rearrange the author names, must be sent to the Journal Manager from the corresponding author of the accepted manuscript and must include: (a) the reason the name should be added or removed, or the author names rearranged and (b) written confirmation (e-mail, fax, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed. Requests that are not sent by the corresponding author will be forwarded by the Journal Manager to the corresponding author, who must follow the procedure as described above. Note that: (1) Journal Managers will inform the Journal Editors of any such requests and (2) publication of the accepted manuscript in an online issue is suspended until authorship has been agreed. *After the accepted manuscript is published in an online issue*: Any requests to add, delete, or rearrange author names in an article published in an online issue will follow the same policies as noted above and result in a corrigendum.

Reporting clinical trials

Randomized controlled trials should be presented according to the CONSORT guidelines. At manuscript submission, authors must provide the CONSORT checklist accompanied by a flow diagram that illustrates the progress of patients through the trial, including recruitment, enrollment, randomization, withdrawal and completion, and a detailed description of the randomization procedure. The CONSORT checklist and template flow diagram can be found on http://www.consort-statement.org.

Registration of clinical trials

Registration in a public trials registry is a condition for publication of clinical trials in this journal in accordance with International Committee of Medical Journal Editors (ICMJE, http://www.icmje.org) recommendations. Trials must register at or before the onset of patient enrolment. The clinical trial registration number should be included at the end of the abstract of the article. A clinical trial is defined as any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects of health outcomes. Healthrelated interventions include any intervention used to modify a biomedical or health-related outcome (for example drugs, surgical procedures, devices, behavioural treatments, dietary interventions, and process-of-care changes). Health outcomes include any biomedical or health-related measures obtained in patients or participants, including pharmacokinetic measures and adverse events. Purely observational studies (those in which the assignment of the medical intervention is not at the discretion of the investigator) will not require registration.

Copyright

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (for more information on this and copyright, see http://www.elsevier.com/copyright). An e-mail will be sent to the corresponding author

confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement. Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations (please consult http://www.elsevier.com/permissions). If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases: please consult http://www.elsevier.com/permissions.
AUTHOR INFORMATION PACK 20 May 2015 www.elsevier.com/locate/bjom 7
For open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (for more information see http://www.elsevier.com/OAauthoragreement). Permitted third party reuse of open access articles is determined by the author's choice of user license (see http://www.elsevier.com/openaccesslicenses). ***Author rights***
As an author you (or your employer or institution) have certain rights to reuse your work. For more information see http://www.elsevier.com/copyright.

Role of the funding source
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Funding body agreements and policies
Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some authors may also be reimbursed for associated publication fees. To learn more about existing agreements please visit http://www.elsevier.com/fundingbodies.
After acceptance, open access papers will be published under a noncommercial license. For authors requiring a commercial CC BY license, you can apply after your manuscript is accepted for publication.

Open access
This journal offers authors a choice in publishing their research:

Open access
• Articles are freely available to both subscribers and the wider public with permitted reuse
• An open access publication fee is payable by authors or on their behalf e.g. by their research funder or institution

Subscription
• Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs (http://www.elsevier.com/access).

• No open access publication fee payable by authors. Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards. For open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses: *Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)*
For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

The open access publication fee for this journal is **USD 3000**, excluding taxes. Learn more about Elsevier's pricing policy: http://www.elsevier.com/openaccesspricing.

Language (usage and editing services)

Please write your text in British English. Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop (http://webshop.elsevier.com/languageediting/) or visit our customer support site (http://support.elsevier.com) for more information.

Informed consent and patient details

Studies on patients or volunteers require ethics committee approval and informed consent, which should be documented in the paper. Appropriate consents, permissions and releases must be obtained where an author wishes to include case details or other personal information or images of patients and any other individuals in an Elsevier publication. Written consents must be retained by the author and copies of the consents or evidence that such consents have been obtained must be provided to Elsevier AUTHOR INFORMATION PACK 20 May 2015 www.elsevier.com/locate/bjom 8 on request. For more information, please review the *Elsevier Policy on the Use of Images or Personal Information of Patients or other Individuals*, http://www.elsevier.com/patient-consent-policy. Unless
you have written permission from the patient (or, where applicable, the next of kin), the personal details of any patient included in any part of the article and in any supplementary materials (including all illustrations and videos) must be removed before submission.

