



Volume 52 Number 2 Autumn 2006

Journal of the Irish Dental Association

Iris Cumainn Déadach na hÉireann



Warning on Bisphosphonates

The Journal of the
Irish Dental Association
Unit 2 Leopardstown Office Park
Sandyford
Dublin 18
Tel: +353 1 295 0072
Fax: +353 1 295 0092
www.dentist.ie

IDA President Dr Gerry Cleary

IDA Chief Executive Ciara Murphy

Journal Co-ordinator Fionnuala O'Brien

EDITORIAL BOARD

Editor Professor Leo F.A. Stassen
MA, FDSRCS, FRCS, FTCD

Deputy Editor Dr Dermot Canavan
BDentSc, MGDS(Edin), MS(UCalif)

Dr David Clarke
Dr Tom Feeney
Dr Michael Fenlon
Dr Therese Garvey
Dr Niall Jennings
Dr Christine McCreary

The Journal of the Irish Dental Association is the official publication of the Irish Dental Association. The opinions expressed in the Journal are, however, those of the authors and cannot be construed as reflecting the Association's views. The editor reserves the right to edit all copy submitted to the Journal. Publication of an advertisement does not necessarily imply that the IDA agrees with or supports the claims therein.

Published on behalf of the IDA by

Th!nkMedia
PROFESSIONAL PUBLISHING SERVICES

The Malthouse, 537 NCR, Dublin 1
T: 01-856 1166 F: 01-856 1169
www.thinkmedia.ie

Paul O'Grady
Tony Byrne
Tom Cullen
Owen McGowan



ABC application approved
May 2006

61	EDITORIAL
62	PRESIDENT'S NEWS New rules for Association are imminent, and spokespersons required.
64	LETTERS TO THE EDITOR
66	IDA NEWS 25 years of the Costello Medal, and important meetings and conferences are planned.
67	BUSINESS NEWS 'Share a smile' is the theme of the Colgate Oral Health Month; GSK launches Sensodyne Pronamel; dental selection issues, plus the latest in the business.
73	EU NEWS The position on dental amalgam and a new identity for the EU-DLC.
76	FEATURE New IDA Chief Executive Officer, Ciara Murphy, is interviewed by Paul O'Grady on the issues facing dentistry in Ireland and the demands of the role.
79	SCIENTIFIC 79 Warning: bisphosphonates and osteochemonecrosis of the jaws. An alert to general practitioners and the implications these drugs may have for their day-to-day practice. 84 Irrigants in non-surgical endodontic treatment. An examination of the ideal root canal system irrigant.
93	ABSTRACTS Abstracts of scientific papers on immediately loaded dental implants; dental extractions under general anaesthesia; abscess of the orbit; osteonecrosis; and an implant aesthetic hierarchy.
96	PRACTICE MANAGEMENT 96 Selling a dental practice? Practical advice on how to best plan an exit from dental practice. 99 The longest holiday Encouragement to use your SSIA funds sensibly.
101	DIARY OF EVENTS
103	CLASSIFIED
105	QUESTIONNAIRE We welcome your views on the Journal – and there's a prize on offer.
106	QUIZ



Costello Medal

66



Murphy's Law

76



Bisphosphonates

79

Win a €250 voucher
HOUSE OF IRELAND
FOR THE WAY YOU LIVE, DECORATE & ENTERTAIN



Questionnaire for readers

105

Power and education

This edition highlights the problems that many dental practitioners, consultants and patients have had with the relatively recently identified mouth problems with the use of the newer bisphosphonates that many patients require and have been prescribed by our medical colleagues. Please take the time to read this article carefully. I have specifically requested it and I am grateful to the authors for their rapid response. Another requested article is an update on the use of 'Irrigants in endodontic therapy'. This is a very well written article and hopefully will help us manage our patients based on science.

The Editorial Board believes that Continuous Dental Education (CDE) through your Journal is essential. I have been asked to make the quiz easier and therefore I include the answers (on a different page). My editorials, over the last year, have tried to include some informal CDE by discussing 'high priority topics' and this quiz is our first attempt at formally introducing CDE. It is planned that each scientific article in future editions will have three questions with answers available elsewhere in the Journal. Sometime in the future this will be electronically managed and contribute towards CDE points.

The summer edition of the Journal was very well received and thank you to all those who wrote and rang me to express their views. It makes the Editor's job more enjoyable. Most readers appreciate the changes and feel that the Journal is easier and more enjoyable to read. I really enjoyed the feature article entitled Power Play (52. (1.) 16-17. 2006) by our in-house editor, Paul O'Grady. This feature highlighted the views of Fine Gael (Dr. Liam Twomey TD), The Green Party (John Gormley TD), The Labour Party (Ms Liz McManus TD) and Sinn Fein (Caoimhghin Ó Caoláin TD) on dentistry. I am very grateful that these parties Spokespeople on Health were willing to give us the time and answer our questions. It is not surprising to hear that their main concern was in the orthodontic arena, where there has been a lot of discussion and questions in the Dáil. They also highlighted the lack of access for many patients to dentistry in Ireland and the need for good advice to make informed decisions. They are looking for help to guide them and to create health policy documents (dental and medical). It came across loud and clear that there is a general lack of understanding (almost certainly clinicians' fault) about dentistry, what it is, what it does and what it can achieve for our patients. We need to engage in open discussion with our TDs, Ministers and patients and ensure that all aspects of dentistry are heard. This must be a strategic forum involving all the stakeholders and looking at the education of dentists and the team, training and assessment of our postgraduates and working within the statutes of the country. Government Committees have been set up which unfortunately are monofocussed, often administrative, do not reflect the clinical needs of dentistry as a whole and often simply reflect those who have contributed previously. A lot of very good work had been done by this group but we need to move on and expand on what orthodontics has achieved. Dentistry needs proper, strategically driven and most importantly 'informed representation'. There is a significant shortage of consultants/specialists in oral medicine (1/1,500,000), oral and maxillofacial surgery (1/800,000), prosthodontics, periodontology, paedodontics, special needs dentistry, sedation dentistry and orthodontics. We need more

consultants/specialists to be able to train more people (the team) in all these areas. It is not possible, without adequate resources (colleagues and state-of-the-art facilities), to train dental students, undertake research, provide expert opinions to the many deserving patients for our colleagues and run the highest standard post-graduate specialist training programmes.

A consultant/specialist orthodontist works very closely with their oral and maxillofacial, prosthodontic/restorative colleagues and practitioners. It is a team and the team needs to develop together or we just swap one waiting list of unhappy patients for another, e.g., patients requiring orthognathic/orthodontic surgery or prosthodontic reconstruction following orthodontics and implants.

A consultant/specialist in special needs works very closely with oral medicine, periodontology, restorative dentistry, oral and maxillofacial surgery, orthodontics, their teams and our many medical colleagues for these very deserving and disadvantaged patients. The management of patients with latex allergy is a good example of how we need to work together. The lack of such a facility in Ireland is scandalous.

