

Cranio UK

*The Journal of the British Society for the Study
of Craniomandibular Disorders (BSSCMD)*

*Issue No. 5
Summer 2016*

IN THIS ISSUE:

**MYOFUNCTION, SLEEP DISORDERS AND
OSTEOPATHY SPECIAL EDITION!**

Featuring -



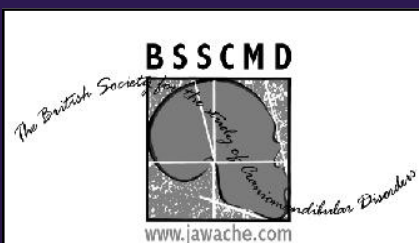
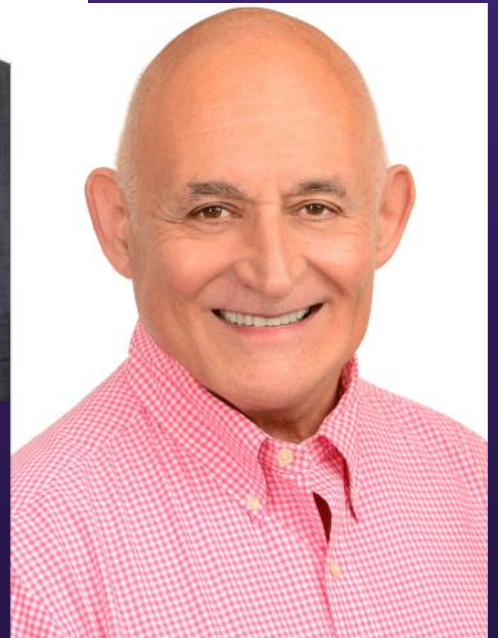
Caroline Penn
Osteopath

Chris Farrell
Dental Surgeon



Roger Price
Respiratory
Physiologist

And many more!



Visit: the BSSCMD's new website at <www.jawache.com>

Issue No. 5 Summer 2016

**BSSCMD CHAIRMAN and
TREASURER:**
Dr André Hedger BDS
26a Church Road
Bookham, Surrey
KT23 3PW

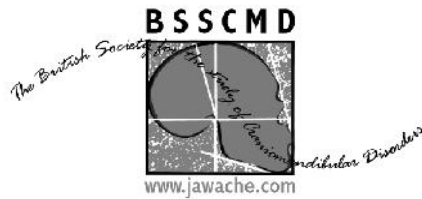
**BSSCMD ADMINISTRATION
ASSISTANT:**
Louise Haywood

EDITOR "CRANIO UK":
Dr Noel Stimson LDS

EDITORIAL ADVISERS:
Dr Richard Dean MSc BDS
Dr Jonathan Howat DC(US)
DICS
Dr Helen Jones BDS LDSRCS
MFGDP(UK)
Dr John Roberts BDS
Dr Brendan Stack DDS MS
Dr John Mew LDSRCS DGD
(UK) M.Orth RCS (Edin)

**ADVERTISING and
PUBLISHING:**
Dr Noel Stimson LDS, 3 The
Lanterns, Sherbourne Street,
Bembridge, Isle of Wight,
PO35 5RU.
Tel: (01983) 874204
Email (Personal):
noel_stimson@btconnect.com

PRINTING BY:
Island Printers
East Street
Ryde
Isle of Wight
PO33 1JP



In this issue of Cranio UK:

- 4 Membership Information**
- 6 Forthcoming Courses and Seminars:
Dr Granville Langly-Smith**
- 9 The Helen Jones Page - "Let's talk about some
good news"**
- 10 Viewpoint - Editor**
- 12 "Questioning orthodontics" by Dr Chris Farrell**
- 17 Reports of two relevant recent studies**
- 21 "Orofacial myofunction" by Dr Tony O'Connor**
- 26 "An osteopathic perspective" by Dr Chris Harris**
- 29 "Osteopathy and occlusion" by Dr Caroline Penn**
- 34 "Dentistry and osteopathy" by Dr Noel Stimson**
- 37 "Strabismus treated by functional orthodontics -
a single case" by Dr Gavin James**
- 40 "Sleep disorders - another perspective" by
Roger Price**
- 45 Chronological Index of previous issues**
- 49 Membership list, websites and email addresses
updated August 2016**
- 54 Membership Application form and
Direct Debit mandate**



*The Editor of "Cranio UK" gratefully acknowledges the continued
support given by Triple "O" Dental Laboratories*

DISCLAIMER

The contents of "Cranio-View" do not necessarily reflect the views of the publishers, the editor, the editorial advisors, or the members of the BSSCMD unless stated as such, and no responsibility is accepted for the accuracy or the nature of the contents.

MEMBERSHIP INFORMATION

BSSCMD MEMBERSHIP RATES

Ordinary (UK) Members:	£100.00 per annum paid by Direct Debit quarterly (£25 per quarter) on Jan 1st, April 1st, July 1st, and October 1st
Students and Year-1 postgraduates:	£20 single payment per academic year
Overseas Members:	£100.00 per annum for all overseas members, paid by credit card each January

Membership entitles members to receive free copies of “Cranio UK” journal (2 per year) and to attend “BSSCMD” Seminars, Study Days and Regional Study Clubs. Members are encouraged to bring guests, especially if they are prospective new members.

NOTICE TO ADVERTISERS

RATES:

COMMERCIAL:

FULL PAGE -	£120.00
HALF PAGE -	£80.00
QUARTER PAGE -	£60.00

FORTHCOMING COURSES AND EVENTS:

MEMBERS -	FREE
NON-MEMBERS -	50% OF FULL COMMERCIAL RATE ABOVE

PERSONAL CLASSIFIED: (up to approx 1/4 a page)

MEMBERS -	FREE
NON-MEMBERS -	£20.00

CONDITIONS: MS Word for Windows (.DOC) format. Other types of presentation may require extra cost at the Printers, and will be charged accordingly.

Cheque with order please, made out to “Cranio UK” and sent to the Editor (see contents page for mailing details).

UP FOR GRABS:

Several VHS tapes of past courses such as:

“CHIRODONTICS” - Bob Walker
“POSTURE AND TMD” - John Beck
“UPLEDGER” - Various

All free of charge to the first applicant!

CONTACT: Norton Grossman on 01414 23 5161 (Glasgow)

FREE ADVERTISING SPACE HERE FOR MEMBERS

Meetings, vacancies, equipment, opportunities, etc.

Contact the Editor

Dentistry and the Cranio-Sacral System

Dr Granville Langly-Smith and Dr Catherine Crowe

(with Thomas Attlee DO, RCST)

Saturday/Sunday 4th/5th February 2017

£225 – early bird (£250 full price)

College of Cranio-Sacral Therapy

London NW3

Do your patients' symptoms persist or recur despite good dentistry?

Can you distinguish non-dental sources of tooth and jaw disturbance?

Do you wish to help patients with more complex dental and health issues?

Can you help to resolve TMJ syndrome and other persistent tooth and jaw pains?

Can you trace obscure symptoms of chronic fatigue and debilitation to their dental source?

Do you wish to extend your understanding of whole-person dentistry and the transformative power of Cranio-Sacral Therapy

Granville Langly-Smith is one of those few Orthodontists who, not only understands the cranio-sacral system, but uses it himself as a matter of course with his dental and orthodontic patients. He has practised as a Dentist and Orthodontist for 30 years, integrating an understanding of whole-body mechanics and Cranio-Sacral Therapy into his practice.

With the help of slides from his vast library of case histories, he will explain the often complex interaction between dental malocclusions and the cranio-sacral system, and demonstrate how orthodontics integrated with cranio-sacral work can produce outstanding results in patients, appreciating the value of referral both ways. This will be a practical seminar, open to dentists, cranial osteopaths and cranio-sacral therapists, enabling an inspiring and informative interaction.

"Cranio-sacral therapy combined with good dentistry can be nothing less than awesome!"

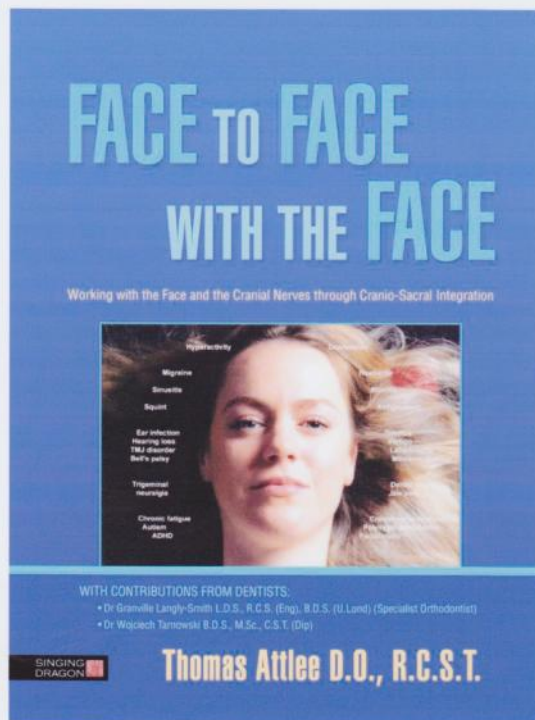
Dr Dietrich Klinghardt

College of Cranio-Sacral Therapy

info@ccst.co.uk

020 7483 0120

www.ccst.co.uk



Face to Face with the Face

by
Thomas Attlee D.O., R.C.S.T

newly published July 2016

A comprehensive approach to working with the Face and Cranial Nerves through Cranio-Sacral Integration

With a substantial section on
Dentistry, Orthodontics and Cranio-Sacral Integration
including contributions from two eminent whole-person dentists

This book provides a unique focus on the face, with sections dedicated to the Eyes, the Ears, the Mouth, the Nose, the Sinuses, the Ethmoid and other areas

Trigeminal Neuralgia, Bells Palsy, Ménière's disease, Vertigo, Tinnitus, Hearing loss, Ear infections, Glue Ear, Sinusitis, Dental disturbances, TMJ syndrome, Facial injury

These are just a few of the many conditions affecting and involving the face, which are covered in this volume

Disturbances to the face may be the underlying cause of
Chronic Fatigue, Hyperactivity, Autism, Depression, Migraine, Learning Difficulties and severe Debilitation
and may arise from birth, early childhood, or past trauma

The book includes a clear presentation of the **Cranial Nerves**, describing Cranio-Sacral approaches to many circumstances involving the cranial nerves and the significance of polyvagal disturbance

Numerous **Case Histories** bring the material to life

367 pages and over 200 full colour photos and illustrations

Retail price	£40
Available from CCST at a 25% discount	£30

Contact: info@ccst.co.uk



BRITISH SOCIETY FOR
ECOLOGICAL MEDICINE



The Allergy
Research
Foundation

A joint BSEM/Allergy Research Foundation
conference on integrating medicine and dentistry

Putting Oral Health at the Heart of Medicine

Royal College of Physicians
11 St Andrews Place, London NW1 4LE

Friday 25 November 2016

Speakers include:

Professor Stephen Challacombe BDS PhD FRCPATH DSc
Dr Patrick Grossmann BDS D Orth RCS
Dr John McLaren-Howard PhD DSc
Dr Jose Mendonca Consultant Maxillo-Facial Surgeon
Dr Shideh Pouria MRCP (UK) PhD
Professor Yehuda Shoenfeld MD FRCP
Dr Michael White BDS (Rand) M. Dent (Prosthodontics)

Topics:

- Oral tolerance
- T.M.J. dysfunction in systemic disease
- Periodontal disease relative to systemic disease
- Focal dental infections and autoimmunity
- Health effects of dental materials

For tickets and further information
visit www.bsem.org.uk



To advertise or exhibit please contact info@bsem.org.uk
BSEM Administration, 3 Anson, Lower Strand, London NW9 5LT
T: 07864 637723 Charity commission no. 326372

The Helen Jones Page (www.connectingheads.com)

Let's talk about some good news!



For a considerable number of years dentistry has been side-lined from medicine and practitioners have focused almost exclusively on structures within the oral cavity. However there are some signs that this may be about to change. The subject of Obstructive Sleep Apnoea is now appearing regularly on conference programmes and special hospital clinics for sleep disorders are being set up and manned by dentists, for example, the Sleep Disorders Centre, Guy's Hospital which provides mandibular-repositioning splints and is run by Mark Woolford, Professor of Education at King's Dental Institute.

Our patients will gain the most benefit when there is co-operation and understanding between all health workers and that includes Osteopaths, Chiropractors, Cranial and other complementary therapists.

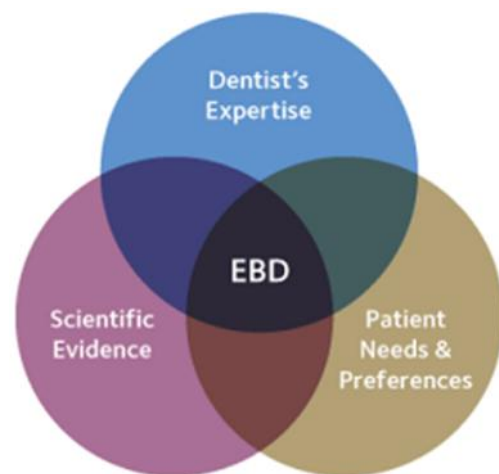
The list of interdisciplinary societies is growing. I have listed a number of these on my blog roll e.g. the Academy of Clinical Sleep Disorder Disciplines, the American Academy of Physiological Medicine & Dentistry, the Australian Academy of Dental Sleep Medicine, the International Academy of Biological Dentistry & Medicine. All these academies set out to provide a platform for interdisciplinary discussion with an holistic approach to treating patients. They seek to find the cause as opposed to only addressing the symptoms.

Last year I was invited by the Dean of King's Dental Institute, Professor Dianne Rekow, to give a presentation to final year dental students at Guy's Campus. The title was to be "Beyond BDS" and I chose the sub-title "Exploring the Wider Role of Dentistry". Professor Woolford said that the students had "found it useful" and I was invited back this May. Again it was captured on video. I have already been given a date for 2017! I know that Professor Rekow has a special interest in integrating medicine & dentistry and I hope that will be reflected in the undergraduate curriculum at some time in the near future.

We should be encouraging young practitioners of all disciplines to enhance their knowledge in this wider field and not be intimidated by the so-called lack of Evidence Based Research.

The American Dental Association defines evidence-based dentistry as:

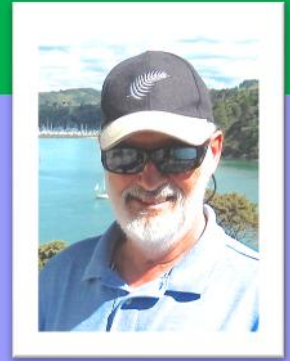
"An approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient's oral and medical condition and history, with the dentist's clinical expertise and the patient's treatment needs and preferences."



This has been endorsed by Professor Kevin O'Brien in his blog of March 7, 2016 entitled "Evidence based orthodontics is not as straightforward as it seems...". In his summary he states "My general feeling is that we should base our treatments on the evidence when it is there. When it is absent, we need to accept that our treatment is based mostly on clinical experience and other sources and we need to explain this to our patients. When we do this we are practising evidence-based orthodontics."

Editor Noel Stimson

VIEW POINT



I was recently challenged by an 'establishment' orthodontist to explain the term 'progressive orthodontics' which I had used to infer a difference between what we do and what they do.

At this time of unavoidable global and national political activity it occurred to me that certain political terms might be helpful in responding to this challenge (though hopefully with no capital initial letters):

1. "Conservative": *Disposed to preserve existing conditions, institutions, etc., or to restore traditional ones and to limit change.*
2. "Liberal": *Favourable to progress or reform.*

Conservative with a small 'C' seems to describe perfectly what we have to contend with from our colleagues in conventional 'mainstream' orthodontics. They stubbornly defend and adhere to outdated science and ideas; stuff that has been around for 150 years with virtually no change. Although it is claimed that fewer cases are being treated with extractions nowadays, the general principles remain much the same:

- ✓ Reduce overjet and crowding by extractions and retraction of anterior teeth
- ✓ Correct Class II with combination of extractions and functional appliance
- ✓ Correct Class III with surgery

All this is vehemently defended by claims of evidence-based dentistry, conveniently overlooking the reality that there is very little viable science out there, even when put under

the Cochrane microscope. This applies to both sides of the argument.

Liberal (with a small 'L') is a term most of us can live with; it fits well with the progressive nature of the principles we favour and with the changes we have made or want to make. We want to minimise the loss of healthy teeth; we want to prevent children growing up with under-size arches that have been fixed in space with permanent bonded retainers. It is so sad to see a thirty-something person with a 10 year-old's arch form. We want to be as sure as possible that children grow up with a fully functional airway and a normal sleep pattern, good tongue posture and swallow. Simply straightening the teeth into a beautiful smile is no longer good enough. Today's children have a right to expect so much more now that we know and understand the implications. We cannot un-learn what we now know about the knock-on effects of poor orthodontic intervention.

But we have a problem; there is no 1-to-1 mathematical relationship between malocclusion and unwanted or unhealthy sequelae. Many patients come through retraction orthodontics, for example, and appear to suffer no ill effects whatever! They function perfectly well and they have well-balanced faces; one of my own granddaughters is such an example. Has the orthodontist involved been very skillful or very fortunate? Or was the patient's malocclusion or cranio-facial structure such that some retraction did little or no damage?

I have seen no study that shows how many or how few patients experience the negative

after-symptoms or problems that we take so much care to avoid. But maybe that is not surprising since these issues are neither recognised nor checked for within the conventional orthodontic establishment. Some vehemently deny (and claim the science supports them) that these health issues have any connection with malocclusion or orthodontic treatment. But we know better.

One of the most advanced and comprehensive orthodontic treatments around today is the MyoBrace system. I watched Chris Farrell's introductory video again the other day and I was impressed by the list of health issues that impact directly with malocclusion and which orthodontists have not been made aware of until recently. If these problems are not recognized early enough, then conventional treatment will at best lock the problems in that position or at worst, exacerbate them. In either case, it does not bode well for the child, and that is a non-Hippocratic way to go.

As Farrell explains in the video, we are mostly pretty good at tooth alignment and correcting the occlusion. We can even im-

prove arch form and facial profile. But what some are not so good at is recognizing breathing disorders and airway problems, sleep difficulties, dysfunctional swallowing and poor lip posture. As for TMD, well let's not go there!

We now have to recognize that these are largely medical issues which are very unlikely to get attention except through an aware dentist or orthodontist or a direct medical referral.

I commented above that some patients treated with 'conventional' extraction/retraction orthodontics seem not to show any of the negative signs we so often expect to see. But many others do show these signs; we have all seen mature adults with a retruded maxilla and small mandible, thin unsupported lips and a naso-alar angle of 120 degrees or more. All highly suggestive of probable extraction-based orthodontics.

It occurred to me that while we would probably offer corrective treatment for the adult, what would mainstream orthodontics suggest if such a malocclusion presented in a child?

See Chris Farrell's article on page 12



Dr Chris Farrell DDS - Sydney, Australia

Questioning orthodontics



MYOFUNCTION

The doctrines of the orthodontic profession were initially established by Edward Angle in the early 20th century. One hundred years later, with the incidence of malocclusion in modern children approaching 100 per cent and demand among adults for re-treatment following relapsed earlier treatment on the rise, specialist orthodontists should expect a brighter future. However, as the orthodontic profession passes its 100th anniversary, there are reasons to pause and reflect on the basis of those principles established by Angle, who was considered the father of modern orthodontics, a century ago. Although technology has made the mechanics of orthodontics easier for practitioners and treatment more accessible to patients, increasing demand has encouraged non-specialists, who often possess only a rudimentary understanding of the complexities involved in orthodontics, to become involved. This has also given

rise to increasing concerns regarding techniques where the anterior teeth are straightened rapidly then fixed in place via permanent retention, ignoring Angle's dogma of correcting to Class I molar relationship.

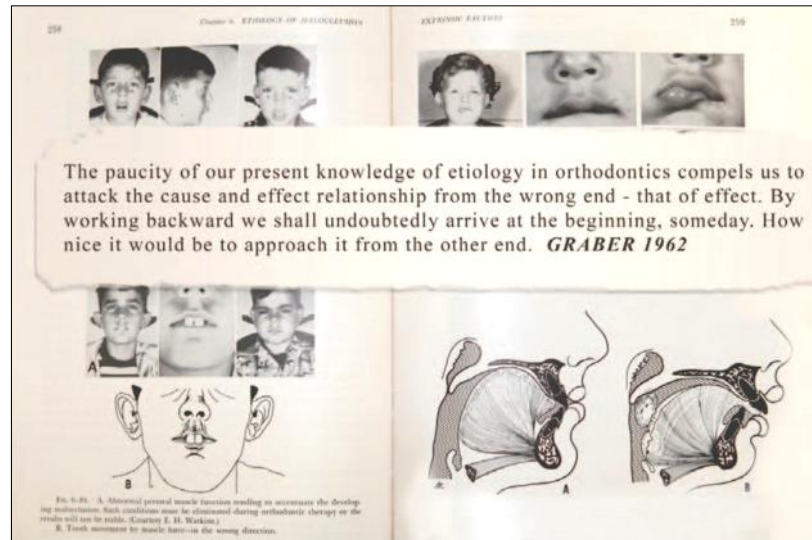
The Australian Society of Orthodontists has expressed their views on their web site:

"The ASO regularly reviews orthodontic courses in the market and to date has not seen any short course that trains a dentist to safely put on fixed appliances or carry out complex orthodontic work"[1].

A further cause for concern is that during the past 100 years, despite technological advances improving the mechanics of orthodontic practice, no scientific evidence has been produced to corroborate Angle's original hypothesis. In fact, following its inception as the first dental specialty in the early 20th century, according to Dr Cerny *"the 'laws of orthodontics' were developed from trial and error assessments, opinions and*

And this from the most eminent Dr James Ackerman writing in the American Journal of Orthodontics and Dentofacial Orthopedics, reflecting on 100 years of the publication, "Occlusion is no more a science today than it was in the 19th century. In spite of this flawed conceptual underpinning to orthodontics, ideal occlusion is likely to remain the most fundamental concept in orthodontics until a new and hopefully more scientific paradigm replaces it"[3]. Furthermore, "ideal occlusion has served as a highly useful arbitrary standard for judging the skills of orthodontists and is still the major tool used by the American Board of Orthodontics for ascertaining board qualification. How might orthodontics have evolved if Bonwill and Angle had been more broadly educated in the biologic sciences of their day? Thus, it is fair to say that orthodontics has been more technologically driven than biologically or scientifically based"[4].