Submission
Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.*Submit your article* Please submit your article via http://ees.elsevier.com/bjoms/.

Style of text

Papers should be presented in British English in the style of the journal; failure to do so may delay assessment and publication. The **title page** should contain the title of the paper, the initials, name and address of each author with higher academic degrees and current positions held, followed by the name, address, fax number,
and email address of the author responsible for correspondence. **PREPARATION**

Use of Word Processing Software

It is important that the file be saved in the native format of the wordprocessor used. The text should be in single-column, double-spaced format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the wordprocessor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is
used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: http://www.elsevier.com/guidepublication). Note that source files of

figures, tables and text graphics will be required whether or not you embed your figures in the text. See also the section on Electronic artwork.
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your wordprocessor.

Article structure

Subdivision - unnumbered sections
Divide your article into clearly defined sections. Each subsection is given a brief heading. Each heading should appear on its own separate line. Subsections should be used as much as possible when crossreferencing text: refer to the subsection by heading as opposed to simply 'the text'.

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods

Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.

Results
Results should be clear and concise.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

• ***Title.*** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

• ***Author names and affiliations.*** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the
e-mail address of each author.

• ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

• ***Present/permanent address.*** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Graphical abstract

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. See http://www.elsevier.com/graphicalabstracts for examples. Authors can make use of Elsevier's Illustration and Enhancement service to ensure the best presentation of their images and in accordance with all technical requirements: Illustration Service.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using British spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Units

Follow internationally accepted rules and conventions: use the international system of units (SI). If other units are mentioned, please give their equivalent in SI.

Math formulae

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Numerical data

Statistical analyses accepted by the journal follow the principles laid down in: Lang TA, Secic M. How to report statistics in medicine. Philadelphia: American College of Physicians, 1997 (available from the BMA Bookshop).

Statistical analysis

Statistical analyses accepted by the journal follow the principles laid down in: Lang TA, Secic M. How to report statistics in medicine. Philadelphia: American College of Physicians, 1997 (available from the BMA Bookshop).

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors can build footnotes into the text, and this feature may be used. Otherwise, please indicate the position of footnotes in the text and list the footnotes themselves separately at the end of the article. Do not include footnotes in the Reference list.

Artwork

Electronic artwork

General points
- Make sure you use uniform lettering and sizing of your original artwork.
- Embed the used fonts if the application provides that option.
- Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
- Number the illustrations according to their sequence in the text.
- Use a logical naming convention for your artwork files.
- Provide captions to illustrations separately.
- Size the illustrations close to the desired dimensions of the published version.
- Submit each illustration as a separate file.

A detailed guide on electronic artwork is available on our website:
http://www.elsevier.com/artworkinstructions.
You are urged to visit this site; some excerpts from the detailed information are given here.

Formats

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.
Regardless of the application used other than Microsoft Office, when your electronic artwork is finalized, please 'Save as' or convert the images to one of the following

formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below): EPS (or PDF): Vector drawings, embed all used fonts.
TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.
TIFF (or JPEG): Bitmapped (pure black & white pixels) line drawings, keep to a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/half-tone (color or grayscale), keep to a minimum of
500 dpi.

Please do not:

• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a
low number of pixels and limited set of colors;
• Supply files that are too low in resolution;
• Submit graphics that are disproportionately large for the content.

Figures of good quality should be submitted online as separate files. Composite illustrations (several pictures presented as one) are not accepted.

Photomicrographs

Please make sure that photomicrographs and pictures of specimens contain a scale bar. The legends to photomicrographs should state the stain used and the original magnification.

Clinical photographs

Written consent should be obtained from the patient (or parent or guardian) for publication of any picture in which the patient is identifiable. The legend should include the words 'published with the patient's (or parent's or guardian's) consent'.