Since returning from the UK, I have been very impressed with the high quality of dentistry available in specialist practices, the dedication of those in the Dental Schools and the Health Boards, and recognising the hard work and difficulties facing many dental practitioners with the shortage of available dentists. High quality dentistry has a cost and it is important that this is recognised. We should be aiming to raise the standards across the board and looking to how we can improve this through developing vocational training, trying to develop general professional training in conjunction with the Irish Postgraduate Medical and Dental Training Board, encouraging our dental students to undertake postgraduate dental training/examinations and especially working with and educating our patients and our TDs. Dentistry is not all about orthodontics, fluoride and tooth whitening. It is about the health of our patients' mouths and its environment. It is about educating our patients to the risks of smoking (mouth cancer, periodontal disease), stressing the importance of preventive dentistry (oral hygiene, dental care) and being ever vigilant to the needs of our population, not popular opinion.

It is hoped that readers can feel encouraged to express their opinion on this feature 'Power Play' through letters to the Editor.



Leo F. A. Stassen

Prof. Leo F A Stassen

PRESIDENTIAL NEWS

Attendance is important

Over the summer months, the business of the association continued. While we have not been as active through the hot days of July, there have been several important issues under consideration. The most significant of these has been the Review of our Memorandum and Articles of Association, i.e., the rules governing the operation of the Irish Dental Association. A marathon council meeting to consider this issue took place at the start of the summer and lasted well over six hours. Council had considerable and robust discussions about the proposed new rules. The changes suggested will be further discussed at the September council meeting and our hope is that council will agree the new proposed Memorandum and Articles of Association which will then be circulated to the membership for general consideration. I ask you to pay particular attention to them when they arrive. We look forward to any feedback you will have. It is anticipated that the revised Memorandum and Articles of Association will be put to our annual general meeting on the first Saturday of December. With such important decisions and with the continuing review of our Association, it will be important that you attend at the annual general meeting this year and participate in the process. It is your Association, and we look forward to your participation in December.

Encourage new members

One of the most pleasant duties all summer was to represent the Association at the graduation dinner of the final year students of the Dublin Dental Hospital. Each year, our Association presents a prize to the overall best student for the five years of the course. The recipient of the prize this year was Michael Freedman, who I understand was a most worthy winner and it gave me great pleasure to present him with a certificate and a cheque on behalf of your Association. It also gave me an opportunity to promote the aims of the Association to the new graduates who are now our colleagues. Please extend a further invitation to any new graduate to participate in the Association and remember that for the first year new graduates enjoy free membership.

Keen spokespersons needed

Coming up in September is Colgate Oral Health Month. We are entering the fourth year of our cooperation with Colgate for the month of September. All of us in the Irish Dental Association should use the month to promote oral health and prevention of dental disease. We are very keen to have as many regional spokespersons as possible respond to any request from national, regional and local media. Please also review the material that Colgate is providing to each dentist and use the opportunity to pick up on the media campaign that will hopefully be as successful as it was last year. Remember our waiting rooms are terrific places to get our message out to the members of the public.

ASC and information meetings

On a personal note, I have felt some frustration recently due to poor attendance at events that I would have considered very important. At our Annual Scientific Conference, we had a total registration of 598 people. A very international group of people from Ireland, England, United States, Germany, France, Bahrain, Canada, and even Australia attended. However,



Michael Freedman, right, the overall best student for the five years of dentistry at Dublin Dental Hospital receiving his Irish Dental Association award from IDA President, Gerry Cleary, at the graduation dinner.

only 15% of our membership attended. Given that our Annual Scientific Conference is our showcase event every year it was very disappointing to the conference committee to have such a poor turnout of our own membership. John Barry and his team are working extremely hard for the conference in Cork in April next year. I encourage you to attend at the conference as I'm sure the presenters and the content will make the learning as easy as possible, and without doubt, the social events will be terrific.

A series of information meetings were undertaken by the Association in June last to inform and educate our membership around the important issues of the introduction of examining dentists in the DTSS. In each of the venues, less than a dozen people attended which was frustrating to both council and those taking the time to provide this information to the members in a voluntary capacity. Please support our members when they are working on behalf of each and every one of us. I attended the information meeting in Dublin and it was very useful. Equally important to our team were the queries and difficulties raised from the floor which will help in the ongoing development of the Scheme. To have missed out on these evenings was a considerable loss to all concerned with this important change in our working conditions.

I look forward to seeing you at our annual general meeting on the first Saturday of December. I hope to meet you all there.

A handwritten signature in blue ink that reads "Gerry Cleary".

Gerry Cleary, President.



LETTERS

From: Brian Merry, Blackrock, County Dublin.

To: The Editor.

Subject: The profession.

Dear Editor,

I am taking this opportunity to pose a question. How does the dental profession in Ireland see itself? The recent engagement of consultants to look at structures is an example of corporate review.

The ongoing PR strategy is both corporate and individual in its attempt to address the many issues concerning how the profession is perceived. My question relates more to self image rather than public image, how we might see ourselves as individuals and as professionals providing health care in various community settings. We know how difficult it can be at times to be objective about our interactions, to step outside as it were to get a clear view of what is going on. We, of course, take our cues in life from those around us, partners, family, patients, associates or whatever. However taking stock of ourselves is not the norm. Practically speaking such analysis is deferred until forced upon us by life events. On this obtuse note I will elaborate the question further.

We are told and few would disagree that group identity is a fundamental human need. Our individual development is always contexted within the social. This need appears to be innate, largely unconscious and underpins much of our social interactivity. Dependence/independence factors are always at play in the emergence of fulfilling life.

Accordingly the healthy development of any peer association, such as this professional association, needs interaction at different levels and the intensity of this working together ranges from serious to playful. We are indebted in dentistry to those whose efforts in education, organisation, research, social events etc. enable the feel good factor that many enjoy.

Status is also important and it could be said that the status of dentistry in Ireland is up there with the best. A unity of purpose, good leadership, political astuteness and a measure of good fortune have played their part. No longer are we the poor relation we once were. We have staked a claim to market share and seem confident in defending our patch. All in all we are quite privileged!

It is necessary, however, to place the above within the context of the prevailing ethos of cultural and economic capitalism, the success of which has resulted in many, including ourselves, being major beneficiaries. It was Homer who suggested that people generally follow where they are led. So dominant is the prevailing ethos we hardly ever question it, a bit like ourselves.

We sense, if we do not always acknowledge, that capitalism also has its darker aspects. Its success is fuelled by, amongst other things, the fact that we are primarily self-interested and unconscious mimetic rivalry is a huge driving force in each of us. Take as an example the fashion or motor industries as benign examples. However when widening gaps develop in the system then we are dealing with potentially more serious issues. The increasing divide between the haves and have-nots is an example here. Historically, excess and poverty are and always have been inextricably linked, irrespective of the prevailing socio-economic system.