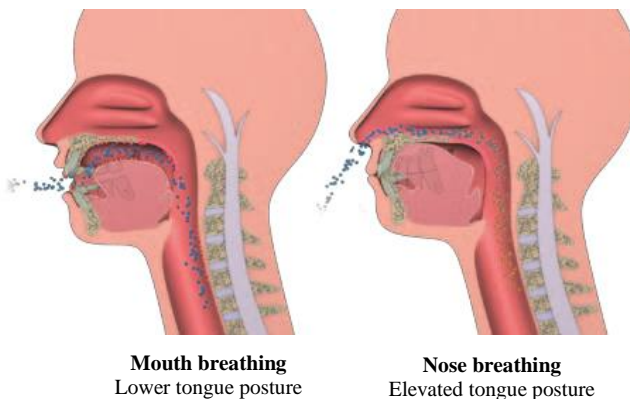
This raises the question of whether the aetiology of malocclusion is truly understood or is the orthodontic profession trying to monopolise entrenched and outdated concepts, which lack scientific grounding? It is reasonable to expect that in order to treat safely and effectively, first you need to understand the aetiology. And this from the Graber text book from the 1960's chapter 6 - ETIOLOGY OF MALOCCLUSION. "the orthodontist should pinpoint the most likely basis for a malocclusion, define it by stripping away associated or symbiotic conditions, study it carefully in broad population groups and then demonstrate its validity. Nothing of this sort has been done in orthodontics"[5]. In fact, "in the past, when a child



had protruding upper front teeth and also breathed through the mouth, had enlarged tonsils and adenoids and a short, hypotonic, relatively functionless upper lip, anyone of these factors might have been tabbed as the causative agent in the malocclusion"[6]. Yes – correct. Was Graber trying to tell orthodontists back then to look beyond the occlusion? He continues, "the question of whether they are causative (primary) factors or merely related (symbiotic) factors that may also be attributed an entirely different and unrecognized etiologic entity must be answered"[7].

So rather than arguing who is *capable* "to safely put on fixed appliances or carry out complex orthodontic work"[8], the recognition of the causative or symbiotic factors in malocclusion need to be understood BEFORE we think about treating with only one tool - fixed appliances. Is it coincidence that mouth breathing, enlarged tonsils and incompetent lip function are present in every Class II div 1 malocclusion? Claiming malocclusion is multifactorial while failing to define those factors then treating to arbitrary Class I without reference to the malocclusion's aetiology would seem unscientific at least and fundamentally flawed. After adhering to Angle's doctrine for the previous 100 years, should the way forward for the orthodontic profession involve a shift from the technical and mechanical excellence of the past to a more health driven, biological, evidence based and effective approach[7].

Increasingly, various orthodontic publications, where the fundamental doctrines of traditional orthodontic treatment have been established, the tough questions are being asked "Science had a tough time getting a foothold in orthodontics and has for the entirety of the profession. This might explain why many of our advances have been more technical and



mechanical rather than biological." [8]

Dr Fields in the centennial guest editorial to the American Journal of Orthodontics and Dentofacial Orthopedics.

Considering the prevalence of treatment relapse, as well as the ubiquitous need for permanent retention in fast or slow braces, it raises further questions regarding the effectiveness and long-term benefit of traditional mechanical treatment as well as whether the aetiology of malocclusion is being addressed or only the symptoms. Has the patient really benefitted if the causes have not been addressed? Therefore, in order to effectively address the causes of malocclusion rather than merely treat symptoms, recognition of the aetiology underlying the malocclusion becomes vital. As far back as the 1960's Harvold demonstrated in his experiments with monkeys that *"the connection between neuromuscular activity and skeletal morphogenesis can be illustrated by a simple experiment."* [54] Nowadays recognition is growing that malocclusion develops as a result of incorrect or restricted craniofacial development, caused by the patient's upper airway or neuromuscular dysfunction. Consequently, it is reasonable to expect that if a child breathes through their mouth, has poor lip or cheek function, has an incorrectly postured tongue and a reverse swallow exacerbated by a nutritionally deficient diet, craniofacial growth will be restricted and they will develop a malocclusion.

Therefore, rather than just straighten the teeth, treatment should first be directed at these contributing factors, not just the malocclusion. Because the aetiology of malocclusion has little to do with the teeth early pre-orthodontic treatment can begin and without the use of braces.

Fortunately for practitioners seeking to distinguish themselves in a more competitive market, recognition of the effect upper airway and neuromuscular dysfunction has on craniofacial growth and therefore, malocclusion, has prompted a change in ideology. As a result, focus has shifted from the technical and mechanical excellence of the past towards more health driven, biological, evidence based and effective approaches to correcting or preferably preventing malocclusion altogether. Again, the orthodontic journals are now publishing more on airway as the new way. However, it was really there all the time and we missed Graber's, Harvold's and Ricketts' bio-logical approach.

The author penned the title 'myofunctional orthodontics' 30 years ago. It could also be called

aetiology orthodontics. The core tenets of myofunctional orthodontics are aimed towards addressing the aetiology of malocclusion. Rather than just straightening teeth into an arbitrary Class I and then retaining forever, myofunctional orthodontic practitioners target the upper airway and neuromuscular dysfunction, which inhibits craniofacial development. Furthermore, by focusing on the aetiology of the malocclusion and promoting correct growth in the primary or early mixed dentition, teeth are often provided with the space required to move into the correct alignment naturally, *"and often the teeth will come in straight even before you get to the braces."* According to New Jersey Orthodontist Dr Barry Raphael, *"Just as the future of medicine has to be looking at root cause, the future of orthodontics is also going to be looking at root cause."* [56].

The rectification of the aetiological factors restricting development can not only correct malocclusion, with myofunctional orthodontics it is possible to begin treatment while the patient is young enough to satisfy the increasing demand from parents for early orthodontic intervention. Because *"the optimal timing for myofunctional intervention is a period of active growth and development with high adaptive capacity"* [57], upper airway and neuromuscular dysfunction can be corrected before it reaches a severity *"which would require considerable efforts to correct later in life"* [14].

Because during *"the last 766 years, no one has been able to produce scientific evidence to corroborate Bonwill and Angle's original hypothesis"* [59] and the only advances in orthodontic practice have been mechanical, myofunctional orthodontics represents a logical step forward. According to the American Journal of Orthodontics and Dentofacial Orthopaedics *"Research presented in our journal in the next century may shed new light that will help us better identify the problem and aid the speciality in developing more effective evidence-based treatment"* [16].

When considering the challenges, the orthodontic profession is faced with today this change of direction cannot come soon enough. No longer does the profession have a monopoly on orthodontic care and technology has enabled access for more patients who are predominantly treated using century old mechanical doctrines by either orthodontic specialists or by the less well-trained general dentist. Compounding this is the oversupply of new dental professionals and corporatisation of the dental industry where orthodontic care has

been relegated to a mere commodity where the dollar value can become more important than a patient's health and well-being. However, myofunctional orthodontics requires a new paradigm in learning for the specialty of orthodontics, which tends to be behind on these diagnostic skills to safely "carry out complex (myofunctional) orthodontic work"[17] in growing children in the future. Time to learn new skills.

For some orthodontic practitioners, reliant on the traditional orthodontic standard of care, the profitability of the past is diminishing, and the future is far from assured. However, for forward thinking practitioners it has presented the opportunity to play an active role in shaping the profession's future by looking towards new treatment systems, which are evidence based and health driven rather than focused on just mechanically straightening teeth into an arbitrary Class I. In fact, when considering "the history of how orthodontic education evolved, it is easy to see how the specialty could grow, flow, and turn with ideas and views that were not science-based and were provided by a selected few persons"[18].

Myofunctional orthodontics, which is focused on treating the aetiology of malocclusion to achieve lifelong natural health outcomes by establishing nasal breathing as a primary goal, provides a means for today's practitioners to distinguish themselves from the crowd. Additionally, there are new opportunities emerging that offer



Making orthodontic cases easier and shaping the future with myofunctional orthodontics.

the prospect for forward thinking orthodontic professionals to work with members of the medical profession and offer solutions for the health issues related to sleep disordered breathing (SDB).

"Since the beginning of our specialty, our understanding of the link between function and facial growth and development has progressively improved. Today, we know that children with sleep-related breathing problems will often develop distinctive facial characteristics"[19].

Furthermore, paediatric SDB has been recognised as causing widespread health, developmental and behavioural problems, including difficulty concentrating at school. Additionally, as well as being detrimental to the development of the face, jaws and teeth, if left untreated paediatric SDB

can lead to significant and serious health problems causing poor quality of life later in adulthood.

"Untreated OSA can result in serious morbidity and mortality mostly caused by cardiovascular disease and traffic accidents"[20].

Understanding of the relationship between upper airway and neuromuscular dysfunction, poor craniofacial development and malocclusion has progressively improved during the last century. Nowadays, because malocclusion is recognised as a symptom of the same upper airway and neuromuscular dysfunction causing SDB, "treating



Myofunctional orthodontics focuses on treating the aetiology of malocclusion to achieve lifelong natural health outcomes by establishing nasal breathing as a primary goal.

these patients presents unique opportunities for orthodontists to collaborate with other medical specialties to improve a patient's health and treatment outcome"[21].

After a century of following the fundamentals of Angle where an arbitrary occlusion has been the standard by which orthodontic treatment success has been judged, even though very little advancement has been made regarding the science of occlusion, the orthodontic profession is now asking the hard questions evoking potential rapid change. Rather than rely on technologically advanced, mechanical methods of straightening teeth into an arbitrary alignment, the focus is shifting towards new means of recognising and then addressing the aetiology of malocclusion.

"The paucity of our present knowledge of etiology in orthodontics compels us to attack the cause and effect relationship from the wrong end – that of effect. By working backward we shall undoubtedly arrive at the beginning, someday. How nice it would be to approach it from the other end"[66]. Dr Tom Graber 1962.

Now in 2015 the profession can begin employing more evidence-based approaches. Because *"Orthodontists can ask sleep-related questions in the health history to help identify sleep breathing disorders. Treating these patients presents unique opportunities for orthodontists to collaborate with other medical specialties to improve a patient's health and treatment outcome."*[23].

As a result of new treatment systems focused on the aetiology of malocclusion as well as breathing and myofunctional disorders, there is now an opportunity for the orthodontic profession to collaborate and not compete with general dentists to both achieve the status of premier dental specialty as well as become more closely integrated into the medical profession.

Myofunctional orthodontics ideally incorporates evidence based, biological solutions from the past, "creating brighter futures"[24] for all.

REFERENCES:

- 1, 8, 17, 24: The Australian Society of Orthodontists web site www.aso.org.au
- 2: ORTHODONTICS and the "PINOCCHIO FACTOR" by Dr Robert Cerny, BDS, MDS. Specialist orthodontist Australasian Dentist
- 3, 4, 15: Centennial guest editorial. James L. Ackerman. American Journal of Orthodontics and Dentofacial Orthopedics March 2015 Vol 147 Issue 3
- 5, 6, 7, 22: Graber, T. M. (1962) Orthodon-

tics; Principles & Practice, Chapter 6, Etiology of Malocclusion – Extrinsic or General factors.

9, 18: Centennial guest editorial. Henry W. Fields. American Journal of Orthodontics and Dentofacial Orthopedics July 2015 Vol 148 Issue 1

10: American Journal of Orthodontics Dec 1968 Vol 54 No. 12.

11, 12: MYOBRACE. (2015). World Fencing Champion Miles Chamley Watson visits Myobrace Center. [Online Video]. 24 November 2015. Available from: https://www.youtube.com/watch?v=sKiF_yCBzw.

13, 14: Kanao A, Mashiko M, Kanao K (2009) Japanese Journal of Clinical Dentistry for Children, Vol 14, No.

4 April

16, 19, 20, 21, 23: American Journal of Orthodontics and Dentofacial Orthopedics November 2015 Vol 148 issue 5: 740-7

Dr Chris Farrell graduated from the University of Sydney in 1971 with a BDS, having gained a comprehensive knowledge of traditional orthodontic treatment using the BEGG technique. As a result of his clinical experience he became interested in TMJ/TMD disorder and after further research, discovered the aetiology of malocclusion and TMJ disorder was myofunctional, which contradicted the established view of his profession. Dr Farrell founded Myofunctional Research Co. (MRC) in 1989 with the intention to develop a myofunctional orthodontic system targeted at treating the upper airway and neurofunctional dysfunction causing malocclusion. Dr Farrell's Myobrace and Trainer systems have proven extremely effective at providing early preventive pre-orthodontic treatment and are now used by dental professionals in more than 100 countries.



Reports of two recent studies

The following studies were recently published as described and subsequently pointed out to the Editor as relevant to the work that we do. For space reasons, the reports comprise the Abstract, Introduction and Conclusion of each study, leaving the reader to access the original study to see the actual data etc.

MYOFUNCTION

Study #1: "The origin and development of malocclusions; when, where and how dental malocclusions develop"

Dr Merle Loudon DDS

Abstract:

This article describes the forces of the muscles from the stomatognathic system and how they interact in many children to change the normal forces of growth. Because of this change in muscle forces there is a change from normal teeth and bone growth positions to abnormal positions. These normal and/or abnormal changes in muscle forces are the basis for development into Class I, Class II and Class III occlusions. This is very valuable information for the orthodontist because these muscle forces are the fundamental basis for all orthodontic treatment. By knowing this an orthodontist will be more able to diagnose and treat a malocclusion. This is exceptionally important for the dentist who is just starting to learn diagnosis, treatment planning, functional and fixed orthodontic treatment.

Introduction:

Every dentist that starts on an orthodontic venture needs to understand the importance of growth and development of the stomatognathic system. However, most of the time, many dentists that teach beginning orthodontic dental courses skip over the fundamentals of growth and development, one of the most important subjects. Growth and development produces a good dentition and/or malocclusions which these dentists are going to be treating every time they start an orthodontic case.

When a football coach trains a football

team, he concentrates on the fundamentals of execution. The defensive fundamentals that are the most important are blocking and tackling. Many games are won or lost by not using the fundamentals of blocking and tackling to "get your man."

The same fundamentals apply to every dentist (orthodontist) who starts an orthodontic case. Every dentist needs to know what has caused the malocclusion that he is going to treat. In other words, one has to know the muscles, structures, attachments, forces, balances, imbalances, resting and swallowing tongue positions. He also has many other things to understand why, how and where to correct imbalances in order to get everything in a normal and correct state.

Knowing the functional malocclusion development and function is absolutely necessary in orthodontics. Without this knowledge your orthodontic treatment may fail on many patients. In an article written in *The Functional Orthodontist* in July/August 1988 the author wrote about the "The Functional Muscle Malocclusion Development and Function." In that article, he states, "The airway and muscles inside and outside of the stomatognathic system shape the form of the good occlusion or malocclusion. However, we must put all the pieces of the different factors together to get a logical, good common knowledge of growth, both normal and abnormal. Otherwise, without that knowledge, the diagnosis and treatment plan may be 100% wrong, and relapse of treatment may occur. We must understand the values and perimeters of balanced and imbalanced muscle movement."

Conclusion:

A thorough knowledge of the stomatognathic development and malocclusion sequence is the basis of the orthodontic diagnosis and treatment planning. Likewise, this knowledge will affect the way you decide early treatment and the timing for fixed orthodontic treatment. This knowledge will help dentists change the way orthodontics is performed over the next decade. Early recognition and treatment of malocclusions, along with more muscle, bone and tooth knowledge certainly will be a great help in diagnosis and treatment planning of malocclusions. Procedures like early tongue thrust appliances, Primary Molar Buildups, widening the maxillary arch on early Class III malocclusions, and universal widening of Class II patients should be the norm.

Because of these fundamental development factors, the author has found that there are only six major movements of teeth. These are distalizing, enlarging (widening), anteriorizing, reducing, extracting and verticalizing, (The Dearev Formula). There are many other minor movements needed along with these major movements, but these forces change the environment that contains the teeth. A practitioner must remember that timing of movements and methods of treatment provides many challenges.

We must also be able to select the appliances which correct muscle function and correct muscle forces. We must keep up on the information that will advance the orthodontic treatment methods and improvements that make orthodontic treatment better and more efficient. With the efforts of every dental practitioner, research facility, orthodontic lab, and dental school research, we are learning new advances every day that will make orthodontics easier and more rewarding.

Understanding the fundamentals of development, muscle actions and forces are very important in treatment planning, diagnosis and treatment.

Reference for this peer-reviewed feature article:

"The Origin and Development of Malocclusions. When, Where and How Dental Malocclusions Develop". Merle Loudon DDS. Int J Ortho. Vol 24. No1, Spring 2013, page 57-64.



Study #2: The Influence of Myofunctional Therapy on Upper Inter canine Distance

Christoph E. Moschik, Margit Pichelmayer, Sandra Coulson and Brigitte Wendl

School of Dentistry, Medical University of Graz, Austria

Abstract:

Objectives: The study was designed to investigate the correlation between myofunctional exercises, including repositioning of the tongue onto the palate and changes in inter-canine distance of the upper jaw in non-growing patients.

Methods: In this retrospective study a total of 141 women and men above the age of 18, treated by the Coulson Institute of Orofacial Myology, with no simultaneous orthodontic therapy, were included. All subjects have participated in a myofunctional therapy program for at least 8 months. The training consisted of various muscle exercises for the lips, cheeks, tongue and body posture and breathing. Additionally, the patients put a small dissolvable gelatine pad onto the palate three times a day to assist the swallowing function. Throughout therapy the length of the philtrum, inter-canine distance and overjet were measured.

Results: After 8 sessions the average inter-canine distance increased by 3.2 mm, the philtrum elongated by 5.4 mm and the overjet

decreased by 1.2 mm.

Conclusion:

The results indicate that tooth position can be changed by muscle therapy, even in non-growing subjects. This implies that muscle training can be a highly supportive therapy for orthodontic treatment.

Introduction:

Orofacial myology therapy is a growing field in orthodontic therapy in the last decades around the world. This therapy principle includes the treatment of facial muscle imbalances, training of tongue posture and establishing equilibrium between the tongue, lip and the cheek muscles. Muscle function has become an important concern in orthodontic treatment as the awareness about long-term stability has risen. A balanced facial muscle system is considered as important factor contributing to a stable orthodontic treatment outcome. The inter-canine distance is a transverse measurement of the dentition at its most important position for occlusal function, namely the canines. The skeletal, alveolar and dental width of the jaw is determined by two important factors, which are genetics and function.

These two factors correlate with the overall body growth factors and are responsible for morphologic development. While the genetic component currently cannot be influenced or controlled through therapy, it is possible to influence the function. As function is the second most important factor relative to form in the sense of biological and medical terms, it is a logical consequence to design and apply therapy methods indirectly to exert influence on the morphology.

The noun "function" itself is described as "a thing dependent on another factor or factors" by the Oxford dictionary. The function of the stomatognathic system involves the interaction of all participating tissues such as teeth, jaws, temporomandibular joint, muscles and the oral cavity. This concludes that the function of the stomatognathic system is composed of masticatory, phonetic and physi-

ognomic tasks, working together forming a "morphological and functional unit".

When morphology and functions are in balance normal development of the jaws and teeth result, which is called eugnathia. In the case of aberrance from the norm, "dysgnathia", "dysalveolarism" or "malocclusion" and dysfunction occur, it is of high importance to understand, how each of these factors influences the other. Orofacial dysfunction can increase the severity of malocclusion, and vice versa.

At the beginning of the 20th century, Dr. Edward Angle stated that the field of orthodontics was only at the beginning of understanding what influences the cheeks, tongue and lips have on malocclusion and the difficulties to alter them. Furthermore, he stated that there was no chance to have long-term success in therapy without correcting the malfunction of this system. It is utterly important to recognize and diagnose a certain problem before being able to correct it.

Additionally Moyers claimed that therapy was needed to address the root of the problem directly as well as to treat the causes of malocclusion, instead of just straightening teeth.

Nowadays, the importance of interdisciplinary cooperation has become more vital and orthodontists, myofunctional therapists and logopaedics, specialized physical therapists, ear-nose-throat specialists, and paediatricians are concerned about the topic of orofacial function.

Each one of these disciplines ought to influence the facial morphology of the patient by changing the function toward a eugnathic norm. This interdisciplinary therapy can be classified as follows:

Orthotropic treatment targets the growth of the face and jaws as well as trying to give the body the chance for self-correction to self-correct. Diagnosis consists of checking the patient for abnormal function, like thumb sucking or mouth breathing. Therapy aims to enable normal swallowing, proper breathing through the nose with a closed mouth and to stop any habits, like thumb sucking or lip

chewing. To maximize the effect of this therapy, it is best applied in young children. Orofacial myofunctional dysfunction is not solely limited to children, but can also occur in adults with permanent dentition; hence, treatment should be applied whenever improper function occurs. The earlier therapy is applied and a habit is broken, the more chances there are for the body to return to normal development.

Orthopaedic therapy is applied if jaw discrepancies are already apparent, either due to excessive or restrictive bone growth. It consists of intraoral or extra-oral appliances that apply a high force on the maxillary or mandibular bone and thus attempt to either encourage or decrease growth.

Orthodontic treatment is described as the adjustment of the occlusion by moving and aligning the teeth. In this stage the jaws should be already eugnathic. Orofacial Myofunctional techniques are often only applied after Orthotropics and orthopaedics are finished.

Summarizing these techniques, it can be said that orthotropic therapy should be applied somewhere between ages 0 and 8, at the beginning of the change to the second dentition. This is followed by orthopaedic therapy, which should be executed during the early phase of the second dentition and correlates with the age of 9 until all permanent teeth are exfoliated. By the time the dentition is fully developed, orthodontic therapy is indicated.