Graphs and histograms

These should be used only when it is not possible to display the data in any other way (for instance in tables), or when they are being used only for comparison with other series. In all cases it should be clear how many cases or patients are being studied in each group. Three-dimensional graphs and pie-charts are not acceptable.
For guidance on the preparation of graphs and figures see: Tufte ER. The visual display of quantitative information. Cheshire, CT: Graphic Press, 1983, or Jolley D. The glitter of the t table. Lancet 1993;342:27-9.

Color artwork

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF) or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) in addition to color reproduction in print. For further information on the preparation of electronic artwork, please see http://www.elsevier.com/artworkinstructions.

Illustration services

Elsevier's WebShop (http://webshop.elsevier.com/illustrationservices) offers Illustration Services to authors preparing to submit a manuscript but concerned about the quality of the images accompanying their article. Elsevier's expert illustrators can produce scientific, technical and medicalstyle images, as well as a full range of charts, tables and graphs. Image 'polishing' is also available, where our illustrators take your image(s) and improve them to a professional standard. Please visit the website to find out more.

Figure captions

Ensure that each illustration has a caption. Supply captions separately, not attached to the figure. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules.

References

Citations in text
Every reference in the list should be cited in the text in numerical order. References should not be given in the abstract. Abstracts presented at meetings, unpublished results, and personal communications should not be listed as references, but given in brackets in the text where they are cited (see examples below). References that were originally published in a language other than English should be cited in English with the words (in French, German, Chinese, and so on, as appropriate) following the title. All references must be easily retrievable from one of the standard databases (for example, PubMed, Google Scholar, or Science Direct). Any reference that is not retrievable will be omitted. All references should be set out in the house style of the journal (please see a copy of a recent issue). Only a reference that has been accepted for publication should be given as 'in press', together with the name
of the journal in which it is to be published.

Reference links

Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, CrossRef and PubMed, please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is encouraged.

Web references

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

References in a special issue

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference style
These should be set out in the Vancouver style, superscripted in the text after punctuation marks, and numbered in the order in which they appear in the

text.Examples: Paper: Williams RW, Travess HC, Williams AC. Patients' experiences after undergoing orthognathic surgery at NHS hospitals in the south west of England. Br J Oral Maxillofac Surg 2004;42:419-31.
Chapter in a book: Pollock AV. The historical evolution of clinical research. In: Troidl H, McKneally MF, ulder DS, Wechsler AS, McPeek B, Spitzer WO, eds. Surgical research. Basic principles and clinical practice. 3rd ed. Berlin: Springer, 1997:49-56. Book: Graber TM, Neumann B. Removable orthodontic appliances. 2nd ed. Philadelphia: Saunders, 1984. Papers in electronic format: Morse SS. Factors in the emergence of infectious diseases. Emerg Infect Dis (serial online) 1995 Jan-March (cited 1996 Jan 5); 1(1):[24 screens]. Available from URL: http://www.cdc.gov/ncidod/eid/index.htm. Thesis: Author, title, degree, name of university, year of publication. Abstract: First authors name et al. Title in full. Paper presented at (name of scientific meeting) year,
place.
Personal communication: Name, date, personal communication.
Unpublished observation: Name, date, unpublished observation.
For other formats see: International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. Ann Intern Med 1997;126:36-47. Also available at: www.icmje.org. *Journal abbreviations source*
Journal names should be abbreviated according to the List of Title Word Abbreviations: http://www.issn.org/services/online-services/access-to-the-ltwa/.

Video data

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly
relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the files in one of our recommended file formats with a preferred maximum size of 150 MB. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect: http://www.sciencedirect.com. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages at http://www.elsevier.com/artworkinstructions. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content. AUTHOR INFORMATION PACK 20 May 2015 www.elsevier.com/locate/bjom 13

AudioSlides

The journal encourages authors to create an AudioSlides presentation with their published article. AudioSlides are brief, webinar-style presentations that are shown next to the online article on ScienceDirect. This gives authors the opportunity to summarize their research in their own words and to help readers understand what the paper is about. More information and examples are available at http://www.elsevier.com/audioslides. Authors of this journal will automatically receive an invitation e-mail to create an AudioSlides presentation after acceptance of their paper.

