Review

Review article: oral surgery and TMJ-related papers published in BJOMS in 2008 and 2009

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Abstract

This review summarises the 81 papers relating to oral surgery and to the temporomandibular joint (TMJ) published in the British Journal of Oral and Maxillofacial Surgery (BJOMS) January 2008–December 2009. They include full length articles on distraction osteogenesis, imaging, extraction techniques, implants, and the management of facial pain and disorders of the TMJ including joint replacement. Many short communications were also published, but an editorial decision was taken in August 2009 to publish most of these in future in the online journal only. As BJOMS encompasses the whole remit of the specialty, and other specialist journals on oral surgery are available, it was encouraging to see that authors still choose to submit their work to our journal.

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Introduction

This article reviews papers on oral surgery and on the temporomandibular joint (TMJ) published in the British Journal of Oral and Maxillofacial Surgery (BJOMS) during 2008 and 2009. Not only does it provide a summary for readers in this area, but also its preparation has provided additional information for the editorial team that is useful for the strategic development of the Journal.

During this period 81 papers relating to oral surgery and to the TMJ were published (Table 1), of which 34 (42%) were full length articles; short communications accounted for 30% of the total submissions. A short summary of the main types of publications (by category) is given below.

Full length articles

Surgical procedures including implants and distraction osteogenesis

Eighteen full length articles relating to surgical procedures in oral surgery and allied areas were published during 2008–2009.1–18 They covered diagnosis, treatment, consent, implant surgery, and distraction osteogenesis.

Markose et al.5 presented a protocol for the surgical management of patients presenting with bisphosphonate osteonecrosis of the jaws (BONJ). This fast growing subgroup of patients present with painful, exposed, necrotic alveolar bone. Bisphosphonates bind avidly to apatite crystals of bone and inhibit their growth; they inhibit osteoclasts using several disruptive effects on their cytoskeleton and oxidative pathways. As they are not metabolised they have a long duration of action, which may last up to 10 years; discontinuation of treatment offers no short-term benefit. The removal of exposed necrotic bone to a level where bleeding compact bone is covered by periosteum may provide sufficient oral mucosa to enable primary closure. Their success rate...
(as assessed by maintained oral mucosal closure) was 100% three weeks after operation. Shearer and McManners investigated advances in peri-radicular surgery, and found that preparation of a retrograde cavity using an ultrasonic retro-tip was more successful than with a more traditional microspeed bur.

An interesting paper by Lizio et al. reported clinical outcomes of dental implants placed on vertically distracted fibular free flaps that were used to reconstruct maxillary and mandibular defects after resection. There were many complications, and pronounced bony resorption around the implant was probably a result of the formation of granulation tissue. The authors advocated meticulous follow up of peri-implants and the necessity of maintaining good oral hygiene.

Sun et al. evaluated the effect of the transgingival height of implants on the maximum equivalent stress in jaw bones and the maximum displacement in the implant–abutment complex by a finite element method. They found that transgingival height played a more important part in protecting dental implants under a buccolingual load than under an axial load; furthermore, transgingival heights ranging from 1.7 to 2.8 mm were biomechanically optimal for a screwed implant.

Perdijk et al. investigated vertical distraction in the atrophic mandible of 34 patients as a method of restoring vertical height. Surprisingly, in nearly all patients there was a backward rotation of the segment with lingual-tipping of the vertical height. Surprisingly, in nearly all patients there was a backward rotation of the segment with lingual-tipping of the vertical height. Not only were these changes predictable, but the vector of distraction was unpredictable.

Another study investigated the changes that occur in periodontal tissue during dentoalveolar distraction osteogenesis using an intraoral tooth-borne distractor to close wide alveolar defects in dogs. The authors found that the anchoring tooth was not displaced, and that the periodontal tissues around it did not change. Morphological changes in the periodontal tissues of the supporting tooth were moderate and, like the physiological changes of the periodontal ligament that occurred during orthodontic movement, could be reversed if the rate and duration of distraction were correct.

Use of distraction osteogenesis has recently been reported to reconstruct a large unilateral maxillary defect. Three different sequential procedures were used to reform the zygoma, alveolar process, and hard palate after ablative surgery. The authors claim that the technique may be the first example of three-dimensional and functional reconstruction of unilateral large maxillary defects that do not require bone grafts from other anatomical areas.

FACIAL PAIN INCLUDING THE MANAGEMENT OF DISORDERS OF THE TMJ

Only two papers that related specifically to facial pain in oral surgery were published during the review period. A large study by McLeod et al. evaluated the methods used by UK oral and maxillofacial surgeons to assess and manage patients with trigeminal neuralgia. A postal questionnaire was sent to 297 UK consultant OMF surgeons about the examination of new patients with symptoms of trigeminal neuralgia, routine investigations that were requested, and their subsequent management. Sixty percent responded. Cranial nerve function was assessed by 92% of respondents, and 93% of surgeons prescribed carbamazepine as the first choice of drug. This agrees with current publications that state that medical management is appropriate for most of these patients. It should be remembered that cross-sectional imaging may be useful for atypical presentation, or in patients under the age of 50.

Sidebottom published a leading article on current management of TMJ disorders. He outlined how this has progressed through the 1990s from a condition dealt with by non-specialists to one managed by an increasing number of sub-specialists. Patients are now managed increasingly with non-surgical options and regimens to manage pain. The introduction of botulinum toxin A and tricyclic antidepressants (and related drugs) has reduced the need for invasive treatment. Primary management of patients with acute restriction of mouth opening and joint pain now includes arthrocentesis and arthroscopy. Degenerative and ankylotic conditions of the joint can be safely treated using alloplastic joint replacements, which have a more predictable outcome than costochondral grafting.