As age progresses and growth slowly ceases, the possibility to influence jaw growth decreases. While the impact on jaw growth subsides, tooth movement is still possible throughout the life – this is the standard opinion of worldwide orthodontists during the last five decades.

Orofacial myofunctional dysfunction is not solely limited to children, but can also occur in adults with permanent dentition; hence,

Orofacial myofunctional dysfunction is not solely limited to children, but can also occur in adults with permanent dentition; hence, treatment should be applied whenever improper function occurs.

treatment should be applied whenever improper function occurs. The therapy is then based on the assumption that these changes appear due to improper usage of the oral-musculature system and if an adequate function is restored, the body will adapt and the facial growth will change according to it. This theory goes along with the Functional Matrix Theory which claims that the whole stomatognathic system develops, aside from genetics, along with the demanding functions

and the tasks that are given to it.

For example, studies have reported a correlation between the tongue resting position and the form of the palate. If the tongue does not rest on the palate a high vault develops, occasionally narrowing the base of the nose and con-

stricting nasal airflow.

Furthermore a correlation between the masseter muscle thickness and the maxillary arch width exists. In general it can be assumed that craniofacial width is linked with the cross-sectional areas or thickness of the masticatory muscles.

By defining the maxillary transverse bone dimension, masticatory muscles can also influence the upper inter-canine width, which again can give information about the arch length and inter-molar width.

Conclusion

A high correlation coefficient between myofunctional therapy in adult patients and width was found for the upper arch. Repositioning the tongue and practicing muscular exercises for the lips, tongue, face and posture lead to an increase of maxillary inter-canine width of 3.2 mm in average and changes of the upper lip length of 5.4 mm within roughly eight months.

Changes in the dental formation can therefore be influenced by muscle therapy in non-growing patients.



Dr Tony O'Connor BSc BDS



Orofacial Myofunction

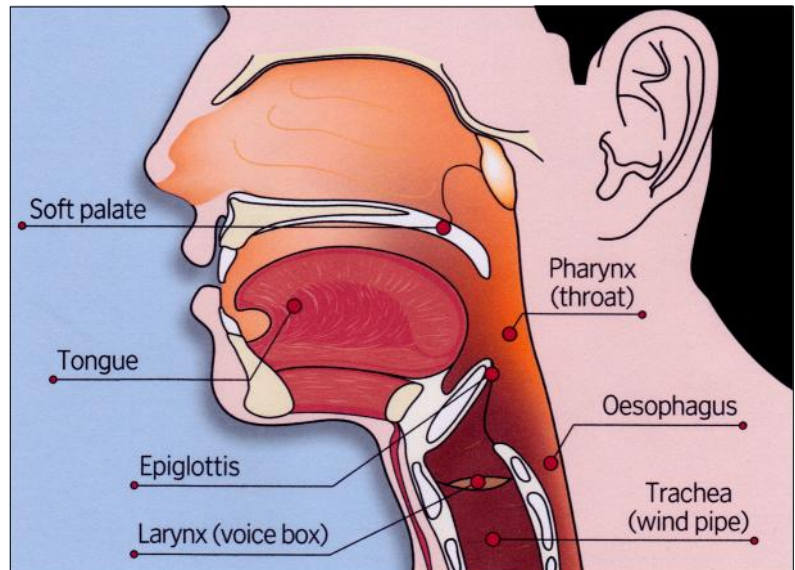
Cork dentist Dr Tony O'Connor explains why early orthodontic intervention is imperative in tackling a range of developmental problems among children

MYOFUNCTION

Dental healthcare professionals are encouraged to assess orofacial myofunctional disorders (OMDs) in their patients. Interest in myofunctional therapy by sleep experts is compelling dental healthcare professionals to revisit the evaluation of myofunctional disorders. Many dental practices pay little attention to OMD and the role they play in craniofacial growth, the airway and overall general health.

Negative craniofacial growth can be attributed to OMD[1]. The consumption of soft processed foods also has also had a negative effect on craniofacial growth [2]. Improper dentofacial growth and development can contribute to a restricted upper airway and associated sleep disorders. Since experts agree that 70% of facial growth is complete by age seven [1,3], early identification and timely treatment of OMD may decrease the risk factors for sleep disordered breathing, and of course, the need for possible extractions for orthodontics later.

Winter can bring the advent of winter bugs and viruses, keeping doctors busy with sick children and stressed parents. Imagine a seven year-old child presents to the local GP complaining of sore throat and chesty cough. The child is also bed-wetting and Mum wonders if the cold resulted from lying in the wet bed? The doctor examines the child and diagnoses inflamed tonsils. Another course of antibiotics is prescribed, yet again. When Mum asks why the tonsillitis keeps recurring, the doctor suggests a referral to an ENT surgeon. The doctor re-assures Mum



that while upsetting, the child is young and will probably grow out of wetting the bed.

Once recovered from the illness, Mum brings the child to the dentist. She is concerned about some mild crowding of the lower incisors. She reminds the dentist that the child tends to "gag" and is quite a fussy eater, to the point that most foods have to be mashed or puréed. During the consultation she expresses her concern about the child's tooth grinding, particularly at night. The dentist examines the child, reassuring Mum that there are no cavities and explains that bruxing is not unusual at that age. Mum is told that the mild incisor crowding will be monitored, and should orthodontic treatment be required, it would be best to wait till all the permanent teeth erupt at about 11 or 12 years of age.

This common medical/dental scenario is all too often played out. However, if viewed from an

“Airway health” perspective, there are many clues to indicate that the child’s dentofacial growth may not be proceeding normally.

These red flags include: recurrent tonsillitis, chesty cough, bed wetting, mild lower incisor crowding, over-sensitive gag reflex and a soft diet. In fact all the clinical signs and symptoms above.

How could the above medical and dental complaints negatively impact on craniofacial growth and result in not only malocclusion, but a myriad of supposedly “unrelated” health problems for the child? If parents and healthcare professional alike are trained to recognise the very obvious signs and symptoms of inadequate craniofacial growth and learn to adopt an early interceptive philosophy, could it be that many paediatric health issues would be alleviated or ameliorated?

If this were possible, and it is, the significance should not be underestimated by parents, health professionals or government, as the overall physical and emotional well-being of the child would be greatly enhanced. Not only would this new protocol have an enormous positive financial impact on government health spending (Heckman Report), but the number of children presenting with crooked teeth and poorly-developed faces, in tandem with airway-related health problems, could be greatly reduced.

There is now a lot of scientific evidence to show the effects of mouth breathing and OMD on craniofacial growth and our overall health[4]. Studies on mouth breathing by Harvold[5] in the 1970s revealed the harmful effects on facial growth in monkeys. Researchers inserted latex plugs into the nostrils of rhesus monkeys in order to evaluate the effects of mouth breathing on facial structure. The monkeys were forced to switch from nasal breathing to mouth breathing. To compensate for the inability to breathe through the nose, the monkeys developed postural changes which were followed by soft tissue changes.

The craniofacial muscles then caused various malocclusions including retrognathia, prognathia, and anterior open bites, when forced by the new functional demand. The interaction between oral and facial structural growth and muscle activity starts early in development and con-



Patient presented age 10 complaining of protruding upper front teeth. She had a mouth breathing pattern with lips apart most of the time with a bilateral tongue thrust. She is currently undergoing Orthotropics and myofunctional therapy. She will another year in treatment. Due to her poor myofunctional habits, i.e. mouth breathing, both upper and lower jaws are under developed. Her upper front teeth are not actually protrusive at all; her lower jaw is fact retruded. Orthotropics aims to correct this negative growth pattern.



tinues throughout childhood. Chronic oral breathing is an important clinical marker of orofacial muscle dysfunction, which may be associated with narrow high-vaulted palate, nasal obstruction leading to negative changes in facial structure[4].

These negative changes are reflected in the skeletal malocclusions such as Angle Class II and III and open or closed bites. The resulting dentitions that evolve also reflect negative growth patterns such as crowding (mild or severe) and crossbites, etc.

Harvold's experiments, although, although crude, proved that changing the oral environment caused a structural change in the form of the face. To put it another way, when function changed, form changed. Anthropologists believe that modern man (*homo sapiens*) has been around for 250,000 years—a very short time on the evolutionary clock. For most of this time we were hunter-gatherers and it was only in the last 12,000 years that farming and agriculture became established. This more sedentary lifestyle brought with it a change in diet.

Anthropologists have shown that changes in facial

form began around this time. In fact they can prove that the human face started to “shrink” or retract approximately 10,000 years ago. This pace accelerated since the Industrial Revolution. Our Paleolithic ancestors had much more forward facial profiles and examination of skulls show broad dental arches - with inter-molar width of 55mm - and plenty of room for 32 teeth, including an extra 10mm behind the wisdom teeth (Daniel Lieberman).

What does a “shrinking face” mean, and does it matter?

The human head is composed of 22 bones; 8 bones of the neuro-cranium (the occipital, 2 temporals, 2 parietals, sphenoid, frontal and ethmoid bones) and 14 bones of the viscerocranium. Space for the brain itself is almost fully established at birth with neuro-growth having occurred rapidly *in utero*. However, growth of the face (viscerocranium) is only approximately 35 per cent established at birth. Growth of the face is quite fast reaching 60 percent by age 4 and finishing around age 12.

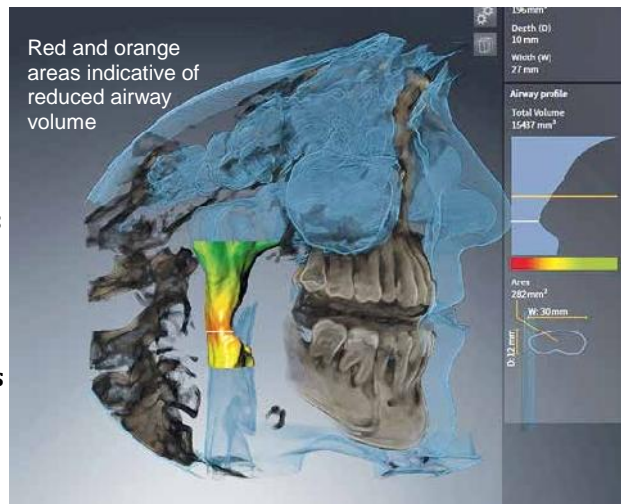
As well as having sufficient room to accommodate all 32 teeth, our Paleolithic ancestors had remarkable dentitions with few cavities and no malocclusions. Sadly, this is not the story today, yet the genotype remains the same. Growth of the facial structure is very much influenced by the oral environment; the correct direction of growth is forward and downward from the cranial base[6].

We need space for the internal organs - the tongue, the nasal passage, the oropharynx and space to accommodate the larynx, the thyroid, the trachea and oesophagus and let's not forget all 32 teeth. But most importantly of all, to accommodate the airway. The mature oropharyngeal airway should be 10 - 12mm wide. When it is less or becomes blocked, we are going to experience a disturbance in breathing; anything that interferes with the oxygen supply to our organs is not good.

If the required architecture does not develop properly, compromises will be reflected in form and function. I like the statement “Anatomy is the platform on which physiology is based”. If the anatomy is underdeveloped, we can only expect changes in our physiology later. We are now seeing a rise in the number of people suffering from hypertension, heart disease, diabetes, obesity, depression, sleep apnoea (OSA) and sleep disordered breathing (SDB), stroke, ADHD and other behaviour problems.

The emergence of dental sleep medicine

Many dental offices in the US have incorporated



dental sleep medicine into their practice, because numerous patients are presenting with the aforementioned issues. There are many correlations between poor craniofacial growth, malocclusion and the above health issues. Upper airway imaging has allowed us to understand the biomechanical bases for OSA and mouth-breathing.

The new CBCT imaging software programs provide accurate mapping of the oropharyngeal airway. This can be very important in designing orthodontic treatment plans. In cases of impeded airway it is important to recognise the structural imbalance and take adequate steps to achieve harmony and facial balance in conjunction with the restoration of physiological functions. Sleep disorders have been estimated to affect 50-70 million people in the US and are linked to increased risk of hypertension, diabetes, depression, heart attack and stroke[8]. Furthermore the risk of a serious car accident increases when the driver is sleepy. There are now numerous reports of such car and rail accidents attributed to drivers falling asleep at the wheel. Hundreds of millions of dollars are spent each year on medical costs related to sleep disorders.

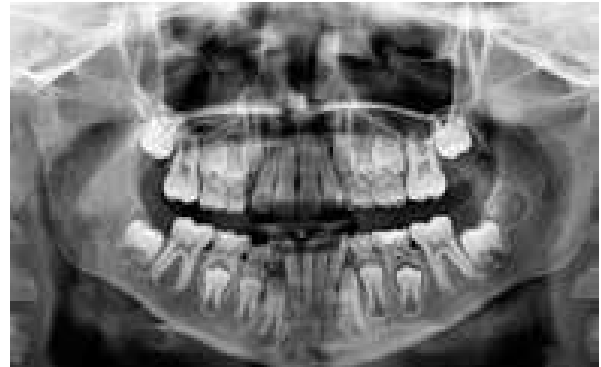
What impact does sleep disordered breathing have on children?

In children, snoring, mouth breathing and OSA can have a negative effect on behaviour as well as the ability to pay attention in school. In a large multi-year cohort of 11,000 patients, it was shown that in children from 6 months to 7 year of age, snoring, OSA and mouth breathing contribute to increased risk of ADHD, peer to peer behavioural problems, increased anxiety and depression[9].

David McIntosh, an ENT surgeon based in Australia, has an interesting website: (www.entspecialists.com.au) on which many of the recent research papers on the airway issue and how



Patient age 9. Mum complained of his crooked teeth. Child is a chronic mouth breather and very hyper-active prior to treatment. He has a vertical growth pattern with both upper and lower jaws retruded. Airway space was compromised and he was a restless sleeper. No sleep study undertaken. Presently undergoing Orthotropics and now much improved. Treatment is still ongoing.



it impacts on the brains of young children, are reviewed.

The consequences of poor sleep add up over time; studies are now showing that when sleep architecture is affected on a regular basis, Alzheimer's disease leading to dementia increases. During the period of deep sleep our brains are cleansed of metabolic waste that builds up during the day. Research shows that patients suffering from Alzheimer's disease have a build up of a protein called amyloid. This affects the communication system within the brain. In studies of mice where oxygen levels decreased, their brains started to show a build up amyloid[10, 11]. There are many causes of a bad night's sleep; one of them is sleep apnoea[12].

It's not just the brain that suffers

Apart from all the problems with brain function. SDB in children also has an adverse effect on heart and blood pressure[15]. In fact it may very well be that high blood pressure experienced in adulthood originates from sleep problems in childhood[16].

The seven year-old boy brought to visit the doctor and dentist could well have been showing signs of Sleep Disordered Breathing. Regular bouts of

tonsillitis is associated with mouth breathing. Further questions may have revealed a snoring issue too.

Teeth grinding (bruxism) is an indicator of an airway problem. Historically it has been associated with a psychological problem - stress perhaps? What we know now is that children who grind their teeth and have an airway problem, once the airway is fixed 80 percent of them stop grinding their teeth. Maybe they are stressed because they cannot breath properly?[13].

This seven year-old displayed crowding of lower anteriors, another indicator of poor facial growth and a developing malocclusion. Bed wetting is another indicator of a narrow palate.

An interesting book called "Naso-Respiratory Function and Craniofacial Growth" edited by James A McNamara Jr. features a chapter written by orthodontist Dr Robert M Rubins. In it he states "*The recognition that crisis care in medicine is the least effective and the most expensive therapy has focussed the attention of health providers on prevention.*

"Similarly, in dentistry, the understanding of the pathology of dental caries and periodontal disease has led to a preventive orientation; control of plaque. Yet in orthodontics it is common practice to allow the

course of detrimental growth to proceed until its virtual completion before commencing treatment.

By age four the craniofacial skeleton has reached 60 percent of its adult size; By age twelve, the age when most orthodontists initiate treatment, 90 percent of facial growth has occurred (Meredith 1953). To wait until a deformity is 90 percent established before instituting treatment is not consistent with a preventive philosophy."

Conclusions

It is obvious from the above information that we need to screen our young patients earlier. Screening can start with the dental hygienist or nurse taking the medical history and asking specific questions, such as:

- Birth, normal or induced? Long labour? Forceps or suction delivery?
- Breast or bottle feeding?
- Did baby experience colic?
- Bed wetting? Sleep posture? Night terrors?
- Snoring, drooling on pillow?
- Teeth grinding or gagging?
- Sleep apnoea? (Epworth sleep questionnaire)
- Tongue-tie, lip tie, tongue scalloping?
- Mallampati Score, indication of oropharyngeal airway?
- Tongue thrusting, OMD?
- Facial profile?
- Gummy smile?
- Non-nutritive sucking habits?

Other records such as x-rays and photographs also help to tailor a treatment plan for the young patient. Awareness of the above signs and symptoms should help us to identify if a child's facial growth is not proceeding normally.

To quote Dr John Flutter, a dentist practising in Brisbane, Australia: *"Nothing will change if nothing changes."*

REFERENCES:

1. Proffit WR Contemporary Orthodontics 3rd St Louis: Mosby, 2000.
2. Price W (ed). Nutrition and Physical Degeneration 8th ed La Mesa, Ca: Price-Pottenger Nutrition Foundation, 2008:55
3. Development of Lower Jaw: Meredith HV. Growth in head width during first 12 years of life. Paediatrics 1953 Oct;12(4) 411-29
4. Jefferson Y. Mouth breathing: Adverse effects on facial growth, health, academics and behaviour. Gen Dent 2010 Jan-Feb; 58(1): 18-23.
5. Dr Egil Peter Harvold: Harvold EP, Tomer BS, Vagervik K, Chierici G. Primate Experiments on Oral Respiration. Am. J. Ortho. 1981 Apr; 79(4):359-372. Miller AJ, Vagervik K, Chierici G. Sequential Neuromuscular changes in rhesus monkeys during the initial adaptation to oral respiration. Am J. Ortho. 1982 Feb; 81(2):99-107
6. Moss M The Primacy of functional matrices in orofacial growth. Dental Practitioner 19:63-73.
7. Committee on Sleep Medicine and Research. Sleep disorders and sleep deprivation: Unmet Public Health Problem, Washington DC: The National Academics of Sciences, 2006.
8. Bonuck K et al. Pediatrics. 2012 Apr; 129 (4):e857-65. Sleep-disordered breathing in a population-based cohort: behavioural outcomes at 4 and 7 years.
9. Daulatzie MA. Neurotox Res 2013 Aug; 24 (2):216-43.
- Death by a thousand cuts in Alzheimer's disease: hypoxia - the prodrome.
10. Tspanou A et al. Dement Geriatr Dis extra 2015 Jul 10; 5 (2):286-95
11. Gagnon K et al. Pathol Biol (Paris) 2014 Oct; 62 (5): 253-40
12. Eftekharian A. Et al, Int J. Pediatr Otorhinolaryngol. 2008 Apr; 72 (4):509-11, Bruxism and adenotonsillectomy. DiFrancesco RC et al, Int J Pediatr Otorhinolaryngol 2004 Apr; 68(4):441-5, Improvement of Bruxism after T and A surgery.
13. The Evolution of The Human Head by Daniel E. Lieberman
14. Nisbet LC et al. Sleep Med Rev. 2014 Apr; 18(2): 179-89
15. Vlahandonis A et al. Sleep Med Rev. 2013 Feb; 75-85.

Dr O'Connor would like to apologise to Paula Fabbie for an oversight in his article, 'Orofacial myofunction'. Dr O'Connor would like to give credit to Ms Fabbie's article "Myofunctional analysis and its role in dental assessments and oral health" which may be found at <www.ineedce.com>

ABOUT THE AUTHOR:

Dr Tony O'Connor is a general dentist working in Cork, Ireland. He first graduated from University College Cork in 1979 with a BSc (Hons) degree in biochemistry and later qualified in 1986 with a BDS. He worked for a few years for the NHS in UK before returning to Cork to commence general dental practice. He has always had a keen interest in non extraction orthodontics and has taken many postgraduate courses worldwide in functional orthodontics.



Dr Chris Harris - Osteopath

An osteopathic perspective



OSTEOPATHY

Well, one osteopath's perspective, at any rate. My most seminal experience of working in the area of face, teeth and jaws was as follows: I was not long out of college - two years, if I remember rightly - and not long previously I had done the first of many postgraduate courses with the Sutherland Cranial College. A middle-aged woman presented to my clinic with a variant of the usual mechanical dysfunction that gets patients through Osteopaths' doors: her cervico-dorsal junction was badly jammed up, giving her local pain and some nasty headaches. This responded well to treatment and she was clearly doing better within a couple of sessions. Then a funny thing happened: she kept on coming. I didn't object - she was keen to attend and I was building a practice after all. Treatments then progressed on down through the layers, as they usually do. First of all we worked through the effects of a whiplash ten years previously. Then a more recent event, a separate blow to the occiput after a fall on an icy pavement: a classic injury. A primary was gradually revealed: there was a really nasty stasis and intraosseous compression in her right maxilla, which I found myself treating repeatedly, both intra- and extra-orally.

After some reticence the reason for her keenness to attend was also gradually revealed. She told me that each time I did the work she would float home feeling quite euphoric at first but then cry her eyes out for the rest of the evening. In the aftermath of this she would experience notable relief from a longstanding problem of depression for a blissful week to ten days. Then sadly the 'black dog' (thank you Mr.W.Churchill for that apt analogy) would start to stalk her again and she would come back for another treatment. These were initially biweekly but as the tissue quality changed and her new and better mood became more stable,

we were able to extend the intervals. When I left the practice, the treatments were three-monthly and she was much happier by then. I never did work out the aetiology of the problem nor, of course, exactly how her Serotonin levels were reorganised as a result of my gently probing gloved index finger. They surely were, however. Have I got a double-blind trial to prove the effect? It would be nice, but no. Do I need one in order to work effectively? Not really.