Supplementary material

Elsevier accepts electronic supplementary material to support and enhance your scientific research. Supplementary files offer the author additional possibilities to publish supporting applications, highresolution images, background datasets, sound clips and more. Supplementary files supplied will be published online alongside the electronic version of your article in Elsevier Web products, including ScienceDirect: http://www.sciencedirect.com. In order to ensure that your submitted material is directly usable, please provide the data in one of our recommended file formats. Authors should submit the material in electronic format together with the article and supply a concise and descriptive caption for each file. For more detailed instructions please visit our artwork instruction pages at http://www.elsevier.com/artworkinstructions.

Submission checklist

The following list will be useful during the final checking of an article prior to sending it to the journal for review. Please consult this Guide for Authors for further details of any item.

Ensure that the following items are present:
One author has been designated as the corresponding author with contact details:
• E-mail address
• Full postal address
All necessary files have been uploaded, and contain:
• Keywords
• All figure captions
• All tables (including title, description, footnotes)
Further considerations
• Manuscript has been 'spell-checked' and 'grammar-checked'
• References are in the correct format for this journal
• All references mentioned in the Reference list are cited in the text, and vice versa
• Permission has been obtained for use of copyrighted material from other sources (including the Internet) Printed version of figures (if applicable) in color or black-and-white
• Indicate clearly whether or not color or black-and-white in print is required.
• For reproduction in black-and-white, please supply black-and-white versions of the figures for
printing purposes.
For any further information please visit our customer support site at http://support.elsevier.com.

AFTER ACCEPTANCE

Use of the Digital Object Identifier

The Digital Object Identifier (DOI) may be used to cite and link to electronic documents. The DOI consists of a unique alpha-numeric character string which is assigned to a document by the publisher upon the initial electronic publication. The assigned DOI never changes. Therefore, it is an ideal medium for citing a document, particularly 'Articles in press' because they have not yet received their
full bibliographic information. Example of a correctly given DOI (in URL format; here an article in the journal *Physics Letters B*): http://dx.doi.org/10.1016/j.physletb.2010.09.059
When you use a DOI to create links to documents on the web, the DOIs are guaranteed never to change.

Proofs

One set of page proofs (as PDF files) will be sent by e-mail to the corresponding author (if we do not have an e-mail address then paper proofs will be sent by post) or, a link will be provided in the e-mail so that authors can download the files themselves. Elsevier

now provides authors with PDF proofs which can be annotated; for this you will need to download Adobe Reader version 9 (or

higher) available free from http://get.adobe.com/reader. Instructions on how to annotate PDF files will accompany the proofs (also given online). The exact system requirements are given at the Adobe site: http://www.adobe.com/products/reader/tech-specs.html.
If you do not wish to use the PDF annotations function, you may list the corrections (including replies to the Query Form) and return them to Elsevier in an e-mail. Please list your corrections quoting line number. If, for any reason, this is not possible, then mark the corrections and any other comments (including replies to the Query Form) on a printout of your proof and return by fax, or scan
the pages and e-mail, or by post. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. We will do everything possible to get your article published quickly and accurately. It is important to ensure that all corrections are sent back to us in one communication: please check carefully before
replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints

The corresponding author, at no cost, will be provided with a PDF file of the article via e-mail (the PDF file is a watermarked version of the published article and includes a cover sheet with the journal cover image and a disclaimer outlining the terms and conditions of use). For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's
WebShop (http://webshop.elsevier.com/myarticleservices/offprints). Authors requiring printed copies of multiple articles may use Elsevier WebShop's 'Create Your Own Book' service to collate multiple articles within a single cover
(http://webshop.elsevier.com/myarticleservices/booklets).

AUTHOR INQUIRIES

You can track your submitted article at http://www.elsevier.com/track-submission. You can track your accepted article at http://www.elsevier.com/trackarticle. You are also welcome to contact Customer Support via http://support.elsevier.com.
© Copyright 2014 Elsevier | http://www.elsevier.com