The significance of the shadow side of things, our culture, our society, ourselves is that elaborate defence mechanisms are in place which resist exposure of the dynamics taking place. So much so that it can take a major disturbance to force the lid open thus allowing a view of what has been suppressed or not looked at. Put another way, access to our conscious and unconscious motivations is not free-flowing.

By way of contrast, liberal economics is much more free-flowing. It thrives on greed, which it regards as part virtue in the manipulation of desire driven creatures who have difficulty at times in containing ourselves. When excess threatens the balance within any system then the need to regulate human behavior becomes a necessary consideration.

In our own profession there has been increasing involvement by dental personnel in voluntary third world projects. Such awareness of divide is heartening. Closer to home, those who have a commitment to the Dental Treatment Services Scheme and are generous, despite the hassle, in the service they provide to less fortunate individuals also bear witness to a reality which can be minimised, if one does not "rub shoulders" with genuine need.

What is worrisome is the view that dentists are failing to self regulate. This is a complex issue. However as long as it appears that fee structuring is based, in some instances, on some abstract that has greater affinity to a stock bull run, as opposed to the level of expertise and time applied, then this profession will have difficulty in detaching itself from labels of greed and arrogance, qualities which are increasingly being ascribed to other prominent groups.

There is an Eastern aesthetic which expresses the view that human beings are swayed less by extremes, for example of joy or sorrow, but find serenity in harmony, in the middle ground. We seem to live in an era of increasing polarisation which thwarts or impedes this natural inclination. Mindless consumerism, individualism, endless positivity, scientism, the cults of perfection and virtual reality are value systems which can diminish altruism and reshape intent into selfishness.

In conclusion, reading signs prompts me to ask questions concerning the individual's relation to professional privilege. Is it sometimes treated as a utility, as a smokescreen? How does one balance the duty of care to self/others/patients/society? What indeed is best practice and should the pursuit of excellence have a balancing cautionary note attached?

These are not new questions and could equally apply to a number of different prominent groupings, who have capacity to influence society, for better or worse, more than they realise.

Such questions need re-asking periodically, to be dialogued and struggled with.

Yours sincerely,

Brian Merry.

From: Noel Walsh, Blackrock Road, Cork.
 To: The Editor.
 Re: Interview with Denis O'Mullane.

Dear Editor,

In a recent bid to catch up with some reading I was browsing through *The Journal of the Irish Dental Association* Vol.51 (4) Winter 2005 when I came across the interview with Denis O'Mullane. Having originally been a student of his, and subsequently working with him in University Dental School and Hospital Cork for many years, I was naturally interested in what he had to say. As ever, he was interesting to read but the content of the final paragraph revived in me memories of the years of haggling and arguing I had with the Department of Social Welfare when I was Chairman of the Irish Dental Association negotiating team.

Denis suggests that the IDA should "take an active role by advising the cheque book holders and the insurance companies and the government funding bodies of the most up-to-date treatments". It was my experience over a protracted period of around 15 years that when the IDA suggested any form of improvement in our state-funded schemes that the automatic response from the Government side, and that includes many Chief Dental Officers of which he was one himself, was an immediate "no". It was as if our suggestions were treated as suspicious and subversive and worst of all self-interested. I always found it very difficult to sit across the table from people whom I knew were disagreeing with our proposals for reasons which I felt were destructive. It took many years to break down that attitude until finally a man who only survived as Social Welfare Minister for a very short period, Brendan Daly, and a progressive Assistant Secretary John Hynes, decided to listen to what we were saying and found that we were not after all trying to "have them on". Denis says of the IDA: "They need to keep pressure on the funding agencies, i.e., the HSE or Department of Social Welfare or the insurance companies, to ensure the best treatment is always available." I would never accuse Denis of naiveté but from my experience, to that exhortation I can only reply 'dream on' as these bodies are singularly concerned with the bottom line, with treatment quality or variety away down the line.

The other point I would like to draw attention to relates to the section "who is Professor O'Mullane?" What concerns me here is a factual inaccuracy which should be corrected. *The Journal of the Irish Dental Association*, being a document from which reference may be sought and quoted, should as far as possible, contain correct information and in this CV it states as follows: "From 1989 to 1998 was Head of Cork Dental School and Hospital". This is not correct. From 1989 to 1991, and indeed for many years previously, Professor Brian Barrett was Director of Studies under the old management system. The University then undertook a study with a view to modernising the hospital structures and a new post of 'Head' was created. This post subsumed the post of Director of Studies and along with the academic role which was what Director of Studies was, it also included a role of executive management of the school and hospital.

The first person to be appointed to the new role of Head by Dr Michael Mortell, who was the President of UCC, was Professor Louis

Buckley. Louis was appointed for three years and oversaw many momentous events and changes during his term. When his three-year term was up he remained on for a further six-month period at the request of the President. He was then succeeded by Professor Denis O'Mullane who held the post for the next three years from November 1994. Denis then in turn was succeeded at the completion of his three year term by Professor Robbie McConnell in 1998.

I trust you will understand why I found it necessary to ask for this information to be published by way of correction, as I am sure everyone, including each of the office holders, would not wish to be associated with air brushing off the record our illustrious colleagues of the past.

Thank you.

Yours sincerely,

Noel Walsh.

ISP

IRISH SOCIETY OF
PERIODONTOLOGY

ANNUAL PERIODONTAL
— SYMPOSIUM 2006 —

Prof Jan Lindhe

presenting

Changing Concepts in
Clinical Periodontology

15th September 2006 - 9am to 5pm
Royal College of Physicians of Ireland

For further information and to reserve your place
please contact:

Dr John Molloy, Secretary ISP,
Marina House, 7B Dock Road, Galway
Tel +353-91-569 110 Email perio@ireland.com

Costs to attend meeting include lunch and coffee

Member of ISP €200 Non-Members €240
Hygienists €120 Full-time Students €60

IDA NEWS

25th presentation of the Costello Medal

This year marked the 25th awarding of the Costello Medal. President of the Association, Dr Gerry Cleary, speaking at the ceremony at the ASC, said: "It is a particular honour to be involved with the Costello Medal. Twenty five years ago my predecessors at 91, Upper Leeson Street, Dublin 4, Colm O'Sullivan and Leo Heslin, with the help of Gerry Meehan in Galway, came together to honour the memory of Tony Costello. Dr. Costello, a general practitioner in Limerick, was worthy of recognition because of his commitment to general practice and the furthering of his own education. As a young general practitioner, he closed down his practice, went to the Eastman in London to do post graduate studies and returned to Limerick to set up a high quality general practice.

"Unfortunately he had a tragic and early demise and his friends and colleagues decided to put this memorial medal in place to recognise his achievements.