So, this was when I was first metaphorically 'bitten on the backside' as to the potential importance of good functioning in this area. That was in the mid 90's and a good bit of water has duly progressed under the bridge including many courses and much detailed study. Patients who were previously very tricky have been helped a lot by some judicious tweaking of the Stomatognathic apparatus. I have had many a lively discussion with Osteopathic colleagues, consisting often of bemoaning the intransigent functional messes we are left to deal with as a result of ill-advised dental intervention, extraction ortho clearly being high on the list. Then I had a bit of a 'Eureka' moment: my introduction by a friend to Meurig Devonald, sadly no longer with us. He introduced me to Dr. Hedger and the BSSCMD and I attended my first conference in, I think, 2003. At last: someone, other than my fellow Osteopaths, who was talking my language. It was a revelation: to find that there were dentists working who knew something of what they were affecting and who had some respect for the structure-function relationships. A revelation, too, was their bemoaning of the intransigent functional messes that they too were left to deal with as a result of ill-advised interventions by some of their very own professional brethren.

Observing the different styles of work presented by our group over the years and juxtaposing

them with my own has been an interesting process for me. We are indeed a very heterogeneous lot. The pattern at our meetings seems to be thus: a case history or three is gone through; a patient is shown to have obviously derived benefit, which is always a cause for celebration; then a detailed presentation is given, complete with anatomical illustrations suggesting that it is all about the Atlas/Vomer/Muscle chains/TMJ health/adequate hydration. Looking at all these approaches, one colleague put it well: 'It's like the Wild West,' he said.

With my own patients, I have attempted to incorporate all that to which I have been exposed. Some of this has been useful, some less so and I have found that I have the best results when I rely on what I know best and what makes most sense to me. This is both in terms of my training and with my palpatory experiences in treating people. I would like to give a flavour of my own perspective. Of particular importance are the Maxillae - no surprise there, of course - however I would like to take this further.

My background as a Cranial Osteopath suggests that the skull functions as a three dimensional jigsaw. Left and right sides of the cranium and the whole body rhythmically move into internal and external rotation in mirror images of each other in a manner palpable to an attentive pair of hands. This is essential to life and health. Trauma and other influences, good and bad, affect the symmetry, potency and amplitude of this. Being happy, with a good diet and being of sturdy genetic stock is helpful. Trauma, on the other hand, is not. Facial trauma is particularly poorly tolerated. Between the maxillae and the rest of the skull exists a highly complex system of shock absorbers. This allows us to chew food without damaging ourselves. It consists of the zygomae, the vomer and the palatines. Study of the anatomy of the sutures reveals this. For the classic example of this, have a look at the grooves on the posterior aspect of the perpendicular plate of the palatines where the pterygoid plates of the sphenoid glide up and down.

Override these protective mechanisms and there will be consequences. I am sure my readers will be familiar with this. I get great results by freeing up these relationships, the palatines in particular. What are less often mentioned are intraosseous stresses. Between the bones, interosseous: within the bones, intra-osseous. The maxilla is a case in point: there is an embryological seam between the pre- and postmaxillae. Each are formed from quite separate structures early on in

utero. The bones are united before we are born, but there is still an axis of movement about which buckling and shearing can occur. If these are left untreated, results are less good. Familiar dental patterns involving distortions in this area are partly a manifestation of this. I am frequently required to treat and release the premaxillae, the postmaxillae and the axis of each upper canine quite separately to get a good solid change. By the way a 'good solid change' means exactly that: good changes in the spinal mechanics plus good overall vitality and wellbeing and also relief from a wide variety of health issues.

Most exciting to me, however, are the clear, dimensional changes that I have seen in the dental arch, and this not just in my young, growing patients. Those little Osteoclasts and Osteoblasts are constantly beaver away, remodelling. Get them 'on side' and lovely things happen. It has been my experience that the work that I do considerably speeds up the process when developmental work with ALF's and other appliances is necessary, which it clearly often is.

Even in the absence of ongoing appliance work, or indeed any obvious occlusal problems, all sorts of problems respond if these relationships are corrected. Dr Dean may remember me persuading him to divide at the midline a rigid appliance that went from upper two to upper two in a patient suffering with chronic debilitating headaches. He was a bit worried that her teeth would move. Maybe they did, however I am glad to report that a year later she is now happy and headache free.

Another example of work in this area is in the treatment of PMS [pre-menstrual syndrome]. Some emotional sensitivity within women's monthly cycle is normal, however when acute this condition can be debilitating and distressing with uncontrollable and embarrassing surges of emotions. It can destroy relationships and cause employment problems. My patients appreciate that I take it seriously. Think of the proximity with the pituitary within the sella turcica and how its function may be compromised. The little pituitary stalk perforates the diaphragma sellae and is vulnerable to local strains. A number of my patients have had good changes with Osteopathic work to this area. One lady came to me with a largely unrelated mechanical problem. I spotted the massive A-P compression across her cranial base she was sporting and asked about her hormonal balance. This was a big problem for her. She was normally even-tempered, however when under the spell of PMT she was a different person and she knew it. Amongst other issues, there was

the unfortunate habit of ramming her car into the cars of other drivers who had incurred her displeasure on the road. Given some timely legal intervention, this would probably have happened only once, had not the recipients of her ire - all male, apparently - taken one look at her expression and chosen to drive away at high speed rather than confront her. I am happy to say that after a course of treatment [maxillae primary again] she made excellent progress and is now a rage-free driver.

This is just a snippet: much more could be said. Certainly I do not focus solely on the maxillae. If there is a clear injury primary then spinal mechanics are obviously important. However in an effort to always get as far upstream of problems, they are frequently the key and are often what I start - or end up - treating. There is often discussion amongst Osteopaths as to how to find the primary problem. Picture the cartoon prisoner with the arrows pointing upwards on the bodysuit. With a large proportion of the people that come to me via the BSSCMD; when I examine them, those arrows are pointing squarely at the maxillae. There is no ambiguity about the primary.

But why is this area such an important one in terms of overall health? I do not think we really know - yet. However I am familiar with the effect on the cranial mechanism of a jammed-up mid-face. It is sometimes truly an anatomical poison in its system-wide effects. An analogy: the word "sabotage" comes from French factory workers in the early days of the industrial revolution protesting at their often dire conditions. They would make their point by throwing their Sabots into the mechanical machinery. These were heavy wooden clogs and caused havoc. The shuddering and crunching of the gears within the tissues and the miserable patients they belong to are suggestive of this disruption.

There are, within our group and elsewhere, a number of other ideas and explanations as to the potency of this part of the body. If I understood him correctly, Dr Stack made reference to the nuclei of the Vagus nerve in the brainstem being disrupted by aberrant sensory input from pathological TMJ's as a possible cause of Tourettes. What we do know for sure is that a huge amount of human suffering can be alleviated by good work in this area.

I for one am really happy to keep exploring.

Chris Harris BAhons DO MSCC

Osteopath



CRANIO SMILE

Paraprodsokians

(Winston Churchill loved them) are figures of speech in which the latter part of a sentence or phrase is surprising or unexpected; frequently humorous.

1. Where there's a will, I want to be in it.
2. The last thing I want to do is hurt you.. But it's still on my list.
3. Since light travels faster than sound, some people appear bright until you hear them speak.
4. If I agreed with you, we'd both be wrong.
5. We never really grow up, we only learn how to act in public.
6. War does not determine who is right - only who is left.
7. Knowledge is knowing a tomato is a fruit . . . Wisdom is not putting it in a fruit salad.
8. To steal ideas from one person is plagiarism. To steal from many is research.
9. I didn't say it was your fault, I said I was blaming you.
10. In filling out an application, where it says, 'In case of emergency, Notify:' I put 'DOCTOR'.
11. Women will never be equal to men until they can walk down the street with a bald head and a beer gut, and still think they are sexy .
12. You do not need a parachute to skydive.. You only need a parachute to skydive twice.
13. I used to be indecisive. Now I'm not so sure.
14. To be sure of hitting the target, shoot first and call whatever you hit the target.
15. Going to church doesn't make you a Christian any more than standing in a garage makes you a mechanic.
16. You're never too old to learn something stupid.
17. I'm supposed to respect my elders, but it's getting harder and harder for me to find one now.



Caroline Penn D0

Osteopathy and occlusion



OSTEOPATHY

Many dentists, particularly orthodontists, spend a lot of time asking their patients to try to keep their mouths closed when not talking or eating. It is a big dental/orthodontic issue, alongside encouraging the tongue to work correctly. Dentists are hard-pressed to help patients achieve this and this is where osteopathy can often help.

Why are dentists so bothered about lip seal and the tongue position? Put simply, the way the powerful muscles of the lips, cheeks and tongue work ultimately determines the development and shape of the dental arches, the face and to a large extent how we look. The teeth are simply passengers between these forces so if muscle action provides appropriate osseous growth stimulation then the teeth position will to a very large extent, look after itself. Patients who habitually breathe through their mouth or do not close their mouths and seal their lips respond poorly to orthodontics and the tendency to relapse is high, even when they wear retainers for life.

In this article I share two cases. In the first case the child was not able to close his mouth, the facial muscles remained weak into adulthood and several bouts of orthodontics improved the outcome but did not result in a stable self-maintaining occlusal relationship. The girl in the second case has craniofacial abnormalities and has

no orthodontic help, but at nearly 10 years old is, with osteopathy and exercises alone, developing a reasonable occlusion.

CASE 1:

The following sequence of photographs shows a boy, we will call him Rob. Anoxia at birth due to a true knot in the umbilical cord caused developmental delay. I have worked intermittently with Rob from 7 to 23 years of age. He was unable to keep his mouth shut when young so has needed a great deal of orthodontic input to achieve a reasonable result, and now as a young man his open mouth is still a problem associated with regression of his occlusion. On a positive note the osteopathy-guided early functional orthopaedic/orthodontic input facilitated adequate growth to enable him to avoid tooth extractions. The posteriorly placed upper lateral incisors were able to move into place as the dental arch widened with the two-piece removable acrylic splint (the best solution available at the time). He needed several of these and fixed braces at 17 years; perhaps some of this could have been avoided if an adequate lip seal had been achieved. Now 23 years old, he has to wear retainers and is still suffering the consequences of the open mouth posture.



8 years; narrow palate and crowding. Note cross-bite and upper laterals trapped lingually.



Removable arch expansion appliance



9 years: beginning to correct.

18 years: Open mouth persists

CASE 2

A girl who I shall name Kris, was born with Golden Har syndrome. She had craniofacial abnormalities due to failure of the first brachial arch to unite on one side, a dorsal hemi-vertebra resulting in scoliosis and dermoid cysts attached to the cornea which challenged vision. The facial asymmetry was surgically 'tidied up' at one year for aesthetic reasons and was much more challenging to her than the family had anticipated. It was at that time that the parents sought osteopathic help. They reported the benefit of osteopathy to post-operative recovery and assistance dealing with recurrent upper respiratory tract infections. Later the focus was on establishing and maintaining a clear nasal airway, a necessary pre-requisite for mouth closure.

I worked with Kris from 4 years old. Lip seal was extremely challenging. Her tongue was over developed and habitually held between her teeth, and her global muscle tone was low. Through her

mother's determined efforts, Kris learnt to suck at 10 months old. From birth she was fed breast milk through a Habenar bottle which provides a milk reservoir to avoid drowning the infant as the parent controls the flow of milk. This type of bottle is particularly suitable for infants with defects of the first brachial arch. Developmentally this is hugely better than tube feeding.

When Kris was 5 years old the osteopathic treatment focussed on working on the post-operative intra-oral scar tissue. Exercises were an important part of this process, encouraging fuller mouth opening and helping to guide the mandibular movements towards symmetry. The family were trained in intra-oral massage as well as mirroring and mental rehearsal exercises made into games. There was and still is a consistent focus on practising efficient sucking, which from the beginning of life paves the way for balanced oral and facial muscle function. Tongue, lips and cheeks



5 Years: Lip closure and tongue control are challenging; mandible deviated to right.

6 Years: Trying to whistle for lip and breath control



7 Years: Mandibular deviation is more obvious when the mouth is closed.



7 Years: Closer examination reveals crossbite locking the mandibular deviation

worked well enough for Kris to become quite a chatterbox, although at first only her family could understand her. By 7 years old she was developing intelligible speech, a skill her speech therapist had not expected Kris to acquire. Kris and her family continue to be enthusiastic and compliant to follow the advice given and there continues to be a dynamic interchange of ideas between family and osteopath about how the next challenge might be addressed. Working with the whole body has been especially important, for example initially it was not possible for Kris to slide her mandible to the left, neither was it possible for her to track her eyes horizontally in either direction or to move her tongue to the left. Her body was very right side dominant with a leading right shoulder which exacerbated the hemi-vertebra scoliosis. At first we underplayed mandibular movement and concentrated on working to lead the body with the left side, strengthening all the neuromuscular connections associated with that missing movement. As the scoliosis straightened and the tongue became freer the mandible began to shift to the left. The spinal scoliosis has become straighter without the prescribed orthopaedic spinal brace. Kris found the brace most uncomfortable and it impeded attention to postural body habits. The results for the jaw and occlusion are also encouraging so far. The next challenge for Kris will be to learn to play a wind instrument. I favour the clarinet because it is centrally aligned so is unlikely to influence the scoliosis adversely; it requires excellent lip seal and trains coordination of tongue, lips, cheeks, breathing and posture. Kris is excited at the prospect and with her determination I anticipate she will do it!

For osteopathic purposes, I am particularly impressed by the Myobrace[1] which is an Australian designed orthodontic system of oral muscle train-

ers. It demonstrates how effective the muscles alone can be in developing a good occlusion. See the pictures below (These are not from my patients).

A very interesting scenario ensued age 7y with Kris's cross-bite. Her deciduous occlusion, particularly her lower left canine, locked her into a cross bite so it was impossible to restore normal occlusal relationships without dental assistance. We began osteopathically guided exercises immediately and sought functional orthodontic consultation. Unfortunately, in Kris's case, Great Ormond Street Hospital did not sanction orthodontic assistance until all permanent teeth had erupted, so we were left to grapple without help to free her.

Finally at age 9.5y the lower left canine came out, which unlocked the cross bite and provided a window of opportunity. We developed new exercises using water swishing and more tongue movements and so far results are encouraging.

Kris and her family continue to be enthusiastic and compliant to follow the advice given and there continues to be a dynamic interchange of ideas between family and osteopath about how the next challenge might be addressed. Working with the whole body has been especially important, for example initially it was not possible for Kris to slide her mandible to the left, neither was it possible for her to track her eyes horizontally in either direction or to move her tongue to the left. Her body was very right side dominant with a leading right shoulder which exacerbated the hemi-vertebra scoliosis. At first we underplayed mandibular



8 Years: Sucking practices muscle and breath control



9 Years: Balancing beanbag for spinal alignment; influences jaw alignment too.

Finally at age 9.5 years lower left deciduous canine is lost, unlocking the crossbite. We developed new exercises using water swishing; and tongue exercises; so far results are encouraging.





Photographs show how the Myobrace system favourably directed growth over a 7-month period for a 10 year old girl. The August 2014 photos show an over-closed bite, squarely flattened off anteriors (upper incisors) and narrow premolar width with inadequate space for the erupting canines. By March 2015 the shape and relationship of the dental arches improved dramatically with plenty of space for the canines and all achieved using those muscular forces.



One of Kris's goals achieved!

movement and concentrated on working to lead the body with the left side, strengthening all the neuromuscular connections associated with that missing movement. As the scoliosis straightened and the tongue became freer the mandible began to shift to the left. The spinal scoliosis has become straighter without the prescribed orthopaedic spinal brace. Kris found the brace most uncomfortable and it impeded attention to postural body habits. The results for the jaw and occlusion are also encouraging so far. The next challenge for Kris will be to learn to play a wind instrument. I favour the clarinet because it is centrally aligned so is unlikely to influence the scoliosis adversely; it requires excellent lip seal and trains coordination of tongue, lips, cheeks, breathing and posture. Kris is excited at the prospect and with her determination I anticipate she will do it!

For osteopathic purposes, I am particularly impressed by the Myobrace[1] which is an Australian designed orthodontic system of oral muscle trainers. It demonstrates how effective the muscles alone can be in developing a good occlusion. See the pictures above (Note: These are not from my patients).

Dr John Mew[2] wrote extensively about the importance of the closed mouth posture to stimulate horizontal growth of the face rather than the vertical growth pattern encouraged by the open mouth posture. I have seen the effectiveness of John Mew's system of Orthotropics.

Both of these very functional approaches (Myobrace and Orthotropics) depend on the lips being sealed when not talking or biting into food.

To summarise, osteopathy has much to offer to enable and encourage this essential function of closed mouth posture at rest. Working both locally and globally osteopaths can attend to some of the impediments to nose breathing and work with mechanical and neuro-developmental issues that may impede oral function and development.

With thanks to Rob, Kris and family. Also to Dr Doug Rider for the Myobrace photographs.

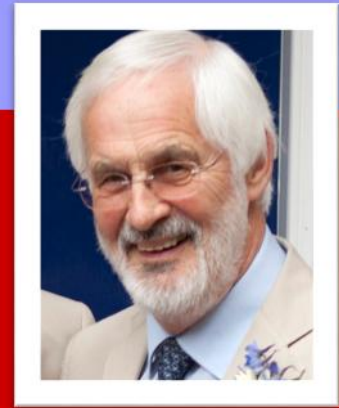
© Caroline Penn 2015

References

- [1] Myofunctional Analysis and its Role in Dental Assessments and Oral Health 2015 Paula Fabbie, RDH, BS PennWell Publications
- [2] Professor John Mew Orthotropics. <http://johnmeworthotropics.co.uk>



Dr Noel Stimson LDS - Editor



Dentistry and Osteopathy

OSTEOPATHY

A: OSTEOPATHY AND SCIENTIFIC EVIDENCE:

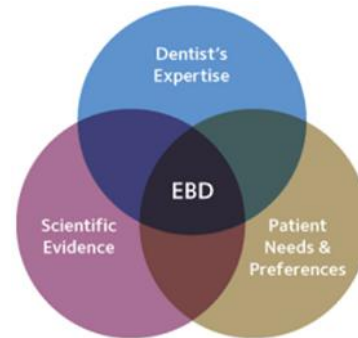
We know that scientific evidence for osteopathy's effectiveness is regarded as weak. However, there is no scientific evidence of it being harmful. Therefore any views on its efficacy and usefulness from both stand-points (for or against) are simply a matter of opinion. The existence of Osteopathy as a health care system for almost 150 years remains in popular demand with patients as well as a number of conventional health care practitioners including those within medicine, dentistry and others.

There are several reasons for the lack of robust science and the consequent variations in opinion:

1. Osteopaths and dentists are normally in daily health care practice treating their patients and therefore do not have the opportunity, the facilities, the resources or the backing required to plan, setup, manage and publish a serious scientific programme. That would have to be the province of major centres of learning, which so far is not yet 'on offer'.
2. Some Hospital Trusts employ osteopaths and provide clinical facilities similar to those provided for physiotherapy.
3. The fact that there is little robust evidence supporting osteopathy does not mean it is worthless, as some have declared.
4. A lack of understanding of what constitutes Evidence Based Healthcare (EBH) as outlined by Helen Jones on page 9:

The American Dental Association defines evidence-based dentistry as: *!An approach to oral health care that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating to the patient's oral and medical condition and history, with the dentist's clinical expertise and the patient's treatment needs and preferences."*

There is a balanced over-lapping inter-play between science-based evidence, anecdotal evidence and patients' requirements. If robust scientific evidence from the main centres of learning is lacking, then anecdotal evidence (case histories etc.) from clinical practice may be regarded as satisfactory, provided the patient's needs are addressed safely and appropriately.



Helen quotes Professor of Orthodontics Kevin O'Brien who has recently stated online:

"My general feeling is that we should base our treatments on the evidence when it is there. When it is absent, we need to accept that our treatment is based mostly on clinical experience and other sources and we need to explain this to our patients. When we do this we are practicing evidence-based orthodontics."

Logically, these same principles apply to all primary healthcare professions including Osteopathy. While "the absence of evidence is not necessarily evidence of absence", and "it is not possible to prove that something does not happen or exist; all one can say with certainty is that so far we have failed to prove that it does", it is obviously best to have high quality clinical trials to support any treatment modality; no one would deny that.

However, this is not always the case and a large number of practitioners are currently being pressured by the use of out-of-date and irrelevant science.

O'Brien brings perspective to the situation when he points out "*we need to explain to our patients*" the scientific validation (or lack of it) for our treatment. Once this is done and the patient accepts it, then evidence-based treatment is being provided.

However, there are those both within and outside the professions who do not understand this. They say their belief is that unless there are randomized clinical trials (RCTs) that prove the efficacy of a particular treatment, then it does not work and the public must be protected from those who would recommend it.

This group of non-believers tends to overlook or ignore the value and significance of the massive amount of anecdotal evidence that comes from clinical practitioners (and upon which all scientific studies are based!) and they seem immune to the needs, preferences and supportive reports from patients, declaring them irrelevant and non-scientific, (unless of course, the patient is a complainant in which case that is a different story!) Most disconcerting of all is the avowed aim of a small group of non-health workers to destroy an entire 150 year-old profession 'to protect the public'. "From what?" one might ask. Since there is no robust scientific evidence of harm or morbidity from osteopathy their only channel is the Advertising Standards Authority using their public protection remit.

The reality is that so long as online (or any other) healthcare advertising makes it clear that the proposed treatment may not be supported by any robust clinical trials, and the patient accepts this by giving their fully-informed consent, then the issue of evidence-based care is covered as indicated above.

Osteopathy is non-allopathic which means it does not generally rely on prescribing medication. Pills do not create health; often they do little more than address or cover up the symptoms, though they can be very important in supporting the recovery process. Osteopaths do not claim to treat medical conditions *per se*, but they do assist the healing and recovery process (whether innate or medically assisted) by setting up the right conditions for recovery - a skeletal and neurological system un-impaired by cranial and spinal distortions or imbalances and a pulmonary-cardiovascular system un-impaired by poor posture, poor diet and lack of exercise.