Three excellent articles summarised current practice, provision and problems in TMJ replacement surgery in the UK. Several other interesting papers on disorders of the TMJ were published, which included ankylosis, arthrocentesis, recurrent dislocation, and arthroscopy.

RADIOLOGY

Four full length articles on radiology relating to oral surgery or the TMJ were published during the review period.
Saravana and Subhashraj\textsuperscript{36} investigated dental follicles around impacted third molars with no pericoronal radiolucency to find out the incidence of histological abnormalities in the soft tissues. In a study of 100 patients with radiographically normal impacted lower third molars (less than 2.4 mm radiolucency around the crowns), the incidence of cystic changes in the dental follicle was 46%.

Zhang et al.\textsuperscript{37} studied 27 consecutive patients with internal derangement of the TMJ (total of 33 joints). All patients were examined using magnetic resonance imaging (MRI) and arthroscopy. The MRI findings were recorded as positive, suspicious, or negative for adhesions, and were compared with arthroscopy. The authors concluded that the diagnostic accuracy of MRI for intra-articular adhesions was poor, but that intracapsular adhesions could be detected on T2-weighted images with existing synovial fluid.

Power Doppler ultrasonography has been found to be a useful technique for the assessment of synovial changes in patients with internal derangement of the TMJ as it can highlight microvascularisation in the joint.\textsuperscript{38}

A study by Feichtinger et al.\textsuperscript{39} showed the useful link between radiology and surgery. Twenty patients who had been treated by secondary bone grafting for a complete unilateral cleft lip and palate had a computed tomograms (CTs) taken immediately before, and at one and two years after operation. Cleft defects and bony bridges were marked on the monitor and the software of the navigation system created three-dimensional models that showed the amount and site of bone resorption. When teeth adjacent to the cleft were missing, the amount of bone lost was 95% after the first year. There was significant correlation between the size of the cleft and the success of alveolar bone grafting. This method of assessment seems to be superior to conventional two-dimensional plain film imaging.

Basic science papers

The publication of basic science papers is vital for the development of the specialty and it also improves the profile of the journal. Three basic science papers relating to oral surgery or to the TMJ were published in 2008/2009.

While studying the nerve to mylohyoid (a branch of the mandibular division of the trigeminal nerve) in 13 cadavers, Kocabiyik et al.\textsuperscript{40} found a previously un-named branch of the lingual nerve that extended horizontally from the medial mandibular cortex at the level of the retromolar pad to the lower first molars—second premolar region. It supplied the lingual peristomeum, gingiva, and mucosa overlying the medial alveolar process.

Heliotis et al.\textsuperscript{41} updated our knowledge of the basic science of bone induction. The understanding of the role of osteogenic glycoproteins in bone formation has increased in recent decades. The isolation of these proteins now permits de novo bone induction both in bony sites and, where indicated, in soft tissues. There have also been dramatic advances in tissue engineering and regenerative medicine, but much is yet to be achieved in implementing them clinically.

Wang et al.\textsuperscript{42} examined the change in expression of matrix metalloproteinases (MMPs) and tissue inhibitor of matrix metalloproteinase-1 (TIMP-1) in the articular cartilage of goats with experimentally induced osteoarthrosis of the TMJ. Osteoarthrosis progressed gradually over time with both MMP and TIMP being expressed strongly soon after injury. The unbalanced ratio between these proteins caused degradation of the matrix of the cartilage and it was suggested that this might be the cause of osteoarthrosis of the TMJ.

Technical notes

Five technical notes were published during the review period.\textsuperscript{43–47} Most were interesting and should be useful in practice, for example to help in the removal of a fractured palatal root,\textsuperscript{43} to modify an orthodontic bracket to facilitate exposure and bonding of impacted teeth,\textsuperscript{44} and to assist in the localisation of the submandibular duct during endoscopically-assisted removal of stones.\textsuperscript{45}

Short communications and letters to the editor

Twenty-five short communications relating to oral surgery or the TMJ were published during 2008–2009,\textsuperscript{20,48–71} forming 31% of all publications in this review. Their educational value is limited and, while some contain interesting information that may benefit future patient care, most of it is fleeting, and they have little or no educational value. The editorial team has therefore decided in future to publish most of these articles in the online-only version of the journal, which will save valuable space in the printed journal. Colleagues will still be able to publish their work in BJOMS and they will be fully cited on Pubmed for use in curricula vitae and job applications. Papers deemed to be of particular value will continue to be published in print. Many other journals successfully run a similar arrangement.

One very useful report was published on the emergency management of upper airway angio-oedema after routine dental extraction in a patient with C1 esterase deficiency.\textsuperscript{51} It highlighted the importance both of taking a thorough family history, and of early oral and maxillofacial review to ensure correct diagnosis and treatment.

With the ever-increasing use of bisphosphonate drugs, the number of publications relating to BONJ is also increasing exponentially, and one short communication was published on the consequences of stopping treatment.\textsuperscript{52} A review of recent papers relating to BONJ and some suggestions for the management of this difficult condition will be published in the Journal shortly.

Finally, letters to the editor provide a useful forum for the discussion of recently published papers, and for the communication of other short items of interest. It also provides an
opportunity to publish a short article that is not suitable as a short communication. Many papers provoked discussion and opinions from colleagues, and in the study period 10 letters were published on subjects relating to oral surgery or the TMJ.\textsuperscript{72–81}

In conclusion, BJOMS publishes some excellent articles on both oral surgery and the TMJ, and it is pleasing that colleagues are continuing to submit high quality work to the Journal.

References