"This is twenty-fifth presentation of the Costello Medal. Over the years we have had terrific participation and support from the Dublin Dental Hospital, Cork Dental

School and Queen's University School of Dentistry. The criteria for the award are very clear: the assessors judge the presentation on clinical usefulness, academic content, presentation and originality and the subject matter of the presentation must be applicable to general practice."



Mrs Jacqueline Costello speaking at the presentation of the medal at this year's ASC.

Mrs. Jacqueline Costello made the presentation to the winner, Siobhan Lucey, (Cork) for her table demonstration – 'Are pins passé'. Mrs Costello also re-iterated the continuing support of the Costello family to the Medal and their ongoing financial support of the competition which is open to final year students of dentistry. She said: "The medal is special. Its value is little but its worth is huge. Its significance to its owner is pride, courage and endurance."

CORK 2007

TALK SCIENCE TALK SURGERY TALK SOCIAL



Plans for next year's Annual Scientific Conference, to be held in Cork from April 18–21 are at an advanced stage. Some of the final details were decided at a recent meeting of the steering committee. Pictured at the meeting were (from left): Dr Eamonn Murphy; Elaine Hughes; Dr Martin Holohan; President-elect Dr John Barry; Dr Maurice Leahy; Ciara Murphy; Dr Michael Hartnett; and Dr Nuala Cagney.

Retirement seminar

On Friday, September 29, the first IDA event in the new conference room in IDA House, will take place. The day will be focused on retiring and retirement issues and the Association is delighted to have Denis Reen to chair the day, and John Timoney share his experiences. Confirmed speakers include Dr. Pdraig O'Morain, *The Irish Times* journalist and psychologist, and Eamon Delaney of the Retirement Planning Council of Ireland. Health issues and financial planning will also be covered. Any member over the age of 40 may wish to consider attending.



Perio presentation

Dr John Molloy, Secretary of the Irish Society of Periodontology, has asked us to remind readers that the Annual Periodontal Society Symposium takes place on September 15 next. Professor Jan Lindhe will present on Changing Concepts in Clinical Periodontology at the venue which is the Royal College of Physicians of Ireland. Costs for attending range from €240 for non-members to €60 for full-time students. Dr Molloy can be contacted at Dock Road in Galway for further information.

North Western Conference

There's both an impressive set of speakers and an excellent social programme lined-up for the North Western Dental Conference being hosted by the IDA and the Post Graduate Medical and Dental Board in Sligo. Taking place on Friday and Saturday October 6 and 7, the speakers include Dr Linda Elliot; Dr Janice Fearn; Dr Terry Gregg, Dr Frank Houston; financial expert Paul Overy and Dr Frank Quinn.

The social programme includes golf at Co Sligo Golf Club (the famous Rosses Point), a poker classic in aid of charity on the Friday night, as well as a magician to entertain the children that accompany their parents to the event. Further information is available from Dr Brendan Flanagan, Wine Street, Sligo.



County Sligo Golf Club, Rosses Point.



PDS Seminar



The Dunraven Arms Hotel in Adare is the venue for the 2006 Public Dental Surgeons Seminar.

The 2006 Public Dental Surgeons Seminar takes place in Adare, Co Limerick on October 18 – 20 next. Based in the famous Dunraven Arms Hotel, the seminar will include speakers on topics ranging from 'How to make patients dislike you – the team approach to dissatisfaction' to 'Do primary teeth need filling? What does the evidence tell us?'

Speakers include Dr Owen Crotty; Dr Paula Moynihan; Simon Pike and Kevin Stump; Dr Dan Counihan; Dr John Tiernan; Dr Hassan Ziada; Dr Alma Lyon; John O'Connor; Dr Helen Whelton; Dr Nick Armstrong; Dr Carmel Parnell; Dr Eleanor McGovern; Dr Brian Millar and Dr Barbara Chadwick.

On the evening of Thursday, October 19, the annual dinner will take place with An Tánaiste and Minister for Health and Children, Mary Harney, as Guest of Honour.

Dental selection

THE brightest students do not necessarily make the best dentists. A new study has concluded that outstanding results in the Leaving Certificate does not necessarily correlate with success in dental college and says that alternative ways of selecting dentistry students should be considered. "Based on this study, academic performance in the Leaving Certificate may not be the best way to select dental students," said Christopher Lynch, one of the authors of the research, published in the *European Journal of Dental Education* and subsequently reported in the Irish edition of *The Sunday Times*. The authors suggest that an interview process should be introduced in tandem with exam results. This would assess candidates' practical skills and their ability to communicate with patients.

Lynch and two other academics analysed the Leaving Certificate results of 95 students who enrolled in the dental programme at the Cork school between 1997 and 1999. With an average of 535 points they were in the top 10% of candidates. The marks were compared with the scores in their final exams which they sat between 2002 and 2004.

Robert McConnell, dean of the dental school, and Ailish Hannigan, a statistician from the University of Limerick, also conducted the research. They found no relationship between students' entry points and marks in their college finals.

"Having higher points did not mean that a candidate would perform better in the final dental exam," said Lynch. "In fact, people with higher points did poorer."



Colgate Blitz Teams on their way



Jamie Cummins, Colgate Oral Health Month Blitz Team, delivering booklets, samples and the CPE pack to Dr Ryan Hennessy, Dun Laoghaire.

Colgate Oral Health Month, in partnership with the Irish Dental Association, takes place in September. Now in its fourth year, Colgate Oral Health Month promotes good oral hygiene in Ireland amongst the general public.

During the month of September, Colgate-Palmolive and the Irish Dental Association highlight the long-term benefits of good dental practice to help protect patients' smiles. In Europe, Colgate and the local dental association in each country both support the Colgate Oral Health Month banner theme of 'Working Together for Better Oral Health'. The specific theme 'Share a Smile' is being used this year and, as part of this year's programme, Colgate-Palmolive will run out-reach activities in selected shopping centres nationwide. This will include free oral health care advice and product sampling. Dental professionals also have the opportunity to participate in the Colgate Continuing Professional Education (CPE) programme that runs throughout September. In 2005, Colgate produced an

interactive, verifiable CPE programme looking at communication challenges for dental professionals. Building on that success, the second in the CPE series provides practical examples of communication strategies for delivering effective preventative advice in surgery.

Colgate 'Blitz Teams' have been calling on dental practices promoting the event and delivering information booklets, samples and the CPE pack. The 'Blitz Teams' are dental students from the Dublin and Cork Dental Schools.

President of the IDA, Dr. Gerry Cleary has called on Association members to be effective spokespeople when the opportunity arises and said: "Dental and oral disease can often go undetected and be quite advanced, unless diagnosed by a dentist. Regular brushing and attending your family dentist on a regular basis can prevent the development and progression of dental disease. Scaling and polishing, oral hygiene instruction and motivation to maintain a healthy dentition is all part of the preventative process."

Dentists seeking further information on Colgate Oral Health Month should visit www.colgate.ie. Practices that wish to register should call 01 403 9860.