Measuring such changes objectively is virtually impossible which renders the use of randomized controlled trials (RCTs) somewhat pointless, however desirable they may be.

B: DENTISTRY AND TMD – THE HISTORY:

For many decades dentists were taught that the bio-mechanical aspects of temporomandibular disorders (previously known as "TMJ dysfunction") were caused by a disrupted or dysfunctional occlusion. This implied that only dentists had the skills and the facilities to treat the condition. At first, it was thought that the only treatment necessary was to restore or re-balance the occlusion; this would allow the muscles to normalize again and the problem would be solved.

It soon became apparent that this was not always the ideal solution and that more fundamental changes to the occlusion were required, sometimes by re-positioning the mandible and re-capturing the dislocated disk(s). Whilst a huge improvement, this too was only partly successful until it was realized that maybe the other component of the TM joint, the temporal bone, together with its associated muscles, could be partly responsible.

Happily, at about the same time, those practitioners working with the cranial bones came to a similar conclusion – that their cranial manipulations for TMD patients were not always successful and they needed some dental input. So in the early 1990's dentists and cranial workers began to work in concert, and the team approach was born, with a noticeable improvement in anecdotal success rates and patient satisfaction that was universally recognised and acknowledged in spite a few skeptics. Not surprisingly, evidence of success was only recorded anecdotally as 'case histories'.

C: ORTHODONTICS AND CRANIAL OSTEOPATHY:

In the following decades, many new concepts within dentistry of the causes of malocclusion started to emerge; this led to some fresh thinking. Among them, dysfunctional oral musculature (John Mew and Chris Farrell) and cranial balancing (Gerald Smith, Gavin James and Dennis Strokon) brought new ideas to the world of orthodontics. The former is based on the powerful effect of the oral muscles on the dental structures, the latter on the idea that structural bony anomalies within the cranium (most probably from birth) may cause a mal-relationship between the jaws. Both concepts depend on normalization of the soft tissues and bony structures concerned in order for the treatment to be successful. The reality is that both sets of circumstances often exist jointly and that if any of the causative factors remain unaddressed, then orthodontic relapse is inevitable.

I confess to being deeply offended by the current mainstream advice that 'post-orthodontic retention is for life'. I view this as a gross failure of the orthodontic profession at large to address the causes of malocclusion and not just the symptoms. Imagine how we might view a hip-replacement patient being told "*we can fix your arthritic hip OK but you will be on crutches for the rest of your life*". Clearly the cranial issues required the assistance of a cranial expert and so a new system of combined cranial

work (osteopathy and chiropractic) and orthodontics was created.

It is a curious fact that most patients accept, and to some degree understand, the concept of cranial respiration - the palpable rhythmic movement of the cranial bones that is required to circulate the CSF throughout the closed cranio-sacral system. They also have no difficulty with the notion that cranial bones have flexible connecting sutures between the bones that permit these tiny movements to take place, nor that living (or 'wet' bone) itself has an inherent flexibility and resilience that allows the cranial movements to take place and to be palpated manually.

Conventional health care professionals, on the other hand, have huge difficulty believing that this can be true; this can be explained by their only experience of handling a skull having been in the Anatomy Department while learning about the skeleton. In this situation, the skull bones will be completely desiccated and rigid; totally unlike living bone in character and appearance.

It has been suggested that many of today's 'new' dental issues (such as TMD, cranial distortion, breathing and sleep disorders) have been 'invented' purely to make money. This is simply not the case as well as being grossly insulting. All these recent developments have come from a deeper understanding of inter-connected functionality of the stomatognathic system and the cranium, and indeed with the rest of the body. An understanding that opens up new avenues of treatment that can help many more people for whom conventional dentistry has perhaps been a failure. Osteopathic support and parallel treatment have become an essential part of the overall dental care in many modern practices.

The sad fact that much of this kind of health care falls outside the scope of our ailing NHS does not make it wrong, unreasonable or inappropriate and it certainly does not make it unethical profiteering as some critics have implied.

Mainstream thinking in dentistry and orthodontics is exactly that; middle of the road, looking neither left nor right; ignoring anything unusual or interesting close to the banks of the stream and either totally unaware or pathologically suspicious of what lies round the next bend.

The sad reality is that the stream is no longer flowing; worse than stagnant, the stream is now flowing backwards, for the following reasons:

) The merging and loss of a number of dental schools.

) Of the 17 schools that remain only 10 (58%) teach orthodontics at undergraduate level.

) New graduates are expected/required to remain "inside the box" unless they have completed further post-graduate training; in orthodontics, this can take 3 -4 years and cost up to £100,000.

) There has been no significant scientific or technological orthodontic development for years

) The science in use is in general years out of date; 'new' studies are most commonly reviews of earlier work, mainly done prior to today's improved understanding.

) Recent developments in dentally-related health care (breathing disorders, sleep medicine, TMD, etc.) are either ignored or dismissed as irrelevant or unproven.

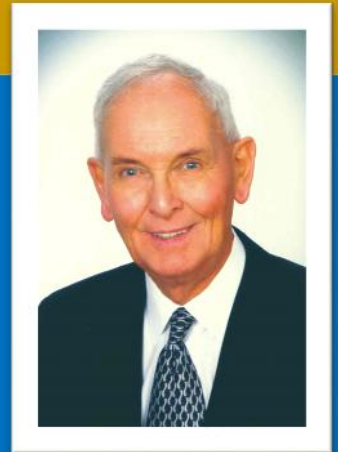
) The mainstream thinkers are in denial of the proven and inextricable 2-way skeletal, functional and physiological connections between the teeth and the cranium.

If mainstream adherents wish to remain so, then fine, but they should never be allowed to prevent others from trying to advance dentistry and improve patient care with fresh thinking and innovation. Deliberately trying to hold back progress is never a wise move, which in this instance could permanently damage our professions. They also seem to be unaware that all the health care professions are very much alive, with all the natural and dynamic tendencies to develop and change that are essential qualities of all living things.

Those who would attack advancing dental concepts and complementary care appear to do so out of ignorance or fear; ignorance because they do not understand, and fear because they believe their 'world' is being threatened by these new ideas. What saddens me is that their response is to try to stop it happening (for purely selfish reasons) rather than saying "that sounds interesting - I would like to know more about it" and "how can we help to establish its effectiveness?" - for the sake of their patients.



Dr Gavin James BDS DOrth (Niagara, Ontario)



Strabismus treated by functional orthodontics - a single case

ORTHO-CRANIAL

Are there any possible links between strabismus and dentistry?

The 14 year old patient in the following photos came into my office to wait while his sister was being treated(Fig 1 a,b) His mother was aware of my interest in posture and suggested that I might look at Mike. Clearly, there were postural problems. An examination of the face and dentition (Fig 2 a b) showed an Angle Class 1 occlusion but neither the family nor Mike were concerned with the mild dental irregularity. He did have occasional lower back discomfort but otherwise appeared to be a healthy, active individual. The only health concern was strabismus, a condition in which there is difficulty in bringing the eyes into focus on the same object. The bony orbits are out of alignment and there is a tendency for double vision. The brain has to adjust to compensate for this. In a severe case the brain will suppress the vision from one eye, creating temporary or even permanent blindness although the eye itself is functioning normally. In Mike's case a patch over the good eye had been tried to strengthen the activity of the weaker eye but without success. He then had had numerous surgical attempts to resolve the problem by reattachment of extraocular muscles. Again, this was not successful. The patient can be left with a variety of possible results depending on the body's ability to adapt and the severity of the condition. The difficulties worsen with time.

There may be a hereditary tendency for strabismus but factors such as a difficult birth or subse-

quent facial trauma are often the cause (see wikipedia). Apart from the ocular problems, even a mild strabismus can cause social embarrassment. One eye will wander while the other remains looking straight ahead. There are other difficulties such as in driving or reading. At the time of the original assessment I was not really aware of the specific characteristics of strabismus. Treatment was begun to assist in correction of his postural problems.

In osteopathic terms, Mike had a right torsion, in which both the ocular and lateral occlusal planes run up to the right. Pretreatment tests suggested that correction of the occlusal cant would help with Mike's posture. ALF appliances were used successfully to level the lateral occlusal plane(Fig 5) with subsequent improvement in his posture(Fig 6 a b) What was not anticipated was a steady lessening of the strabismus as the orthodontic treatment progressed. Mike's ophthalmologist was monitoring him throughout this time and reported an almost complete recovery of normal vision.

One successful case does not justify claiming that orthodontic intervention can resolve strabismus. There are far too many variables involved. What it does do is raise a whole series of questions. Answers might start by looking to see if strabismus patients as a group have displacement of the bony orbits similar to Mike. Appropriate manipulation by osteopaths in infants has been shown to be effective in correction of various ocular disturbances including strabismus. Even in adults, especially after trauma, such manipulation may resolve the condition. Whether orthodontic intervention can help is therefore an open question. Experience with Mike suggests that it would be worth exploring.



Fig 1a



Fig 1b



Fig 2a



Fig 2b

14 year old boy presenting with postural problems, a mild Class I malocclusion and strabismus.

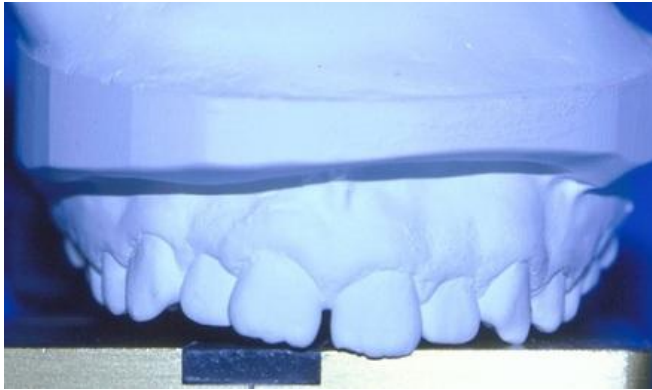


Fig 3

Right superior maxillary cant evident on model and A-P radiograph.



Fig 4



Fig 5

Upper and lower ALF appliances with lower occlusal 'lift' on the left.

Resulting facial balance with almost complete recovery of the strabismus.



Fig 6ab



Roger L Price - Respiratory Physiologist and Integrative Health educator



Sleep disorders - another perspective

SLEEP DISORDERS

Article first published in the **Journal of Lung, Pulmonary and Respiratory Research**, Vol 2 Issue 4, April 2015

Abstract

Sleep disorders are usually multi-factorial in nature, very often without a single solution available. As with many interventive processes there are unanticipated and iatrogenic consequences, which cause further complications and more intervention is then required. Sufficient evidence now exists to indicate that prevention of the onset of the symptoms, which are often referred to as 'the disease', can minimize or even eliminate the need for intervention. It is not possible for a person to have functional breathing during the day and dysfunctional breathing during the night, any more than it is to have the reverse situation. Given that the vast majority of people spend approximately two thirds of their lives awake and active, there is a significant likelihood that addressing daytime dysfunction is at least as important as, if not more important than, applying short - term night time intervention.

Introduction and Commentary

In this era of 'spin', selective reporting of fact, and downright untruths, it is difficult to know exactly what or who to believe. The fact is that the so-called "Health System" really has very little to do with health, but is rather a professionally managed, obscenely profitable business, based on "Disease Creation and Management" [1]. It is sad that human nature is such that when an opportunity is created to 'scam' or 'game' a system, there is no shortage of opportunists ready to cash in on ignorance, fear or distress. When we see regular examples of how the true results of clinical trials have been manipulated, selectively reported, and sometimes even totally obscured, in order to present a favorable commercial outcome [2], it is no wonder that a healthy degree of cynicism prevails in the sector

of the profession that is more concerned with Outcome than Income.

Sleep Disorders are usually complex mixtures of various compromises, compensations, para functions and dysfunctions- all ending up in a situation where health is compromised through lack of quality sleep. Given this complexity in etiology, it is unlikely that the offer of quick solutions has much validity.

Similarly, the current rash of offers of becoming an "expert in sleep dentistry" after an expensive 2 day weekend, have to be looked at askance - and closer examination of some of the processes involved, show a distinct bias towards exploiting loopholes in the legislation and insurance billing [3], where the focus is on fitting as many oral appliances as possible - irrespective of whether they are appropriate, or actually address the sleep disorder effectively. So based on the above, one does not need a long stretch of the imagination to see how the following could well apply to many of the 'truths' that are currently being paraded as the answer to all Sleep Disorders and other comorbid conditions.

"tell a lie, loudly and often enough, and it becomes the truth" attributed to both Lenin and Goebbels; "if all you have is a hammer, everything looks like a nail" from Abraham Maslow's 'The Psychology of Science' 1966

Generally Accepted Standards and Guidelines

So let us look at the Gold Standards, Best Practice and Evidence Based practices currently in use today. The industry is rife with many TLAs (three letter acronyms), the majority of which have ZERO empirical value, and, at best, are nothing more than useful indicators of change. Again however, the fact that a 'number' exists, even if, like the BMI, it bears NO resemblance to the individual - but is rather an indicator of a group tendency - it is still used as an empirical diagnostic icon in the determination of a condition. Similarly, names given to conditions, or groups

of symptoms, take on a life of their own, and, through repetition and reinforcement, become the 'buzzwords' of the industry - without actually meaning much. Furthermore, there is the temptation to 'grab

- bag' symptoms into neat and tidy definitions, which, through usage, become non - defining definitions. An example here is the use of the word 'flu to describe everything from a minor sore throat, or a mild cold virus-right up to life threatening influenza. Let us examine the term SDB- Sleep Disordered Breathing - used as a grab - bag for anything to do with sleep and breathing. What does it actually mean? What is Sleep - Disordered - Breathing?

American Thoracic Society Definition

Sleep-disordered breathing is an umbrella term for several chronic conditions in which partial or complete cessation of breathing occurs many times throughout the night, resulting in daytime sleepiness or fatigue that interferes with a person's ability to function and reduces quality of life.

Medicine.net

Sleep-disordered breathing: A condition characterized by repeated episodes of hypopnea (under breathing) and apnea (not breathing) during sleep. A significant proportion of adults are thought to experience sleep-disordered breathing.

Cleveland Clinic

SDB comprises a wide spectrum of sleep-related breathing abnormalities; those related to upper airway resistance include snoring, upper airway resistance syndrome (UARS) and obstructive sleep apnea-hypopnea syndrome (OSAHS).

Resmed

Many clinicians regard SDB as a spectrum of diseases characterized by:

- a) Abnormal respiratory patterns (e.g. the presence of apneas or hypopneas);
- b) Insufficient ventilation during sleep

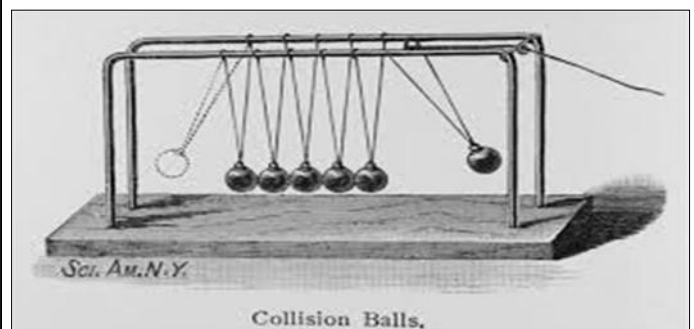
There doesn't seem to be a sufficient commonality in the above definitions to be able to zero in on what causes the actual problem - so the only option available is to use short-term intervention to attempt to manage the symptoms when they occur-usually during the night. If, on the other hand, one was to look at the non-sleep behavior - the 16-18 hours a day when the patient is awake, working, driving, eating etc. does it not make sense to examine this behavior to see if what they are doing - for three

times the amount of time that they are in bed - can influence their condition to a greater extent than the few hours they're trying to sleep?

This is why there is so much validity in the concept of Breathing Disordered Sleep (BDS) as the etiology of the problem - rather than the other way round? There is no doubt that there are millions of people suffering from Sleep Disorders, and that only a very small percentage is being reported and successfully treated and it is beyond important that we try to understand why this is so. This is a multi-billion dollar industry which, by its own reporting, is perhaps addressing less than 10% of the suspected cases of Sleep Disorders. One doesn't have to be a genius to see the disproportionate benefit, or lack thereof, in such vast amounts of money being spent on so small a segment of the market. What is of even greater concern is the abysmally low compliance rate of these devices and the actual cost per successful patient outcome is staggering.

Breathing is a mainstream function - Why then should Breathing Retraining be regarded as Complementary or Alternative?

Breathing Disordered Sleep - Cause and Effect



Where better to find the etiology than in the simple Newtonian Third Law of Motion? Because "every action has an equal and opposite reaction" it is not a long bow to draw between linking daytime dysfunction to nighttime consequences. The perennial complaint in the sleep industry is lack of compliance. So serious is this issue that the term 'compliance' has been watered down to mean far less than its actual description. The Medicare definition of CPAP compliance is

"equal to or greater than 4 hours per night for 70% of nights in a consecutive 30 day period."

So the question arises. "Why is compliance so poor?" It is hard to believe that people with a serious

sleep disorder would not *want* something to alleviate their condition - so why is it so difficult to get them to comply? The answer could be much simpler than is widely believed - and the explanation that follows might shed some light on this perplexing problem.

Explanation

Breathing is triggered by a sensor in the medulla portion of the brainstem that responds to both pH shift and the arterial pressure of CO₂. The majority of textbooks on this subject admit that the mechanism is not fully understood, but it is widely accepted that an increase in CO₂ levels is what stimulates breathing. Does it not then stand to reason that if the brainstem becomes hyper-responsive to the pH/CO₂ trigger, that breathing will be initiated earlier than 'normal'?

Hyperventilation-<http://www.nlm.nih.gov/medlineplus/ency/article/003071.html>

Hyperventilation is rapid or deep breathing that can occur with anxiety or panic. It is also called over breathing, and it may leave you feeling breathless. You breathe in oxygen and breathe out carbon dioxide. Excessive breathing creates low levels of carbon dioxide in your blood. This causes many of the symptoms of hyperventilation.

Given that Hyperventilation is an accepted medical diagnosis, can become a serious chronic condition, and can lead to the re-setting of the brainstem response, is it not possible that a sudden reduction in breathing rate-such as caused by CPAP or some Oral Appliances, could result in a spike in PaCO₂? This would then cause the breathing rate to rise-which is not permitted by the machine and mask-and be one of the reasons that patients experience a 'panic, claustrophobic or drowning' feeling, and have to remove the intervention? This mechanism will be discussed in greater detail later. Absent the fact that there is no such thing as *normal breathing* - the best we can rely on is a scientifically calculated formula for '*optimal breathing at rest*'. Obviously, breathing changes all the time, to address function and effort, but measure-

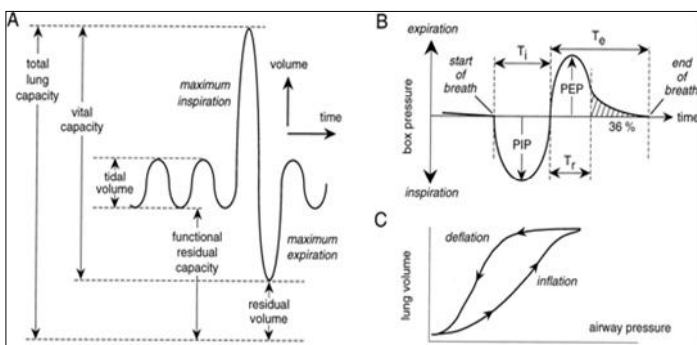
ment at rest gives us a fairly accurate baseline from which to evaluate functional efficiency.

Breathing is a mainstream function - Why then should Breathing Retraining be regarded as Complementary or Alternative?

- i. **Minute Volume (MV)**, The volume of air inhaled and exhaled in one minute.
- ii. **Respiratory Rate (RR) (also referred to as breaths per minute)**, The number of inhalation/exhalation cycles in one minute.
- iii. **Tidal volume (TV)** about 500 mL, is the amount of air inspired during normal, relaxed breathing.
- iv. **Inspiratory reserve volume (IRV)**, about 3,100 mL, is the additional air that can be forcibly inhaled after the inspiration of a normal tidal volume.
- v. **Expiratory reserve volume (ERV)**, about 1,200 mL, is the additional air that can be forcibly exhaled after the expiration of a normal tidal volume.
- vi. **Residual volume (RV)**, about 1,200 mL, is the volume of air still remaining in the lungs after the expiratory reserve volume is exhaled.
- vii. Summing specific lung volumes produces the following lung capacities: Total lung capacity (TLC), about 6,000 mL, is the maximum amount of air that can fill the lungs ($TLC = TV + IRV + ERV + RV$).
- viii. **Vital capacity (VC)**, about 4,800 mL, is the total amount of air that can be expired after fully inhaling ($VC = TV + IRV + ERV$ = approximately 80 percent TLC). The value varies according to age and body size.
- ix. **Inspiratory capacity (IC)**, about 3,600 mL, is the maximum amount of air that can be inspired ($IC = TV + IRV$).
- x. **Functional residual capacity (FRC)**, about 2,400 mL is the amount of air remaining in the lungs after a normal expiration ($FRC = RV + ERV$).

Some of the air in the lungs does not participate in gas exchange; this air is located in the anatomical dead space within bronchi and bronchioles - that is, outside the alveoli. By using the above information we can arrive at what constitutes functional breathing at rest - and that can be summarized in a few lines:

1. 8-10 breaths per minute
2. 4-5 litres of air per minute
3. In and out through the nose
4. Driven by the diaphragm
5. Silent



When a person breathes at this rate the ETCO₂ (end tidal CO₂) reaches approximately 40mm Hg pressure, there is sufficient buffer available for the pH in the respiratory system to move between 7.35 and 7.45, oxygen transport and release is optimal, and smooth muscle systems in the body are relaxed. At 40mm Hg PaCO₂ the brainstem response maintains this rhythm. What then happens when people breathe dysfunctionally? They breathe more air per breath, more breaths per minute, start to use mouth and chest instead of nose and diaphragm, and reduce their ETCO₂. This alters the respiratory pH - resulting in a tendency towards more alkalinity and as a consequence, the release of oxygen from haemoglobin is reduced (the Bohr Effect). Concurrently, as a compensatory defense mechanism against further loss of CO₂, bronchoconstriction occurs—prompting even more labored breathing. Should the reduction in CO₂ loss not be sufficient, the next line of defense is a breath-hold or apnoea, to rapidly increase ETCO₂ and therefore PaCO₂.

This is done to ensure the ongoing supply of oxygen to the brain and the rest of the body. Ironically - an apnea is nature's way of protecting the body - not harming it. Many doctors totally refute the idea that it is possible to reprogram the brainstem response - and demand scientific proof to support this assertion. They furthermore claim that breathing is a totally automatic response and, as such, cannot be changed. If it is not possible to change the brainstem response why then do babies, born as obligate nasal breathers, develop into mouth breathers in a short space of time?

Why is it that functional minute volume, long held to be around 6 liters per minute, is now regarded as being 'normal' at 12 liters per minute? If this is not indicative of a change in the brainstem breathing response - what is?

The reality is that the brainstem response IS subject to reprogramming - just as much as so many other body functions alter in the face of long term dysfunctional behavior. In summary, Breathing Disordered Sleep is based on the following premises:

1. Long-term stress and dysfunction causes hyperventilation.
2. Hyperventilation increases brainstem response to CO₂ and is a known precursor to many sleep disorders, especially central sleep apnea.
3. Rapidly moving someone from hypocapnia to normocapnia or even hypercapnia, provokes an instantaneous response and an automatic reaction to remove the source of interference.
4. By addressing daytime dysfunction and parafunction, and by retraining the brainstem response to be less reactive to CO₂, it is possible to reduce the onslaught effect of CPAP and /or OAT, make



them easier to adapt to and therefore achieve better compliance with less stress and emotional trauma.

5. Simple common sense should show that it is more likely that 16-18 hours of dysfunctional behavior during the day has the potential to influence night time breathing more than 6-8 hours of night time dysfunction has the potential to disrupt day-time balance.

6. It is not possible for breathing to be functional during the day and not at night any more than the reverse case.

The Iceberg Analogy

The 10% of the iceberg that is visible is not what represents the danger; it is the 90% hidden below the surface that will sink ships. The diagram below indicates the ratio of symptoms to aetiology, and if one takes into consideration the billions of dollars expended on above-the-line intervention

30 Patients selected randomly from files

GENDER	RANGE CHILD	MEAN AGE	NO	RANGE ADULT	MEAN AGE	NO
MALE	5 - 12	9.32	3	15 - 59	30.25	4
FEMALE	5 - 12	8.25	4	15 - 69	33.89	19

7 children had crooked teeth and were in various stages of correction

5 adults had no orthodontic intervention and all had occlusal issues

12 adults had 4 bicuspid extractions and braces in their teenage years

6 adults had non extraction orthodontics

All adults had stopped wearing retainers at some stage and all had relapsed

Duration 90 days	Starting ETCO ₂	Optimal ETCO ₂	Breaths per minute	Optimal breaths/min	Mouth/Nose	Chest/Diaphragm	Disturbed sleep	Nightly toilet trips	Waking energy level	Daytime sleepiness	Snore-Loud breathing	Waking effort	Overall assessment	Satisfaction level
all scored out of 10 - where 10 is the most severe OOL														
Start	28.59	40-45	21.35	8-10	97% Mouth	97% Chest	8.43	7.8	9.23	8	8.83	7.7	8.33	0%
End	39.02	40-45	8.96	8-10	92% Nose	92% Diaphragm	0.6	0.26	1.2	1.1	2.32	3.1	2.76	96%

against the almost negligible focus on the below-the-line causes or exacerbatory factors, it is no wonder that the problems remain unresolved to the extent that they are.

Therefore addressing the 'below-the-line' issues such as posture, breathing mechanics, nutrition, stress and the rest of the co-factors - would go a long way in providing a more comfortable, acceptable and stable outcome - with far greater compliance.

Ignoring the presence of these multiple factors will result in being confined to short-term night-time intervention.

Handling such multi-factorial issues requires the involvement of a trained team of therapists, working in conjunction, to get the required result.

Conclusion

Just because something is being done by a lot of people doesn't necessarily mean that this is the best or most successful way of doing things. Change is challenging - especially when there is pressure from commercial interests to maintain their bottom line by insisting on selling equipment and appliances - even when common sense indicates that there are better alternatives. So, based on the research papers attached - which show conclusively that restoring normocapnia will reverse CSA - does it not make sense to change breathing behavior to prevent the loss of the CO₂ in the first place - through over breathing?

Prof. Peter C Gay is an Associate Professor of Medicine at the Mayo College of Medicine in Rochester, MN. He has been a consultant in the Division of Pulmonary, Critical Care and Sleep Medicine since 1988 and after receiving all of his training at Mayo, he obtained board certification in all of these subspecialties. He is now President of NAMDR, Vice-Chair of the ACCP Home Care Network. A delegate to the ACCP Sleep Institute. He states the following:

"The pathophysiology is a combination of factors which involve the brain, the heart and lungs. A key factor is enhanced chemoreceptor responses-the degree to which you hyperventilate, in response to hypoxia and hypercapnia.

A characteristic feature of CSA is hyperventilation, which is where it has its parallels with altitude sickness. The difference is that in altitude sickness it's hypoxia that is the primary factor driving hyperventilation and hypocapnia is a consequence of that. In heart failure there's increased ventilation due to a number of factors including the fact that the lungs are wet and receptors in the lungs are sending nerve signals to the respiratory control centers in the

brainstem to cause hyperventilation. In healthy individuals carbon dioxide levels normally rise during sleep. If we go to sleep with a low CO₂ level below a certain value (the apnea threshold) breathing will be inhibited and reduce or even stop until the CO₂ rises, when breathing resumes.

It is common in patients with heart failure, and healthy individuals at altitude, for hyperventilation and the resultant hypocapnia to make breathing unstable during sleep. In patients with heart failure and sleep-disordered breathing, breathing is made more unstable as the prolongation of circulation time means that the effects of blood gas changes in the periphery take longer to reach the brainstem where control of breathing occurs."

References

1. Xie A, Rankin F, Rutherford R, Bradley TD (1985) Effects of inhaled CO₂ and added dead space on idiopathic central sleep apnea. J Appl Physiol 82(3): 918-926.
2. Badr MS, Grossman JE, Weber SA (1994) Treatment of refractory sleep apnea with supplemental carbon dioxide. Am J Respir Crit Care Med 150(2): 561-564.
3. Thomas RJ, Daly RW, Weiss JW (2005) Low-concentration carbon dioxide is an effective adjunct to positive airway pressure in the treatment of refractory mixed central and obstructive sleep-disordered breathing. Sleep 28(1): 69-77.
4. Szollosi J, Jones M, Morrell MJ, Helfet K, Coats AJ, et al. (2004) Effect of CO₂ inhalation on central sleep apnea and arousals from sleep. Respiration 71(5): 493-498.
5. Johansen T, Jack S, Dahl R (2013) Normalizing CO₂ in chronic hyper-ventilation by means of a novel breathing mask: a pilot study. Clin Respir J 7(4): 359-366.
6. Central Sleep Apnea Treatment & Management.
7. Ritz T, Rosenfield D, Steele AM, Millard MW, Meuret AE (2014) Controlling asthma by training of Capnometry-Assisted Hypoventilation (CATCH) vs slow breathing: a randomized controlled trial. Chest 146(5): 1237-1247.

Sep 15, 2014 - The term central sleep apnea encompasses a heterogeneous group of ... While this study failed to show a mortality benefit, CPAP was associated with ... set as a back-up rate, especially when the central apneas are long.

"CPAP Should Not Be Used for Central Sleep Apnea"

www.aasmnet.org/.../020405.pdf

American Academy of Sleep Medicine

by S Javaheri - 2006 - Cited by 38 - Related articles



CRANIO VIEW CHRONOLOGICAL LIST OF ARTICLES

JULY 1992 (No 1) (1/1)
 TRANSCRANIAL RADIOGRAPHY by Richard Greenan
 VERTICAL DIMENSION - PRIMARY MOLAR BUILD-UPS by Merle Loudon
 DENTAL IMPLICATION OF CRANIAL OSTEOPATHY by Gerald Smith
 THE SEVENTH KEY TO FACIAL BEAUTY AND THE TMJ PART I by Grant Bowbeer

OCTOBER 1992 (No 2) (1/2)
 AN INTERVIEW WITH JOHN NASEDKIN by Richard Dean
 THE EFFECTS OF BICUSPID EXTRACTION ORTHODONTICS ON TMJ DYSFUNCTION by Eugene Covey
 THE INFLUENCE OF THE MUSCLES ON THE FACE AND TEETH by John Mew
 THE SEVENTH KEY TO FACIAL BEAUTY AND THE TMJ PART II by Grant Bowbeer
 THE SAGITTAL APPLIANCE by Robert Hughes

FEBRUARY 1993 (No 3) (2/1)
 PRIMARY MOLAR BUILD-UPS by Merle Loudon
 OTITIS MEDIA WITH EFFUSION (GLUE EAR) by Michael Fennel
 APPLIED KINESIOLOGY AND TMJD by Chris Smith
 INTERVIEW WITH EUGENE GREGORY by Richard Dean
 INDICATIONS FOR TMJ SURGERY by Brendan Stack
 THE 3-D APPLIANCE by Robert Hughes
 FACIAL BEAUTY AND THE TMJ PART III by Grant Bowbeer

MAY 1993 (No 4) (2/2)
 MYOFUNCTIONAL THERAPY by Daniel Garliner
 WHIPLASH AND THE TMJ by Meurig Devonald
 THE FUNCTIONAL TMJ by Sean O'Geary
 THE "LOST C" TRAP by John Witzig
 THE CRANIAL SACRAL COMPLEX by Jon Howat
 INTERVIEW WITH JACK HADEN by Noel Stimson

SEPTEMBER 1993 (No 5) (2/3)
 INTERVIEW WITH JOHN WITZIG by Richard Dean
 SALISBURY PLAINSPEAK by Charles Lister
 THE ALEXANDER TECHNIQUE by Max Rutherford
 JUST A LITTLE ACCOMMODATION by Angela Caine
 THE OCCLUSAL/PERIO INTERFACE by Ian Poplett
 DENTITION AND THE SPINE by Bill Read
 DIGITAL SUBTRACTION TOMOGRAPHY by Douglas Lee

FEBRUARY 1994 (No 6) (3/1)
 MARIANO ROCA BADO AT YORK by Noel Stimson.
 AN INTERVIEW WITH BRENDAN STACK by Kevin Bowling.
 SALISBURY PLAINSPEAK by Charles Lister.
 MIGRAINE AND THE DENTAL CONNECTION by J. G. Steele.
 HOMEOPATHY IN DENTISTRY by Peter Varley.
 BENIGN HYPER-MOBILE JOINT SYNDROME by John Roberts.
 THE INFLUENCE OF MUSCLES ON THE FACE & TEETH by John Mew.
 AN APPRECIATION OF THE WHOLE CUBE by Clayton Skaggs.
 LANDMARKS FOR OCCLUSAL RECORDS by Tony Kitchen.
 ATYPICAL ODONTALGIA by Steven B. Graff-Radford and William K. Solberg.

MAY 1994 (No 7) (3/2)
 MUSICIANS AND TMD by John Taddey.
 INTERVIEW WITH TERRY SPAHL by Richard Dean
 CASE FINISHING PART 1 by James Broadbent
 TM AND MF STRESS by Ron Cullen
 HOLISTIC DENTISTRY by Jurgen Hartz

SEPTEMBER 1994 (No 8) (3/3)
 STRUCTURAL PREDISPOSITIONS IN STAMMERING by Angela Caine Lis Cardew and Noel Stimson
 CASE FINISHING 2 by James Broadbent
 CRANIAL OSTEOPATHY - SIDEBEND & DENTISTRY by Jim Jecmen
 OTITIS MEDIA WITH EFFUSION by Richard Dean
 THE TRANS-FACULTY APPROACH TO CHRONIC PAIN by Stewart Wright
 TMD AND THE SINGING VOICE Sylvia Amorina and John Taddey
 THE VERTICAL OVERBITE DOMINO RULE by Merle Loudon

FEBRUARY 1995 (No 9) (4/1)
 LITERATURE REVIEW ON RANGE OF MOTION by the newly-formed Society for the Study of CMD
 GLUE EAR by Peter Varley
 TMD DYSFUNCTION DIAGNOSIS by Sean O'Geary
 POSTURE AND DENTAL ORTHOPAEDICS by Christopher Stevens
 SIDEBENDING ROTATION by Jim Jecmen

JUNE 1995 (SPECIAL ISSUE) (No 10) (4/2)
 UNDERSTANDING MALOCCLUSION by Dr Jim Jecmen

SEPTEMBER 1995 (No 11) (4/3)
 VISCO-ELASTIC IMPORTANCE OF THE MYOFASCIAL SYSTEM by John Barnes
 ASSESSMENT OF TEMPOROMANDIBULAR INJURY AND ORO-FACIAL PAIN by Robert Talley

DECEMBER 1995 (No 12) (4/4)
 AIRWAY ENHANCEMENT FOR TRUE ORTHODONTIC HEALTH by Dr Donald Grim
 ALTERNATIVE LIGHT WIRE FUNCTIONALS (ALF) by Gerald Smith and Heather Ashton
 TRIPLANAR ANALYSIS by Gregg Pucel
 THE VOMER - CRANIAL SPEED REDUCER by Nicholas Mandoll
 STRUCTURE AND THE VOICE - THE ROLE OF THE SKELETAL AND MUSCULAR FRAME IN SPEECH AND SINGING by Angela Caine

APRIL 1996 (No 13) (5/1)
 ARTHROSIS (DJD) OF THE TMJ by Sean O'Geary
 THE PLANE OF OCCLUSION IN TMD PATIENTS by Gerald Smith
 OCCIPITAL MUSCLE ATTACHMENT OF THE DURA by Gary Hack
 THE PENDULUM APPLIANCE by Brock Rondeau

SEPTEMBER 1996 (No 14) (5/2)
 OCCLUSAL PLANE AND THE HAMULAR/INCISAL PAPILLA PLANE AS A HORIZONTAL REFERENCE by James Carlson and Runar Johnson
 CRANIAL SUTURE MOBILITY by Gerald Smith and John Barnes
 DURAL FIBRILLATION by Gerald Smith
 MRI STUDY OF TMD CASE by Ronald Levandoski

JANUARY 1997 (No 15) (5/3)
 NUTRITION A CELLULAR APPROACH TO HEALTHY PATIENTS by Bob Walker
 A PHYSIOLOGICAL APPROACH TO TREATING THE COMPROMISED DENTITION by Gerald H Smith

APRIL 1997 (No 16) (6/1)
 ORAL MEDICINE - STOMATOLOGIE by Agnes Koubi
 ADAPTIVE THERAPY by Chris Sherlock
 N-SAGITTAL APPLIANCE by Darrick Nordstrom

AUGUST 1997 (No 17) (6/2)
 PERFORMERS NEED STRUCTURAL MAINTENANCE by Angela Caine
 CEPHALOMETRIC EVALUATION OF FOUR ORTHODONTIC METHODS by John Mew and Michael Trenouth
 PANORAMICS FOR THE TMJ by Richard W Greenan

JANUARY 1998 (No 18) (7/1)
 STRUCTURAL DENTISTRY by Noel Stimson
 CRANIO-SACRAL THERAPY by Sean O'Geary

CRANIO VIEW ARTICLE LIST (cont.)

JULY 1998 (No 19) (7/2)
 UNDER-REPORTING OF MRI's by Brendan Stack
 OSTEOPATHY IN THE CRANIAL FIELD by Viola Frymann
 NOT ONLY CANARIES NEED SING by Angela Caine
 THE PLACEBO EFFECT by Sean O'Geary
 AN INTEGRATED APPROACH TO CHRONIC PAIN by Gerald Smith

DECEMBER 1998 (No 20) (7/3)
 INTERVIEW WITH JON HOWAT AND JOHN PAGE by Noel Stimson
 THE PROBLEM OF RETENTION by George Northcroft
 A PARADOX STORY OF RELAPSE by Marc Saadia
 THE CHEMISTRY OF INFLAMMATION AND PAIN by Christopher Astill-Smith
 SHOULD DENTISTS ADMINISTER NITROUS OXIDE?

APRIL 1999 (No 21) (8/1)
 PATHOLOGY AS INFLUENCED BY OCCLUSION (c.1914) by Henry Ferris
 TREATING INFECTIOUS DISEASES AND AK by Christopher Astill-Smith
 ORTHODONTIC THERAPY AND CRANIAL DYSFUNCTION by Skip Truitt
 MORE THAN JUST BEAUTIFUL SMILES WITH EUROPEAN ORTHODONTICS by Helen Jones
 THYROID FUNCTION TEST

AUGUST 1999 (No 22) (8/2)
 THE HYOID BONE by Sean O'Geary
 THE FUNCTIONAL JAW ORTHOPAEDICS MANIFESTO by Terrance J Spahl

DECEMBER 1999 (No 23) (8/3)
 TMJ THERAPY – ORTHODOX OR UNORTHODOX? from Dental Protection (IRE)
 ENHANCED TMJ IMAGING by Iain Stewart *et al*
 POSTUROLOGY by Prof S Rocca
 CHRONIC MOUTH BREATHING AND MUSCULO-SKELETAL PAIN by Derek Mahony
 HOMOEOPATHY AND OME by Hugh Harrison *et al*
 THE GREAT ORTHO DEBATE Charles Lister's email forum

MAY 2000 (No 24) (9/1)
 JOHN MEW – LIST OF REFERENCES
 NUTRITION AND THE TMJ by Andre Hedger
 THE NEED FOR MINERAL SUPPLEMENTATION by David Thomas
 CRANIODONTICS by Gerald Smith

OCTOBER 2000 (No 25) (9/2)
 INTEGRATING DENTOFACIAL ORTHOPAEDICS WITH CRANIAL OSTEOPATHY by Richard Dean
 "OUT OUT DAMN TOOTH" by Tony Edwards
 SHARING THE UNKNOWN by John Page
 THE MILLENNIUM AND TMD by Frank Heynick
 TWIN BLOCK APPLIANCE THERAPY by Michael Trenouth

FEBRUARY 2001 (No 26) (10/1)
 DIGITAL PHOTOGRAPHY Noel Stimson and David Cheetham
 TREATMENT OF LYME DISEASE Dietrich Klinghardt
 REACHING ACROSS DISCIPLINES Bill Whateley
 BIOLOGICAL INDICATORS Gerald Smith

JULY 2001 (No 27) (10/2)
 SECOND MOLAR REPLACEMENT / VIAZIS Derek Mahony
 DIGITAL PHOTOGRAPHY - CAMERAS Noel Stimson
 WILSON'S SYNDROME – THE DYSFUNCTIONAL THYROID
 THE RIFE MACHINE – 50 YEARS OF SUPPRESSION

DECEMBER 2001 (No 28) (10/3)
 THE TEMPORAL BONE AS IT RELATES TO OCCLUSION Jim Jecmen
 THE EFFECTS OF BICUSPID EXTRACTION ON TMJ DYSFUNCTION Eugene Covey
 JOHN MEW'S LIST OF REFERENCES John Mew
 AN INTEGRATED APPROACH TO CHRONIC PAIN Gerald Smith
 CHRONIC MOUTH BREATHING AND MUSCULO-SKELETAL PAIN Derek Mahony
 POSTURE AND DENTAL ORTHOPEDICS Christopher Stevens

MAY 2002 (No 29) (11/1)
 THE SEEDS OF MALOCCLUSION by Jim Jecmen
 WHIPLASH AND ITS EFFECT ON THE TEMPORO-MANDIBULAR JOINT by Meurig Devonald
 TRUINE PROCESSING by Sean O'Geary

OCTOBER 2002 (No 30) (11/2)
 DOES MERCURY AMALGAM CAUSE SYSTEMIC TOXICITY? By James MacDonald (3rd yr BDS)
 MERCURY TOXICITY AND SYSTEMIC ELIMINATION AGENTS by Dietrich Klinghardt
 RADIOGRAPHIC EVIDENCE OF CRANIAL BONE MOBILITY Gerald Smith *et al*
 WHAT DO WE NEED TO KNOW ABOUT BITE REGISTRATION by Stephen Bray

MARCH 2003 (No 31) (12/1)
 WHAT DO WE NEED TO KNOW ABOUT BITE REGISTRATION: PART 2 by Stephen Bray
 CONJOINED TWINS AND CRANIOSACRAL THERAPY Contributed by Helen Jones
 THE DENTAL IMPLICATIONS FOR BREAST FEEDING by Noel Stimson
 SKELETAL CROSSBITE AND SCOLIOSIS by Richard Dean

DECEMBER 2003 (No 32) (12/2)
 MINERAL DEPLETION IN OUR FOODS by David Thomas
 THE OTHER FOOT AND MOUTH DISEASE submitted by Andrew Jackson and Stephen Bray
 THE STRANGE CASE OF THE TMJ by Stephen Bray
 DEHYDRATION by Noel Stimson
 SCIENCE AND IMPIRICISM by John Mew

SUMMER 2004 (No 33) (13/1)
 DENTAL SEALANT TOXICITY by Omar Amin
 THE VOICE GYM by Angela Caine
 BITE REGISTRATION PART III by Stephen Bray
 NOCTURNAL CONSIDERATIONS FOR TMD PATIENTS by Brendan Stack

WINTER 2004-5 (No 34) (13/2)
 INSIDE THE FUNCTIONAL MATRIX by Jim Jecmen
 OSTEOPROSIS submitted by Gerald Smith
 THE SPIRITUAL DIMENSION OF THE TMJ by Sean O'Geary
 BITE REGISTRATION PART IV by Stephen Bray
 FACT SHEET ON MERCURY by Simon Rees

SUMMER 2005 (No 35) (14/1)
 10 TRIALS ON CMD/ARTHROSIS SUMMARY by Noel Stimson
 OCCLUSAL CRANIAL BALANCING by Gerald Smith
 INSIDE THE FUNCTIONAL MATRIX: PART II by Jim Jecmen
 EVOLUTION OF THE SPRING ALIGNER by Derek Mahony

WINTER 2005-6 (No 36) (14/2)
 TMJ IMAGING COURSE REPORT by Stephen Bray
 DAMON EDGEWISE BRACKETS by Derek Mahony
 CONDYLAR RE-POSITIONING by Michael Trenouth
 INSIDE THE FUNCTIONAL MATRIX PART III by Jim Jecmen

SUMMER 2006 (No 37) (15/1)
 AN INTRODUCTION TO CRANIAL MOVEMENT AND ORTHODONTICS by Gavin James and Dennis Strokon
 BRINGING ORTHODONTICS INTO THE 21st CENTURY by Derek Mahony
 NEURO LINGUISTIC PROGRAMMING by Brid Hedron
 ANTI-OXIDANTS AND PERIODONTAL DISEASE by Stephen Bray
 ALTERNATIVE TO SBS MOTION by Andrew Cook

WINTER 2006-7 (No 38) (15/2)
 CRANIAL FACTORS AND THE ALF APPLIANCE by Gavin James and Dennis Strokon
 ESTABLISHING THE VERTICAL DIMENSION by Derek Mahony
 HOW TO TREAT TMD FROM START TO FINISH report by Andre Hedger
 ORTHODONTIC POLITICS AND THE GDC by John Mew
 THE VANISHING LINE BETWEEN FUNCTION AND PAR-

CRANIO VIEW ARTICLE LIST (cont.)