There are likely to be opportunities for dentists to talk to the media about oral health care during the month of September. IDA President Gerry Cleary says: "Please review the material that Colgate is providing to each dentist and use the opportunity to pick up on the media campaign that will hopefully be as successful as it was last year."

Implant course

3i Implant Innovations Inc. is sponsoring a dental implant course, presented by Dr Spencer Woolfe. With a practice limited to periodontics and implant dentistry, Dr Woolfe is also a lecturer in periodontology at Trinity College Dublin.

The course will take the format of one half-day session per month from September to June inclusively and will involve both surgical and restorative treatment. It is aimed specifically at the general practitioner who is keen to gain hands-on experience dealing with single tooth dental implants. There are only limited places remaining, so interested dentists should call Olivia Kirwan, Sales Manager Ireland, 3i.

Baffled by pensions?

You may be one of the many people who put off making a decision about your pension because you find the information too difficult to understand. Help is at hand, because the Financial Regulator has just published a free guide, 'Pensions made easy', which gives you all the information you need to know as well as useful tips.

The Financial Regulator is an independent watchdog set up to protect consumers and help answer your questions and provide publications and/or cost surveys on products such as mortgages, motor insurance, personal loans, credit cards, life insurance and more.

To get their information, including copies of 'Pensions made easy' or 'Your options at retirement' visit www.itsyourmoney.ie.

BUSINESS NEWS

GSK launches Sensodyne Pronamel



A new toothpaste, Sensodyne Pronamel, has been launched this summer. GlaxoSmithKline (GSK) which markets the product says it is destined to set new standards for innovation in the oral care sector. According to the company, Sensodyne Pronamel has been created to address the growing problem of acid erosion which affects a large proportion of the population to some extent. It also says that the product's unique formulation protects against acid erosion, and with regular use, it will help reharder the softened enamel of the teeth. In addition Sensodyne Pronamel's formulation is low in abrasivity, is PH neutral, SLS free and relieves the pain of sensitive teeth.

A new survey conducted by GSK has shown that 62% of Irish people are unaware of acid erosion, and only 1% claim to have the condition, despite dental claims that nearly everyone with natural teeth are likely to develop



At GSK's annual 'Talking Points Dental in Dentistry' seminar which took place last May in the Belfast Hilton, were, from left to right: Peter Harding, General Manager, GSK Ireland; Ian Peace, Specialist Periodontist (speaker); Kyle McClintock BDA NI President; Alan McCartney, Senior Territory Manager, Dental Detailing, GSK; and John Tiernan, Dental Protection (speaker).

some signs of acid erosion. In Ireland, 40% of Irish people claim they have sensitive teeth and 21% say their teeth are discoloured, two of the symptoms of acid erosion. The most note worthy factor identified with causing acid erosion are the acidic foods associated with the modern diet including salad dressings, wine and acidic fruits.

Designed for daily use, Sensodyne Pronamel delivers all the benefits of a regular toothpaste and retails in a 75ml tube.

Protect yourself

Many dentists are self-employed, and, as their skills are in demand they can command a very respectable level of income, even if opting to work on a part-time basis. Despite that, financial hardship can arise within a relatively short space of time should the practitioner fall ill, or suffer an injury which prevents them from attending work. Sick pay for the self-employed is non-existent, and for employees is often available for just a few weeks or months. That's the warning from Mark Perkins of the Dentists' & General insurance company, who has sent us the following advice for dentists.

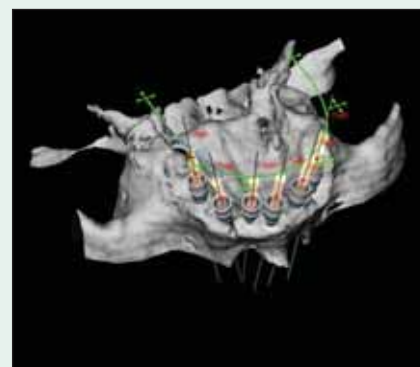
There are various preventative steps which can be taken to protect your income. Insurance products come in all shapes and sizes, but the most wide-ranging type of policy – which ensures financial security against illness and injury right through to retirement - is 'income protection' (IP). It is important that the features of an IP policy are understood before any preventative insurance is put into place, as it can be easy to confuse it with more restrictive (and often more expensive) solutions.

The beauty of income protection is that it can pay the dentist a regular income for almost any ailment, minor or major, from the very first day of non-attendance at work, and will keep paying until a return to work is possible. This contrasts starkly with various other insurance products, often promoted by mortgage lenders, for example, which may either pay benefit for a maximum of one or two years, or alternatively will simply pay a one-off lump sum in the event of the dentist suffering a specified, serious illness. The D&G is authorised and regulated by the UK Financial Services Authority

Teeth in an hour

Nobel Biocare is currently promoting a range of key brands, including the recently introduced NobelGuide.

According to Eamonn Farrell, Regional Manager, Ireland, Nobel Guide are minimally



invasive guided surgery procedures for all indications which facilitate extra oral planning, enabling accurate and predictable results for every dentist placing implants. It is a fully flexible package of options enabling dentists to select the package best suited to their practice requirements. He continues: "NobelGuide delivers reduced chair time and treatment scheduling to achieve a more productive practice. As final prosthetics can be prepared beforehand and fitted at the time of surgery, patient demand for immediate function can be met. The need for invasive surgery is eliminated and patients have the reassurance of treatment by their own dentist. And for practices choosing the most comprehensive package, 'Teeth In An Hour' will be a reality for their patients." Meanwhile there is also a final reminder for the Nobel Biocare World Tour 2006 which comes to London on September 14-16. Dentists can still register at www.nobelbiocare.com/worldtour

New name and website for EU-DLC

In May 2006, the General Meeting changed the association's name to Council of European Dentists (CED). You will still see some references on the website to the EU Dental Liaison Committee (EU DLC), which will be changed soon. Documents of the association pre-dating the change of name will, however, remain on DLC-headed paper and be referred to as DLC documents.

The new website name is www.eudental.eu. The .eu domain name, which became available for all individuals established within the EU on April 7, 2006, is fitting for the CED as a Europe-wide association. It is hoped that the new address will make the CED website more visible across Europe. Given the new website name, the CED Brussels office has changed its email address too, which from the end of June 2006 is ced@eudental.eu.

Resolution on dental amalgam

DR TOM FEENEY, Treasurer of the Council of European Dentists (CED), reports on developments in Europe on the dental amalgam issue.

In March 2006, contrary to expectations, the European Parliament asked the Commission to propose restrictions by the end of 2007 on the use of dental amalgam. This was despite the best efforts of the CED and its member associations to prevent this.

The Parliament surprisingly overturned the ENVI (Environment and Public Health) committee's decision that the way forward was to ask the Medical Devices Expert Group to consider the safety of amalgam. Since then, the CED has been in frequent contact with the Commission. The demands by the European Parliament were based on fears relating both to the health and environmental impact of amalgam.