SUMMER 2007 (No 39) (16/1)
 CRANIAL STRAINS AND MALOCCLUSION by Dr Gavin James MDS FDS and Dr Dennis Strokon DDS
 THE VANISHING LINE BETWEEN FUNCTION AND PARAFUNCTION by Dr Jim Boyd DDS and Dr Barry Glassman DMD
 A PERSONAL VIEW OF DENTAL SCIENCE by Dr Mark Antosz DDS
 A FABLE by Dr Peter Crocker BDS
 THE CHALLENGE OF HISTORY AND RECORD TAKING IN THE ETHICAL MANAGEMENT OF TMD PATIENTS by Dr Richard Dean MSc BDS
 BRINGING BIOMETRICS INTO DENTISTRY by Dr Derek Mahony BDS MScOrth DOrth

WINTER 2007-8 (No 40) (16/2)
 CRANIAL STRAINS AND MALOCCLUSION - HYPEREXTENSION AND SUPERIOR VERTICAL STRAIN by Dr Gavin James and Dr Dennis Strokon
 THE EFFECTS OF LARGE ADENOIDS ON A DEVELOPING MALOCCLUSION by Dr Derek Mahony
 THE PROBLEM WITH ALIGNERS by Joe Caprani

SUMMER 2008 (No 41) (17/1)
 CRANIAL STRAIN AND MALOCCLUSION PART V - INFERIOR VERTICAL STRAIN by Dr Gavin James and Dr Dennis Strokon
 ORTHODONTICS WITHOUT EXTRACTIONS AND THE ALF APPLIANCE by Dr Hugh McDermott
 AREA CENTROID ANALYSIS OF CRANIOFACIAL GROWTH by Dr Michael Trenouth
 INFORMED CONSENT AND THE GDC

WINTER 2008-9 (No 42) (17/2)
 CRANIAL STRAIN AND MALOCCLUSION PART VI—TORSION by Dr Gavin James and Dr Dennis Strokon
 INTEGRATED MEDICINE VIEWS BODILY FUNCTION FROM A GLOBAL PERSPECTIVE by Dr Gerald Smith
 PAIN RELIEF THROUGH LEARNING - A CONTROLLED CLINICAL TRIAL contributed by Susan Cheek MSTAT
 CASE HISTORY Dr Granville Langly-Smith
 CLINICAL THERMOGRAPHY - AN OVERVIEW by Noel Stimson

SUMMER 2009 (No 43) (18/1)
 CRANIAL STRAIN AND MALOCCLUSION PART VII—SIDE BEND Part 1: by Dr Gavin James MDS FDS and Dr Dennis Strokon DDS
 CHIROPRACTIC AND DENTISTRY IN THE 21ST CENTURY By Dr Charles Blum DC CSCP
 AN INTERDISCIPLINARY APPROACH TO THE ALEXANDER TECHNIQUE by Gitte Fjordbo MA MD FLAT SEP
 DITI IN SPORTS MEDICINE AND MUSCULOSKELETAL DISORDERS (Advertorial)

WINTER 2009-10 (No 44) (18/2)
 CRANIAL STRAIN AND MALOCCLUSION PART VII—SIDE BEND Part 2: by Dr Gavin James MDS FDS and Dr Dennis Strokon DDS
 CRANIAL STRAIN AND MALOCCLUSION— REVIEW OF THE SERIES: by Dr Gavin James MDS FDS and Dr Dennis Strokon DDS
 ASSESSING THE NEED FOR DENTAL-CHIROPRACTIC TMJ CO-TREATMENT: THE DEVELOPMENT OF A PREDICTIVE INSTRUMENT. Dr Charles Blum DC CSCP

SUMMER 2010 (No 45) (19/1)
 CRANIAL STRAINS AND MALOCCLUSION VIII PALATAL EXPANSION by Dr Gavin James MDS FDS DOrth and Dr Dennis Strokon DDS
 OCCLUSAL CRANIAL BALANCING TECHNIQUE - AN UPDATE by Dr Gerald Smith DDS
 ORTHODONTICS IN A QUANTUM WORLD - I: THE RATIONALE FOR A NEW APPROACH by Dr Gavin James MDS FDS DOrth
 BOOK REVIEW by Dr John Adam and Dr Tone Tellefsen-Hughes

WINTER 2010-11 (No 46) (20/1)
 ORTHODONTICS IN A QUANTUM WORLD - II: CRANIAL MOVEMENT AND PARAFUNCTION by Dr Gavin James MDS FDS DOrth.
 ALF CORRECTION OF FACIAL AND POSTURAL ASYMMETRY: 3 CASE PRESENTATIONS - Torsion and Cranial Strain, Dental and Cranial Sidebend, Superior Vertical Strain, by Dr Dennis Strokon DDS.

SUMMER 2011 (No 47) (20/2)
 ORTHODONTICS IN A QUANTUM WORLD - III: "ELECTROMAGNETIC FIELD THEORY AND PARAFUNCTION". by Dr Gavin James MDS FDS DOrth.

"THE EFFECTS OF DIFFERENT STATES OF ORAL OCCLUSION ON STRENGTH, BALANCE AND MUSCLE FUNCTION" by Paul Willoughby BSc

WINTER 2011-12 (No 48) (21/1)
 "HOMEOBLOCK APPLIANCE - THEODORE BALFOUR" a course report by Amir Kamburov BDS
 "ORTHODONTICS IN A QUANTUM WORLD - IV: BALANCE POSTURE AND ORAL FUNCTION". by Dr Gavin James MDS FDS DOrth.
 "HABITS ETC. AND OROFACIAL DYSKINESIA" by Dr W Entrup DDS
 "AN OSTEOPATHIC COMPARISON OF THE ALF AND BIOBLOCK APPROACH" by Dr Tasha Turzo DO

SUMMER 2012 (No 49 - 20th Anniversary issue) (21/2)
 "14th FACIAL GROWTH GUIDANCE SYMPOSIUM" report by Dr Helen Jones.
 "MY JOURNEY FROM ORTHODONTICS TO CRANIO-FACIAL PAIN AND TMJ TO MOVEMENT DISORDERS" by Dr Brendan Stack DDS MS
 "CRANIO FORUM - ORTHODONTIC DIAGNOSIS: Cranial v Oral Posture: featuring Gavin James and John Mew
 "THE UNIVERSAL/DIGESTIVE JAW" by Dr Wilhelm Entrup DDS
 "WHY CRANIAL?" by Dr Jim Jecmen DDS

WINTER 2012-13 (No 50) (22/1)
 "THE LIMITATIONS OF THE ANGLE CLASSIFICATION SYSTEM" Viewpoint by Dr Noel Stimson.
 "THE INFLUENCE OF CLASP DESIGN ON TWIN BLOCK APPLIANCE OUTCOME" by Dr Michael Trenouth.
 "PARKINSON'S DISEASE; ARE SOME CASES MIS-DIAGNOSED CMD?" by Dr Dwight Jennings.

SUMMER 2013 (No 51) (22/2)
 "ORAL APPLIANCES IN THE MANAGEMENT OF TEMPOROMANDIBULAR DISORDERS" Dr G Klasser and Dr C Greene
 "TAKING INHIBITION ONTO THE ROADS - Alexander Technique and Advanced Driving." Dr Barry Collins

CRANIO VIEW ARTICLE LIST (cont.)

WINTER 2013-14 (No 52) (23/1)

- "CRANIO FORUM - PART 2" Gavin James and John Mew
- "STRAIGHT TALK ABOUT CROOKED TEETH" Derek Mahony and Kent Lauson
- "THE EFFECTS OF BICUSPID EXTRACTION ORTHODONTICS ON TMJ DYSFUNCTION" Eugene Covey (re-print)

CHANGED TO "CRANIO UK"

SUMMER 2014 (Cranio UK issue No 1)

- SINGING FOR SNORERS - Interview with Alise Ojay
- EXETER UNIVERSITY - 2 studies on singing exercises to improve snoring
- MALOCCLUSION AND ABNORMAL FOOT MOTION - Dr Brian Rothbart PhD
- WHY THE ALF SYSTEM PROVIDES SUPERIOR ORTHODONTIC TREATMENT - by Dr Gerald Smith DDS
- THE BRAIN, THE MIND AND THE OSTEOPATH - by Dr Joanna Wildy DO

WINTER 2015 (Cranio UK issue No 2)

- DEMONSTRATING CRANIAL CHANGES WITH DITI
- by Dr Gerald Smith DDS
- CASE HISTORY #1: ANTERIOR OPEN BITE or 'How to avoid jaw surgery' by Dr Victoria Jones BDS
- CASE HISTORY #2: "IS TRADITIONAL ORTHO THE SAME AS CRANIAL BINDING?" plus personal case history by Ian Hedley
- CASE HISTORY #3: "MY 12 YEAR SEARCH FOR MIGRAINE RELIEF and POSTERIOR TONGUE TIE" by Michale Fetzik BSN OMT
- THE HIPPOCRATIC OATH
- 10 ORTHODONTIC COCHRANE REVIEWS

SUMMER 2015 (Cranio UK issue No 3)

- CASE HISTORY #1: "ALF CORRECTION OF FACIAL AND POSTURAL ASYMMETRY" Dennis Strokon
- CASE HISTORY #2: "A CHALLENGING CLASS TWO RE-TREATMENT" Victoria Jones
- CASE HISTORY #3: "TMD MANAGEMENT FOR TOURETTES" Andre Hedger
- "SLEEP APNOEA AND DYSFUNCTIONAL BREATHING" by

WINTER 2016 (Cranio UK issue No 4)

-) "TMD AND HEADACHES" - by Patrick Grossmann; originally published in the BASH journal
-) "OCCLUSAL WEAR AS A DIAGNOSTIC INDICATOR" - by Gavin James
-) CASE HISTORY #1 - "URSULA'S STORY" - A RE-TREATED EXTRACTION CASE by Granville Langly-Smith
-) CASE HISTORY #2 - "RACHEL'S STORY" - THE CONSEQUENCES OF RETRACTIVE ORTHODONTICS: submitted by John Page and sourced from the www.therighttogrow.com website

SUMMER 2016 (Cranio UK issue No 5)

(MYOFUNCTION, SLEEP DISORDERS AND OSTEOPATHY SPECIAL EDITION)

- QUESTIONING ORTHODONTICS - Dr Chris Farrell
- REPORT ON TWO STUDIES - Editor
- OROFACIAL MYOFUNCTION - Dr Tony O'Connor
- AN OSTEOPATHIC PERSPECTIVE - Dr Chris Harris
- OSTEOPATHY AND OCCLUSION - Dr Caroline Penn
- DENTISTRY AND OSTEOPATHY - Dr Noel Stimson
- STRABISMUS TREATED BY FUNCTIONAL ORTHODONTICS - Dr Gavin James
- SLEEP DISORDERS - ANOTHER PERSPECTIVE - Roger Price

BSSCMD CURRENT MEMBERSHIP LIST

LAST UPDATED DECEMBER 2015, ARRANGED GEOGRAPHICALLY

First Name	Surname	Profession	Town/City	Practice Phone.
------------	---------	------------	-----------	-----------------

NORTHERN GROUP

MARK	BUTTERWORTH	CHIROPRACTOR	LEEDS	0113 228 9888
ELISABETH	CARDEW	PHYSIOTHERAPIST	SHEFFIELD	0114 273 0319
OFORI	DUODU	DENTIST	WITHERNSEA, N YORKS	01964 612024
LISA	HALSE	OSTEOPATH	SHEFFIELD	0114 258 6133
DOUGLAS	LEE	DENTIST	ACCRINGTON	01254 237517
ALAN	MOFFATT	DENTIST	SHEFFIELD	0114 272 3076
JOHN	ROBERTS	DENTIST	ROCHDALE	01484 514451
MICHAEL	TRENOUTH	ORTHODONTIST	PRESTON	01772 717016

CENTRAL AND SOUTHERN GROUP

JOHN	AHEARNE	DENTIST	POOLE	01202 741622
ELISENDA	BALDA	DENTIST	KNAPHILL SURREY	07716 249050
GARETH	BUTLER	OSTEOPATH	WINDSOR	01753 850322
TIM	CLARK	OSTEOPATH	WINCHESTER	01962 881301
CATHERINE	CROWE	DENTIST	LANDFORD, HANTS	02380 774056
TERESA	DAY	DENTIST	BINFIELD	01344 867144
MICHAEL	DONOVAN	DENTIST	PETWORTH, W SUSSEX	01798 343552
JONATHAN	HOWAT	CHIROPRACTOR	OXFORD	01865 761802
HELEN	JONES	ORTHODONTIST (Ret)	HASLEMERE, SURREY	01428 683844
MARK	KENNEDY	CHIROPRACTOR	WINCHESTER, HANTS	01962 843242
GRANVILLE	LANGLY-SMITH	DENTIST	LANDFORD, HANTS	02380 774056
CAROLINE	LAURENCE	CRANIOSACRAL THPST	GUILDFORD	01483 211845
PRESTON	LEE-SUI	OSTEOPATH	CHALFONT ST GILES, BUCKS	07979 903693
MARK	MORTIBOYS	DENTIST	EAST HORSLEY, SURREY	01483 281428
TOM	ROBINSON	MASSAGE THRPST	GREAT BOOKHAM	07734 205469
JOHN	VESEY	OSTEOPATH	CHRISTCHURCH	07973725105
JOSEPH	VIZKELETY	DENTIST	OLD PORTSMOUTH	02392 296620
CATLIN	VIZKELETY	DENTIST	OLD PORTSMOUTH	02392 296620
ANDREW	WHITEHOUSE	DENTIST	SOUTHWICK ,W SUSSEX	01273 592155
STEVE	WILLIAMS	CHIROPRACTOR	SOUTHAMPTON	02380 788111
ANDREA	WYNNICK	CHIROPRACTOR	WOKINGHAM, BERKSHIRE	01189 787466
ANDREW	ZARANKO	DENTIST	BILLINGSHURST, E SUSSEX	01642 566615

SOUTH WESTERN GROUP

PETER	BISHOP	DENTIST	BRISTOL, AVON	01179 260265
ELIZABETH	CLAYTON	OSTEOPATH	YEOVIL	01935 422488
MALAN	CLOETE	DENTIST	WINCHCOMBE, GLOS	01242 602381
SIMON	COAD	CHIROPRACTOR	PENRYN, CORNWALL	01326 375905
MARTIN	COLEMAN	OSTEOPATH	HASLEMERE	01428 651067
GILES	COURTIS	CHIROPRACTOR	BATH, AVON	01225 423333
ANNELI	HULKKONEN	OSTEO + CHIRO	WIMBORNE DORSET	01202 888812
SHOAIB	JAMIE	DENTIST	BRISTOL	01179 566121
BERNARD	MASTERS	CHIROPRACTOR	LAUNCESTON DEVON	01566 773671
HILARY	QUINLAN	DENTIST	STREET, SOMERSET	01485 445115
PAULA	RICHARDSON	DENTIST	ILCHESTER, SOMERSET	01935 840784
BILL	WHATELEY	DENTIST	TEIGNMOUTH	01626 774547

MIDLANDS AND EAST ANGLIA GROUP

YVONNE	AYLIFFE	OSTEOPATH	TACOLNESTON NORFOLK	01953 789629
ANNA	GIENCO-CHISTOWSKA	DENTIST	HOMECastle, Lincs	01507 525655
JONATHAN	GRENDMEIR	CHIROPRACTOR	MILTON KEYNES	01508 630544
HELEN	HARRISON	DENTIST	CAMBRIDGE	01223 461381
JOANNE	HARTSHORN	PHYSIOTHERAPIST	LOUGHBOROUGH	01509 263932
ROBERT	HUGHES	LAB.OWNER	BIRMINGHAM	0121 7022353

IF YOUR DETAILS ARE NOT CORRECT, PLEASE NOTIFY THE EDITOR AS SOON AS POSSIBLE

VICTORIA	JONES	DENTIST	NOTTINGHAM	07817 303726 (M)
MICHAEL	JONES	CHIROPRACTOR	PONTARDWE	07717 001331 (M)
TRISHAN	MALHI	DENTIST	DERBY	07711 522715 (M)
NICOLA	MARR	DENTIST	PETERBOROUGH	01832 272515
TIMOTHY	OXBROW	OSTEOPATH	STOWMARKET, SUFFOLK	01449 613633
DOUG	RIDER	DENTIST	GREAT DENHAM, BEDFORD	01234 244013
ALEXANDER	TAYLOR	OSTEOPATH	TRUMPINGTON, CAMBS	07949 089 566(M)

LONDON & HOME COUNTIES GROUP

SHIRAZ	AKRAM	DENTIST	LONDON SW6	0207 736 6276
ATHYR	AL-KILLIDAR	DENTIST	LONDON W2	0207 723 5424
THOMAS	ATTLIE	OSTEOPATH/CST	LONDON NW1	0207 586 0148
HELEN	BARTLETT	CHIROPRACTOR	ASHTAD, SURREY	01372 274723
HITESH	BATAVIA	DENTIST	LONDON W6	0208 748 4023
PAULA	BRENNAN	DENTIST	WEYBRIDGE, SURREY	01932 701234
MARINA	CAREW	DENTIST	TAKELEY, ESSEX	01279 870077
DAVID	COOK	DENTIST	LONDON W1	020 7323 1363
RICHARD	COOK	CHIROPRACTOR	HARROW, MIDSX	020 8864 6768
RICHARD	DEAN	DENTIST	FOREST ROW, E SUSSEX	01342 824580
ANN	DOBSON	LACTATION CONSLNT	LONDON WC1	07980 017607
YASMIN	GEORGE	DENTIST	CHERTSEY, SURREY	01932 582949
PATRICK	GROSSMANN	ORTHODONTIST	LONDON W1	020 7935 0545
CHRIS	HARRIS	OSTEOPATH	LONDON W1	07900 927 692
ANDRE	HEDGER	DENTIST	GREAT BOOKHAM, SURREY	01372 457959
IAN	HEDLEY	DENTAL STUDENT	LONDON SW9	?
KATHRIN	HUZELMANN	DENTIST	LONDON W1	?
STEPHANIE	JAMES	OSTEOPATH	RICHMOND SURREY	02083 326184
TIM	JOHN	OSTEOPATH	LONDON W1	0207 436 8422
ALISON	JUDAH	OSTEOPATH	LONDON W6	07956 287776
FAREED	KAHN	DENTIST	PUTNEY LONDON SW15	0208 789 2323
MALCOLM	LEVINKIND	DENTIST	LONDON N2	020 8444 3413
RORY	LINDEN-KELLY	DENTIST	LONDON W1	0207 580 1252
GRAHAM	MANN	PODIATRIST	DORKING SURREY	01306 883332
MICHAEL	MEHTA	OSTEOPATH	LONDON EC1	0207 639 3202
JOHN	MEW	ORTHODONTIST	TUNBRIDGE WELLS	01892 525798
MIKE	MEW	ORTHODONTIST	PURLEY, SURREY	0208 660 3695
CAROLINE	OLESZKIEWICZ	DENTIST	LONDON W1	?
KARINA	PATEL	DENTIST	CHERTSEY, SURREY	01932 582949
PARAG	PATEL	DENTIST	LONDON W1	0207 580 9116
CAROLINE	PENN	OSTEOPATH	HATFIELD, HERTS	01707 274148
MICHELE	ROBINSON	ORTHODONTIST	ROCHESTER KENT	01634 253876
FRANCOIS	ROSSOUW	DENTIST	COLCHESTER	01206 764111
ADAM	SAPERA	DENTIST	LONDON NW3	0207 722 2959
HARRIS	SMEYATSKI	DENTIST	WINDSOR BERKS	01753 859776
JAGDIP	SONEJI	DENTIST	LONDON NW1	0207 224 8558
TAMSIN	VAUGHAN WILLIAMS	DENTIST	LONDON W1	0207 629 2164
MATTHEW	VOIGTS	OSTEOPATH	LONDON W1	07771 764803
MICHAEL	WHITE	DENTIST	LINDFIELD, W SUSSEX	01444 414994

SCOTLAND GROUP

JOHN	ADAM	CHIROPRACTOR	ISLE OF ARRAN	01770 850230
SIMON	YICK YEE CHEN	ORTHODONTIST	GLASGOW	0141 578 0288
JOHN	HUTCHESON	DENTIST	ABERDEEN	?
HUW	MARTIN-JONES	DENTIST	EDINBURGH	0131 225 9093
JOHN	PAGE	OSTEOPATH	PERTH	01764 683675
IAIN	STEWART	DENTIST	EDINBURGH	0131 446 9500
STEWART	WRIGHT	DENTIST	GREENOCK	01475 720682

IRELAND GROUP

SHANE	CURTIN	DENTIST	CORK	00 353 21 4291616
CARA	McMORROW-MORIARTY	MCM THERAPIST	TRALEE, CO KERRY	00 353 87 334 9940

J.R.	MANNION	DENTIST	BISHOPSTOWN	00 353 21 542475
ANTHONY	O'CONNOR	DENTIST	BALLINCOLLIG	00 353 2148 72600
DAVID	O'MEARA	DENTIST	FERMOY	00 353 25 31137

OVERSEAS AND OFFSHORE MEMBERS

ERIK	BARMAN	DENTIST	5700 VOSS	NORWAY	?
JAN	CAMUS	CRANIOSAC TH	ANTWERP B-2050	BELGIUM	0032 470 508 158
GYSBERT	DE NECKER	DENTIST	JOHANNESBURG	SOUTH AFRICA	0027 11 726 7240
JAN FILIP	DEPAUW	OSTEOPATH	3900 BRIG	SWITZERLAND	0041 27 924 6070
THOMAS	EARLEY	DENTIST	ENGLEWOOD OHIO	USA	001 937 836 9221
DITTMAR	EICHHOFF	DENTIST	GRAHAMSTOWN	SOUTH AFRICA	0027 46 622 3789
WILHELM	ENTRUP	ORTHO	30159 HANOVER	GERMANY	0049 511 364990
GAVIN	JAMES	ORTHO	ONTARIO	CANADA	001 705 7210350
JIM	JECMEN	ORTHO	JEFFERSON CITY MI	USA	001 573 636 7432
JOHN	LAUGHLIN III	DENTIST	RIVER FALLS, WI	USA	001 715 426 7777
DEREK	MAHONY	ORTHO	RANDWICK NSW	AUSTRALIA	0061 29314 5533
ADRIANA	NA	ORTHO	SEOUL	SOUTH KOREA	0082 1062 90963
PAUL	OEY	ORTHO	ENSCHDEDE	NETHERLANDS	0031 534 355633
RIDEAU	ORTHODONTIC	DENTAL LAB	ONTARIO	CANADA	001 613 2836841
EDUARDO	PADROS-SERRAT	DENTIST	BARCELONA	SPAIN	0034 934 146580
RON	PHELAN	STRUCT.INT.TH	OCEAN GROVE, VIC	AUSTRALIA	0061 35 2555 229
CLARE	PETTITT	CHIRO	JERSEY	CHANNEL ISLES	01534 876510
JONATHAN	POLLARD	DENTIST	JERSEY	CHANNEL ISLES	01534 731113
KYPROS	ROSSIDES	DENTIST	ROSEBURY NSW	AUSTRALIA	0061 2952 46677
ANTHONY	SIMS	DENTIST	COLUMBIA MD	USA	0014 10 872 0872
GERALD	SMITH	ORTHO	LANGHORNE PA	USA	?
RICK	SOORDHAR	DENTIST	ONTARIO	CANADA	001 905 876 2747
VIC	SOORDHAR	DENTIST	ONTARIO	CANADA	001 905 876 2747
DENNIS	STROKON	DENTIST	SURREY BC	CANADA	?
BRENDAN	STACK	ORTHO	VIENNA VA	USA	001 703 821 1103
SKIP	TRUITT	ORTHO	GAINESVILLE TX	USA	001 940 612 3900
JONATHAN	WOOD	DENTIST	JERSEY	CHANNEL ISLES	01534 731680

IF YOUR DETAILS ARE NOT CORRECT, PLEASE NOTIFY THE EDITOR AS SOON AS POSSIBLE

MEMBERS' WEBSITES

JOHN ANDERSON	www.holistic-dentistry.co.uk
ATHYR AL-KILLIDAR	www.medi-centre.co.uk
PETER BISHOP	www.highstreetdental.co.uk
MARK BUTTERWORTH	www.headchiro.com
TIM CLARK	www.spinalcomposure.com
TERESA DAY	www.cosmeticdentistbracknell.co.uk
RICHARD DEAN	www.dentalorthopaedics.com
DANNY de VILLIERS	www.dannythedentist.co.uk
JAN FILIP DEPAUW	www.osteopathie-oberwallis.ch
MIKE DONOVAN	www.donovansdentalpractice.co.uk
WILHELM ENTRUP	www.balance-entrup.de
YASMIN GEORGE	www.thecourtyardclinic.com
HELENA GREENWOOD	www.villageosteopaths.co.uk
PATRICK GROSSMANN	www.patrickgrossmann.com
NORTON GROSSMAN	www.glasgowdentist.co.uk
LISA HALSE	www.stillpoint practice.com
HELEN HARRISON	www.grantadental.co.uk
ANDRE HEDGER	www.openwide.biz
JONATHAN HOWAT	www.cranial-communication-systems.co.uk
HELEN JONES	www.connectingheads.com
MARK KENNEDY	www.chiopracticunlimited.co.uk

JOHN LAUGHLIN III	www.drlevinkind.com
HUGH McDERMOTT	www.mytooth.com (password "mytooth")
DEREK MAHONY	www.derekmahony.com
HUW MARTIN-JONES	www.integrateddentalcare.com
MICHAEL MEHTA	www.hermeshealth.co.uk
JOHN MEW	www.orthotropics.com
IAN MILLER	www.ian-miller.co.uk
MARC MORTIBOYS	www.mortiboysdentalspa.com
TIMOTHY OXBROW	www.stowosteopaths.co.uk
EDUARDO PADROS-SERRAT	www.clpadros.es
GAYLE PALMER	www.livingelements.co.uk
RON PHELAN	www.nsthealth.com
JOHN ROBERTS	www.integratedhealthpractice.com
FRANCOIS ROSSOUW	www.francoisrossouw.com
GERALD SMITH	www.icnr.com
BRENDAN STACK	www.tmjstack.com
TONE TELLEFSEN-HUGHES	www.luckysyardclinic.com
SKIP TRUITT	www.cfoo.com
STEWART WRIGHT	www.stewartwright.co.uk
ANDREA WYNNICK	www.manualmedicine.co.uk
BSSCMD (c/o Andre Hedger)	www.jawache.com
CRANIO GROUP (c/o Noel Stimson)	www.craniogroup.com

**LIST OF BSSCMD MEMBERS' E-MAIL ADDRESSES AND WEBSITES
UP-TO-DATE DECEMBER 2015**

First Name	Surname	Profession	E-mail address
JOHN	ADAM	CHIROPRACTOR	drjohnadam@btinternet.com
JOHN	AHEARNE	DENTIST	john@ahearne30.freemove.co.uk
SHIRAZ	AKRAM	DENTIST	shirazakram@yahoo.co.uk
ATHYR	AL-KILLIDAR	DENTIST	athyr@btinternet.com
JOHN	ANDERSON	DENTIST	JAnder9194@aol.com
YVONNE	AYLIFFE	OSTEOPATH	yayliffeost@hotmail.com
ERIK	BARMAN	DENTIST	erik@tannlege-barmann.no
HELEN	BARTLETT	CHIROPRACTOR	helenbartlett1@btconnect.com
HITESH	BATAVIA	DENTIST	hitesh_batavia@hotmail.com
PETER	BISHOP	DENTIST	pjbishop.bds@virgin.net
PAULA	BRENNAN	DENTIST	paulabrennan@wavedentalspa.com
GARETH	BUTLER	OSTEOPATH	gbutlermail@btinternet.com
MARK	BUTTERWORTH	CHIROPRACTOR	mark.butterworth@ukonline.co.uk
JAN	CAMUS	CRANIOSACRAL THERAPY	mail@jancamus.be
ELISABETH	CARDEW	PHYSIO	g.cardew@shef.ac.uk
MALAN	CLOETE	DENTIST	malan.cloete@hotmail.com
SIMON	YICK YEE CHEN	ORTHODONTIST	simonyyichen@hotmail.co.uk
TIM	CLARK	OSTEOPATH	tim@spinalcomposure.com
ELIZABETH	CLAYTON	OSTEOPATH	eclayton926@btinternet.com
SIMON	COAD	CHIROPRACTOR	scoad2@tiscali.co.uk
MARTIN	COLEMAN	OSTEOPATH	info@haslemereclinic.co.uk
DAVID	COOK	DENTIST	david@londonholisticdental.com
RICHARD	COOK	CHIROPRACTOR	dr-richardcook@aol.com
GILES	COURTIS	CHIROPRACTOR	giles@chiro.apthorpecentre.com
CATHERINE	CROWE	DENTIST	admin@rookwood.co.uk
SHANE	CURTIN	DENTIST	ardfallendentalpractice@gmail.com
TERESA	DAY	DENTIST	teresa@appledore.co.uk
RICHARD	DEAN	DENTIST	richarddean@talk21.com
JAN FILIP	DEPAUW	OSTEOPATH	jf.depauw@mac.com
GYSBERT	DE NECKER	DENTIST	dolf@denekergroup.com
DANNY	DE VILLIERS	DENTIST	reception@dannythedentist.co.uk
ANN	DOBSON	LACTATION CONSULTANT	adobsonann7@gmail.com
ROBERT	DOBSON	DENTIST	robert.dobson@pobox.com
MICHAEL	DONOVAN	DENTIST	donovandental@tiscali.co.uk
OFORI	DUODU	DENTIST	eduodu@btclick.com
THOMAS	EARLEY	DENTIST	tearleyDDS@compuserve.com
DITTMAR	EICHHOFF	DENTIST	teeth4ever@imaginet.za
WILHELM	ENTRUP	ORTHODONTIST	BALANCEDE@aol.com
STUART	FERRARIS	DENTIST	stuartferraris@btinternet.com
YASMIN	GEORGE	DENTIST	yasmin@confident-smiles.org
ANNA	GIENCO-CHRISTOWSKA	DENTIST	anagnc75@gmail.com
HELENA	GREENWOOD	OSTEOPATH	helena@villageosteopaths.co.uk
JONATHAN	GRENDLMER	CHIROPRACTOR	jonchiro@yahoo.co.uk
EMMETT	GRIFFITHS	LAB. OWNER (Canada)	orthodontic@orthodontic.ca
PATRICK	GROSSMANN	ORTHODONTIST	partick@patrickgrossmann.com
LISA	HALSE	OSTEOPATH	enquiries@stillpointpractice.com
CHRIS	HARRIS	OSTEOPATH	info@chrisharrisosteopathy.com
HELEN	HARRISON	DENTIST	helen@grantadental.co.uk
JOANNE	HARTSHORN	PHYSIOTHERAPIST	jo@loughboroughphysio.com
ANDRE	HEDGER	DENTIST	andre@openwide.biz
IAN	HEDLEY	DENTAL STUDENT	ianhedley1@hotmail.co.uk
DAVID	HILTON	DENTIST	david.hilton@churchfield.info
JONATHAN	HOWAT	CHIROPRACTOR	admin@jonathanhowat.com
ROBERT	HUGHES	ORTHO LAB TECH	info@tripleodentallabs.com
ANNELI	HULKONEN	CHIRO/OSTEO	annelihulkonen@mac.com
JOHN	HUTCHESON	DENTIST	
KATHRIN	HUZELMANN	DENTIST	dr.huzelmann@gmail.com
GAVIN	JAMES	ORTHODONTIST	gavjam@cogeco.ca
SHOAIB	JAMIE	DENTIST	shoaib255@gmail.com
JIM	JECMEN	DENTIST	cranialjim@aol.com
TIM	JOHN	OSTEOPATH	debbie.hamer@hotmail.com
HELEN	JONES	DENTIST	helenjones@lowercombe.co.uk
VICTORIA	JONES	DENTIST	drvcjones@googlemail.com
MIKE	JONES	CHIROPRACTOR	msken19@gmail.com
ALISON	JUDAH	OSTEOPATH	Alison@hammersmithosteopathy.co.uk
FAREED	KHAN	DENTIST	fareedkhan11@gmail.com
MARK	KENNEDY	CHIROPRACTOR	info@thewsc.co.uk
GRANVILLE	LANGLEY-SMITH	DENTIST	glanglysmith@yahoo.co.uk
JOHN	LAUGHLIN III	DENTIST	hcd@healthcentereddentistry.com

CAROLINE	LAURENCE	CRANIOSACRAL THERAPIST	carolinelaurence1@gmail.com
DOUGLAS	LEE	DENTIST	dougie@douglasleedental.co.uk
PRESTON	LEE-SUI	OSTEOPATH	preslee2000@hotmail.com
MALCOLM	LEVINKIND	DENTIST	drlevinkind@btinternet.com
RORY	LINDEN-KELLEY	DENTIST	rlk90@btinternet.com
DEREK	MAHONY	ORTHODONTIST	derek.mahony@fullfaceorthodontics.com.au
TRISHAN	MALHI	DENTIST	kenaldo1@msn.com
GRAHAME	MANN	PODIATRIST	advancedfootcare@btconnect.com
J R	MANNION	DENTIST	tmjmannion@eircom.net
NICOLA	MARR	DENTIST	nicola@marrworld.co.uk
HUW	MARTIN-JONES	DENTIST	email@integrateddentalcare.com
BERNARD	MASTERS	CHIROPRACTOR	bernie_masters@hotmail.com
MICHAEL	MEHTA	OSTEOPATH	osteopathy@hemeshealth.uk
JOHN	MEW	ORTHODONTIST	john.mew@orthotropics.co.uk
MIKE	MEW	ORTHODONTIST	mikemew@gmail.com
ALAN	MOFFATT	DENTIST	moffatt8@hotmail.com
MARC	MORTIBOYS	DENTIST	marcmortiboy@yahoo.co.uk
ADRIANA	NA	DENTIST	holisticbiocent@gmail.com
JILL	NIGHTINGALE	DENTIST	jillN131@aol.com
ANTHONY	O'CONNOR	DENTIST	toconnor.dental@gmail.com
CAROLINE	OLESZKIEWICZ	DENTIST	caroline.dentist@googlemail.com
DAVID	O'MEARA	DENTIST	omearadentists@gmail.com
TIMOTHY	OSBROW	OSTEOPATH	timoxbrow@aol.com
EDUARDO	PADROS	DENTIST	eduardo@padros.org
KARINA	PATEL	DENTIST	karina25@live.co.uk
PARAG	PATEL	DENTIST	smile@facialwellness.co.uk
CAROLINE	PENN	OSTEOPATH	caroline@pennclinic.co.uk
CLARE	PETTITT	CHIROPRACTOR	clarepettittdc@gmail.com
RON	PHELAN	STRUCT. INT. THPST.	bowenst@iprimus.com.au
JONATHAN	POLLARD	DENTIST	jonpollard1@googlemail.com
HILARY	QUINLAN	DENTIST	info@familydentalpractice.com
PAULA	RICHARDSON	DENTIST	info@dentistrybypaula.co.uk
DOUG	RIDER	DENTIST	doug@villagedentistry.co.uk
JOHN	ROBERTS	DENTIST	john@holistic-dentistry.com
MICHELE	ROBINSON	ORTHODONTIST	michelerobinson@hoodental.plus.com
TOM	ROBINSON	MASSAGE THERAPIST	info@tomrobinsonmassage.co.uk
KYPROS	ROSSIDES	DENTIST	kypros1618@bigpond.com
FRANCOIS	ROSSOUW	ORTHODONTIST	info@francoisrossouw.com
ADAM	SAPERA	DENTIST	enquiries@saperadentistry.co.uk
GERALD	SMITH	DENTIST	ghsdoc@icnr.net
JAGDIP	SONEJI	DENTIST	jagsoneji@aol.com
RICK	SOURDHAR	DENTIST	drsoordhar@gmail.com
VICK	SOORDHAR	DENTIST	vick.soordhar@gmail.com
BRENDAN	STACK	ORTHODONTIST	angela@tmjstack.com
IAIN	STEWART	DENTIST	ims.ims@virgin.net
DENNIS	STROKON	ORTHODONTIST	destrokon@shaw.ca
ROBERT	SWINSON	DENTIST	robert@hilltop-dental.co.uk
ALEXANDER	TAYLOR	OSTEOPATH	alex@cambridgeosteopaths.com
MICHAEL	TRENOUTH	ORTHO. CONSULTANT	michaeltrenouth@hotmail.co.uk
SKIP	TRUITT	ORTHODONTIST	skipcfoo@cox-internet.com
TAMSI	VAUGHAN WILLIAMS	DENTIST	tamsinw@totalise.co.uk
JOHN	VESEY	DENTIST	johnmvesey@gmail.com
JOSEPH	VIZKELETY	DENTIST	katigosef@btinternet.com
KATLIN	VIZKELETY	DENTIST	katigosef@btinternet.com
MATTHEW	VOIGTS	OSTEOPATH	info@voigtsspinalsolutions.com
BILL	WHATELEY	DENTIST (RET)	billwhateley@supanet.com
MIKE	WHITE	DENTIST	michael.white@tmjcentre.com
ANDREW	WHITHOUSE	DENTIST	office@windmilldentalpractice.co.uk
STEPHEN	WILLIAMS	CHIROPRACTOR	wilchiro@btopenworld.com
JONATHAN	WOOD	DENTIST	jwood@jerseysmiles.co.uk
STEWART	WRIGHT	DENTIST	stewart@stewartjwright.co.uk
ANDREA	WYNNICK	CHIROPRACTOR	andrea.butterfield@hotmail.co.uk
ANTOINETTE	YOUNG	CHIROPRACTOR	clinic@yeovilchiropractic.co.uk
ANDREW	ZARANKO	DENTIST	andrew.zaranko@ntlworld.com

If your e-mail address listing is incorrect, changed or missing, please notify the editor BY E-MAIL at:
noel_stimson@btconnect.com

Please do not use earlier versions of this page from other issues.

Visit: the BSSCMD's new website at <www.jawache.com>

British Society for the Study of Craniomandibular Disorders (BSSCMD)

MEMBERSHIP APPLICATION & PAYMENT INSTRUCTION

Annual subscription for UK members: £100 paid quarterly (i.e. 4 x £25) by Direct Debit (on 1st Jan, 1st April, 1st July and 1st October).
Annual subscription for Overseas members pay £100 by credit card renewing annually on January 1st.
Annual subscription for Students and year-1 post graduates: £20 single payment per academic year.

Part 1: This section is not part of the instruction to your Bank or Building Society; **Please complete ALL shaded boxes in block capitals:**

I prefer to receive my copy of Cranio UK as (tick):
Colour .PDF file: ☐ a Hard copy: ☐

Profession: ↓ <input type="checkbox"/> General Dentist <input type="checkbox"/> Orthodontist <input type="checkbox"/> Chiropractor <input type="checkbox"/> Osteopath <input type="checkbox"/> Physiotherapist <input type="checkbox"/> Cranio-sacral Therapist <input type="checkbox"/> Speech/Voice Practitioner <input type="checkbox"/> Student/P. Grad. <input type="checkbox"/> Other:	Name and Title: _____ Home Address: _____ _____ Post Code: _____ Telephone: _____ Mobile: _____ Email: _____	Signature: _____ Business Address: _____ _____ Post Code: _____ Telephone: _____ Website: _____ Email: _____
Bank card details: → <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		
Expiry Date: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Security No. (on back) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		

Part 2: (For members using UK banks only)

Instruction to your Bank or Building Society to pay by Direct Debit



Please complete ALL shaded boxes using a ball point pen and send to:
Dr A J Hedger, 26a Church Road, Great Bookham, Surrey, KT23 3PW

Originator's Identification Number:

6 3 0 1 8 1 7

Name and full postal address of your Bank or Building Society:

To: The Manager	Bank/Building Society
Address:	
Postcode:	

Name(s) of Account Holder(s):

--

Bank/Building Society account number:

--	--	--	--	--	--	--	--	--	--

Branch Sort Code:

--	--	--	--	--	--	--	--

Reference Number (for BSSCMD official use):

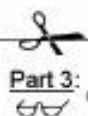
P									
---	--	--	--	--	--	--	--	--	--

Instruction to your Bank or Building Society:

Please pay the BSSCMD variable Direct Debits from the account detailed in this Instruction subject to the safeguards assured by the Direct Debit Guarantee. I understand that this Instruction may remain with the BSSCMD and, if so, details will be passed electronically to my Bank/ Building Society.

Signature(s)
Date

Banks and Building Societies may not accept Direct Debit Instructions for some types of account



This guarantee should be detached and retained by the payer

The Direct Debit Guarantee

- This Guarantee is offered by all Banks and Building Societies that take part in the Direct Debit Scheme. The efficiency and security of the Scheme is monitored and protected by your own Bank or Building Society.
- If the amounts to be paid or the payment dates change, Cranio Group will notify you 7 working days in advance of your account being debited or as otherwise agreed.
- If an error is made by Cranio Group or your Bank or Building Society, you are guaranteed a full and immediate refund from your branch of the amount paid.
- You can cancel a Direct Debit at any time by writing to your Bank or Building Society. Please send a copy of your letter to us.



Visit: the BSSCMD's new website at <www.jawache.com>

Visit: the BSSCMD's new website at <www.jawache.com>

Triple O Dental Laboratories



Twin Block



Crozat



Schwarz



ALF



Williams



Excellence in Orthopaedic & Orthodontic Appliances

Triple O Dental Laboratories, first established in 1987 is a specialist Laboratory concerned in the manufacturing and production of orthodontic, orthopaedic and functional appliances. We provide a Cephalometric tracing service, as well as being a main supplier of a large variety of orthodontic instruments and brackets. We also manage a series of Orthopaedic and Orthodontic Seminar programmes ranging from beginners courses to the more experienced in Advanced Orthodontics and T.M.J. therapy.

Although a large company we manage to maintain a very personal service to our highly valued clients by actively encouraging communication. Technical assistance is always freely available and this together with maintenance of the very highest standards has helped build Triple O into the successful company it is today.

Contact us for information and a free Laboratory Pack
Or visit our website at www.tripleodentallabs.com

Laboratory
Tel/Fax +44 (0) 121 702 2353

Supplies Department
Tel/Fax +44 (0) 121 778 6868



Course Information
Tel/Fax +44 (0) 121 778 5494

Email info@tripleodentallabs.com