The Commission will submit questions to two scientific committees: the Scientific Committee on Health and Environmental Risks – which concentrates more on environmental issues – and the Scientific Committee on Emerging and Newly-Identified Health Risks – which concentrates more on health issues.

Meeting

A CED delegation was invited to meet officials of the European Commission on April 26 to explain the CED position on the safety of dental amalgam, particularly in light of the European Parliament's calls for restrictions on its use in March. During the meeting, the President, Dr Wolfgang Doneus referred to the large body of literature on amalgam, very little of which demonstrated any health risks posed by amalgam either to patients or to dental professionals.

On the issue of alternative materials to amalgam, the CED delegation said that alternatives did exist and were often used by dentists, but could not simply replace amalgam, because amalgam had significant advantages and really was the best material in certain situations. It was also important to be aware that relatively little research had so far been done on the safety of the alternatives. Certainly some research showed there could be health risks linked to composite fillings.

The key message of the CED was that it was important for the dentist to have a range of tools at his disposal to meet the different needs of patients: sometimes composite fillings will be most appropriate; but other times dental amalgam will be the best option.

The Commission was very open to the comments made by the CED delegation and asked for us to provide them with further information on certain points.

At the May General Meeting the CED agreed the following resolution: Whereas

- a. The effectiveness and safety of dental amalgam in the restoration of decayed teeth has been demonstrated through long usage;
- b. Its safety and the importance of its continued use is supported by the World Health Organisation (WHO) and the World Dental Federation (FDI) (Consensus Statement, 1997);
- c. Research over many decades has failed to show any significant health risk posed by dental amalgam;
- d. Restorations using dental amalgam are durable and cost-effective;
- e. For many restorations, dental amalgam is the best filling material due to its ease of use and other advantageous physical properties; and whereas dentists are best placed to make the appropriate choice of material;
- f. Research into the potential health and environmental risks posed by dental amalgam should continue; whereas it is important that waste laws on the handling of waste amalgam be strictly enforced in the Member States;
- g. This research must go hand in hand with research into existing alternative materials, since far too little is known about their risk of toxicity, safety to both patients and dental staff and about their other properties;

The Council of European Dentists:

1. Stresses that no imposed restriction on the use of dental amalgam must be envisaged until such time as reliable evidence is produced that demonstrates the health risks of amalgam; nor until such time as the safety of alternative materials has been adequately demonstrated;
2. Notes that in most Member States amalgam separators are used; supports examination into whether waste laws on the handling of amalgam waste are being strictly enforced in the Member States;
3. Underlines that dentists must continue to be able to meet the needs of patients by remaining able to offer a range of possible treatments for tooth decay;
4. Stresses that dentists are best placed to identify patients' oral health needs; and that patients must not be denied the freedom of choice in respect of how to be treated;



CORK 2007

TALK SCIENCE TALK SURGERY TALK SOCIAL

Cutting-edge science

World class speakers

Superb social programme

Terrific trade stands

Alumni night

Golf outing

Partner's event

Annual Scientific Conference
Rochestown Park Hotel
April 18 - 21, 2007

5. Emphasises that restrictions on the use of amalgam would damage the financial stability of health systems as well as impact on individual patients' ability to afford dental care;
6. Expresses its regret at the European Parliament's calls (in the context of the European Commission's proposed Community Mercury Strategy in March 2006 for restrictions on the use of amalgam despite the lack of any scientific justification for this action;
7. Calls on the EU institutions to take fully into account scientific evidence relating to dental amalgam and the worldwide consensus of the dental profession that amalgam should remain part of the dentist's armoury in order best to meet the needs of patients.

The Resolution was adopted unanimously by the CED General Meeting on May 27, 2006.

Tooth whitening

The CED has been in further talks with the European Commission on the issue of how to regulate tooth-whitening products containing more than 6% hydrogen peroxide (H_2O_2). The CED working group on tooth whitening, set up in the Porto General Meeting in May, is investigating how these products should best be regulated. CED member associations made clear in their answers to a Brussels office survey in February 2006, that stronger tooth-whitening products should be marketed as medical devices, and this position will shortly be explained to the Commission. The Commission would prefer to regulate all tooth-whitening products as cosmetics.

Health services consultation to start in September

Since the exclusion of health services from the Services Directive earlier this year, the Commission has been preparing to publish a separate initiative on dealing with health services in the internal market. The publication, which is being prepared by the Directorate-General responsible for health (DG SANCO), in cooperation with the DGs for the internal market, and employment and social affairs, is expected at the end of September. Its contents are still unknown, but it will kick off a public consultation to which the CED will certainly contribute.

In preparation for the Commission's initiative, EU Health Ministers from the 25 Member States issued a statement in June on common values and principles in EU health systems. This very interesting statement highlights the overarching values common to all EU health systems – universality, access to good quality care, equity and solidarity – as well as other commonalities under the headings of quality, safety, evidence-based care, patient involvement, redress, and privacy and confidentiality. The statement stresses, however, that different Member States have different approaches to making a practical reality of these values. So for example, whereas some countries might seek to include market mechanisms and competitive pressure in their health systems, other Member States might take a different approach tailored to their specific health system.

Competition in professional services

The European Parliament is preparing a report in response to the Commission's most recent communication on competition in professional services (COM(2005)405) in which it looks at regulations which may restrict competition in professional services. The Parliament's rapporteur, Jan Christian Ehler MEP (EPP-ED, Germany), encourages professions and Member States to contribute constructively in the reform process in professional services, given the important role that professions have in attaining the Lisbon objectives on economic growth and the creation of jobs. Whilst supporting the tradition of self-regulation of professions that exists in many Member States, and acknowledging the need for a certain amount of professional regulation, he considers that some regulation – above all advertising restrictions – is unjustified and should only be allowed in exceptional circumstances.

Neither the original Commission communication nor the Parliament's draft report deals specifically with the dental profession, but many arguments in favour of increased competition are seen as applicable to the health professions too. The Parliament's report will not be legally binding, but will be an important reference document.

Medical devices – support for CED amendments

The Commission's proposal for a revision of the Medical Devices Directives SEC (2005)1742 is currently being discussed in the ENVI, IMCO and ITRE Committees of the European Parliament.

At their General Meeting on May 27 in Porto, the CED adopted a position paper on the Commission's draft directive, and transmitted it to MEPs on the reporting Committees.

In this position paper, the CED has welcomed the revision of the Medical Devices Directives as it simplifies the existing legal framework whilst safeguarding protection of patients and at the same time providing them with the benefits of technological innovation. The improvements proposed by the CED in its position paper aimed to reduce bureaucracy without infringing the justified interest of patients, users and third parties in maintaining high levels of protection.

The draft report of Thomas Ulmer (EPP-ED, Germany) was due to be discussed in the ENVI (Environment and Public Health) Committee on July 6, and the deadline for other MEPs to table amendments is September 6. The Committee will vote on its report on October 4 and the whole Parliament will vote on its adoption in November 2006.

Survive without an income until you retire

Could you do this?

You might have to, if you become ill or injured

Citadel Income Protection will pay you an income if you can't work due to illness or injury

- You can be paid from the very first day of illness
- You'll continue to be paid until you retire, if needs be
- You'll receive a cash lump sum on retirement

Don't take the financial risks of illness – we'll do it for you



00 44 121
452 1066

www.dengen.co.uk
citadel@dengen.co.uk



Authorised and regulated by the
UK Financial Services Authority

FEATURE

Murphy's law

Ciara Murphy is the new Chief Executive Officer (CEO) of the IDA and she has a busy agenda. PAUL O'GRADY interviewed her for the Journal.



Ciara Murphy who became Chief Executive Officer of the Association in January.

How do you represent a profession in an age of consumerism? How do you take a representative body to a new level? How do you motivate your greatest asset, the membership? Does volunteering work in modern society? What is the place of dentistry in modern healthcare? Where does the public dental service fit within the new Health Service Executive structures in Ireland? How do you implement a comprehensive reform of the structures of an association? How do you deal with a negative public perception of the profession? When do you find time to do the research for benchmarking that needs to be done? How do you deal with all of this at the same time? How do you balance this work with your family life when you have young children?

It's almost overwhelming to consider the list above. Yet that is precisely the challenge that faces the Chief Executive Officer of the Association, Ciara Murphy. Not on her own, as she is quick to point out, but facing it all nonetheless.

Strengths and weaknesses

Ciara feels that the biggest strength of the organisation is its membership and its power when activated and motivated. She cites the PRSI dispute in 2002/03 as an excellent example of how unity amongst the membership helped to achieve a satisfactory resolution. The flip side of that coin, though, is apathy and apathy among

A series of steps

Let's start at the beginning and track how this 33 year-old Dubliner ended up in this particular hotseat. Brought up in a non-denominational household in Blackrock, she was educated at Gaelscoil, Colaiste Íosagáin in Booterstown. She gained admission to the BESS degree in Trinity College, where she specialised in employment law. Her final year thesis studied the impact of AIDS on the workplace. Interestingly, a needlestick injury to a dentist in the USA featured prominently in the research. Also in her final year came one of the many challenges that Ciara Murphy seems to take in her stride - she gave birth to her first daughter, Sophie. With the support of family and tutors, she graduated and then got a job with Inbucon Ireland Ltd., International Business Consultants. Less than a year later she had joined the Society of the Irish Motor Industry (SIMI) as a researcher. Inside another year, the Health Service Employers Agency

members is this CEO's greatest fear. "Active participation in the Association needs to be promoted and we need to look at the role of volunteering in modern life. Some solutions can be centralised while other roles will have to be de-centralised. Whatever way we do it, we need to keep the membership fully energised."

(HSEA) had recruited her as an Employment Information Officer. Now the Health Service Executive - Employers Agency, the HSEA was the negotiating arm of the Department of Health and Children for all aspects of the Irish health service.

One of the tasks she faced in the job was the implementation of the new Organisation of Working Time Act for Non-Consultant Hospital Doctors. Given the legendary working hours of junior hospital doctors, it was quite a task. The research process that she commenced eventually gave rise to a proposal for NCHDs to reduce the number of hours they worked, a proposal which is still being piloted throughout the country. Murphy's recollection of her time with the HSEA is tinged with frustration arising mainly from a lack of direction within the health services generally at that time.

“The active consumer lobby does not always fully understand the restrictions put in place which are in the interest of the consumer.”

Having married and given birth to her second daughter in the meantime, Ciara felt that a move that facilitated a better work-life balance, as well as a more rewarding working environment, would be good. The family had moved to Greystones, so when the position of Membership Services Officer became available at the Irish Dental Association, she applied. The IDA office in Clonskeagh was easier to get to than the HSEA in the city centre, and while it was a return to full-time work, the hours were flexible. As it turned out, it was the right move at the right time. Industrial relations became a big issue for dentists and Ciara knew the grades, the structures and was thoroughly familiar with all the local bargaining mechanisms.

Benchmarking success

In that first year with the IDA, Ciara, with the assistance and support of the members, wrote the submission to the Public Service Benchmarking Body (PSBB) on behalf of public dental surgeons. It proved to be a great start, with the public dental surgeons awarded a 15% increase, the second highest increase of any group in the health service. She rapidly found that the job was not limited to membership services or industrial relations. It covered every possible angle of professional representation. Therefore, when the then Secretary General became ill and had to take four months sick leave, Ciara stepped up to the plate. The work she did in that time earned her a promotion to Deputy Secretary General and Council approved her appointment in September 2003. This entailed a bigger portfolio and amongst the new areas for which she took responsibility were the *Journal of the IDA*, the IDA UPdate and the accreditation scheme – all of which have now undergone a much needed review and makeover.

Home time

Ciara Murphy has what she calls “a great home unit”. Married to businessman Simon Byrne, and with three daughters Sophie (11), Naoise (8), and Ellie (4), she admits to watching *Big Brother* as being a vice. Otherwise, to relax she plays the piano. She's been playing since the age of six and had achieved Grade VIII status by the time she was 16.

Horse riding is her outdoor pursuit of choice.

She says that her work/life balance was severely disrupted by the challenges she faced at work in the last 18 months. However, she is hopeful that equilibrium will be restored following the appointment of the new team at IDA House.

Professional challenges

What's it like to be young and female in a post traditionally held by a mature male? “It's a great job,” she replies. “I love coming to work.” Yes, but what about being 33 and a woman? “People expect the CEO to be male, so when they find out, they tend to re-evaluate the situation. I also have the advantage of a natural sense of intuition which tends to allow me a little extra insight into a situation. It also allows me to develop a greater empathy with people I meet. That is an advantage to being female.” She also feels that being relatively young allows her to bring a youthful enthusiasm to her work. “You can become very cynical, but enthusiasm allows you to keep your passion for a job, despite the knocks that inevitably come.”

When the difficult year of 2005 ended, she found that the PWC Review of the Association provided the framework for a re-invigorated organisation and that it was a good environment in which to apply for the top job. She won out, not surprisingly given her record, in an open competition for the position of CEO and took up the post in January last.

Challenges ahead

She sees her biggest immediate challenge as putting the team she needs in place. “The IDA is not about the CEO. It requires a team to drive the agenda agreed by the membership. This year, the Association can reflect on good progress. There is a new CEO and a new Membership Services Development Manager (Elaine Hughes), while an Employment Relations Officer is about to be appointed. Long-serving staff members of the administration section also continue in the Association including Mena Sherlock, Mary Graham, Fionnuala O'Brien and Eileen Green. Murphy speaks highly of their ability to adapt to overwhelming change within the organisation.

Ciara observes that the addition of Elaine Hughes has facilitated a significant development in the provision of membership services. As a result, a new and comprehensive suite of membership services is expected to be in place by January next. This is likely to co-incide with a new corporate image for the Association.

FEATURE

One of the biggest external issues facing the profession is the acute manpower shortage, with dentists outside urban areas finding it particularly difficult to recruit. Access to dental services has not yet been affected, but it could become a problem if the problem is not addressed. In the UK, she points out, access has become a problem and when a new NHS dentist opens their doors, people queue to get on their list for routine dental treatment.

With the imminent recruitment of an Employment Relations Officer, Murphy hopes to further develop this service to members, ensuring that members have access to best practice in human resources. "This will complement the guidelines for best practice in dentistry which are currently being developed under the chairmanship of Dr Eamon Croke," says Ciara.

Industrial relations (IR) is one of the Association's core services - so much so that, at times in the past, Ciara feels that other services suffered when big IR issues hit the agenda. She says that the new staffing structures in the IDA will prevent that happening in the future.

One of the other major problems that Ciara feels the profession is facing is the dominance of consumerism. "It makes it so hard to get a balance in the arguments over many issues. The active

consumer lobby does not always fully understand the restrictions put in place which are in the interest of the consumer," says Ciara. She cites the example of the current debate over advertising. It is not unique to dentistry that the Competition Authority wants to remove some of the restrictions on dentists' advertising, restrictions that dentists feel are in the public interest. Improving the lobbying work of the Association is a priority for Ciara and she intends to work closely with consultants MRPA Kinman over the coming 12 months to achieve that goal.

Competence

So what of this young woman with her hands firmly on the tiller of the good ship IDA? She comes across as seriously engaged in and by her job, committed to achieving the goals set by the Association (specifically the reforms outlined by the PWC Review) and determined to succeed despite the many potential obstacles. She is also an engaging interviewee, thoughtful in her answers and not afraid to question the motives of a question. Dentists will already know her through her previous work with the Association and will have many opportunities to gauge her success as a CEO. Daunting for some, it's a prospect that Murphy appears to relish.

Bicon Dental Implants

Simplify (and Demystify) the Practise of Implant Dentistry Hands-on courses in Dublin

The Bicon implant with its locking taper, 360° rotation and anti-bacterial seal, offers an efficient, cost-effective mechanism to incorporate implant dentistry treatment into every dental practise.

With instructions in both the surgical and restorative aspects of the Bicon system, these one-day courses will provide participants an opportunity to place implants under the guidance of experienced clinicians.

To register, call 1-800-200-252

For additional information on the Bicon System, visit www.bicon.com



bicon europe ltd.
DENTAL IMPLANTS

Warning: bisphosphonates and osteochemonecrosis of the jaws

Abstract

The aim of this article is to highlight the link between bisphosphonates and osteonecrotic lesions of the jaws ("osteochemonecrosis") and to alert general practitioners to the implications these drugs may have on their day-to-day practice. We review the use of this class of drug, the indications for which have widened recently, describe their effect on bone metabolism and outline the proposed mechanism for bisphosphonate-induced osteochemonecrosis. Predisposing and initiating factors and management are outlined, and suggestions made as to how the dental profession can help with this increasingly prevalent problem.

Journal of the Irish Dental Association Volume 52: 79 - 83, 2006

Bisphosphonates and their uses

Bisphosphonates are a group of synthetic analogues of inorganic pyrophosphate that have a high affinity for calcium. They bind to bone and have a very long half life of up to 10 years¹. Although these drugs have been used for over 30 years, it is only recently that their use has become widespread.

Bisphosphonates are potent inhibitors of osteoclastic activity both directly, by interfering with osteoclast metabolism through disruption of the mevalonate pathway which leads to apoptosis^{2,3}, and indirectly by interfering with osteoclast precursors.

The main bisphosphonates in use today are the orally administered Alendronate (*Fosamax; Merck Co, West Point, PA*), the intravenously administered Pamidronate (*Aredia; Novartis Pharmaceuticals, East Hanover, NJ*) and Zoledronate (*Zometa; Novartis Pharmaceuticals, East Hanover, NJ*). Many other formulations exist which differ in their potencies due to different side chains attached to the central parachlorophenol moiety.

The oral bisphosphonates are used in the treatment of osteoporosis. They stop bone loss and preserve bone density by inhibiting the osteoclastic resorption of bone. The obvious success and widespread use of these drugs is reflected in the fact that, in 2003,

with 17 million prescriptions, Alendronate (Fosamax) was the nineteenth most commonly prescribed drug in the world⁴. An estimated 191 million prescriptions for bisphosphonates have been issued in the last ten years.

The intravenous bisphosphonates are also used extensively in oncology. Bisphosphonates are extremely effective in preventing the spread and growth of metastatic osteolytic lesions associated with solid tumours such as breast cancer, prostate cancer and multiple myeloma. They can also prevent hypercalcaemia of malignancy by stopping excess calcium being mobilised from bone. According to the American Society of Clinical Oncology intravenous bisphosphonates are, along with appropriate chemotherapy, the standard of care for treatment of these conditions⁵.

Osteolytic lesions grow and spread by release of pro-resorptive factors from the tumour cells. If osteoclastic activity is inhibited by bisphosphonates, the ability of these tumours to spread is severely limited because they are unable to remove bone and proliferate. This results in a reduction in loco-regional and metastatic spread and associated co-morbidity.

The anti-osteoclastic properties of bisphosphonates are being explored for use

Stephen R Flint¹,

Seamus Sharkey², Sheila Galvin³.

1. Consultant and Senior Lecturer in Oral Medicine, Dublin Dental School and Hospital, Trinity College Dublin.

2. Senior House Officer, Dublin Dental School and Hospital, Trinity College Dublin.

3. Junior House Officer, Dublin Dental School and Hospital, Trinity College Dublin.

Corresponding Author:

Stephen R Flint,

Consultant and Senior Lecturer

in Oral Medicine,

Dublin Dental School and Hospital,

Trinity College Dublin.

SCIENTIFIC

in a number of other conditions such as the treatment of periodontal disease, management of diffuse sclerosing osteomyelitis⁶ and in alleviating pain in patients suffering from fibrous dysplasia⁷ and Paget's disease.

Bisphosphonate-induced osteochemonecrosis

Despite the very real benefits of these drugs, there is a need for caution. Controlled trials have not been undertaken, but there are now numerous case reports and patient series emerging to support the link between jaw necrosis and bisphosphonates^{1,8,9,10,11} and the evidence is now compelling. Whilst the problem of bisphosphonate-induced osteochemonecrosis seems to be mostly associated with the intravenously administered drugs, caution is still advised with the oral preparations, as shown in Ruggiero's review of 63 cases of bisphosphonate-induced osteochemonecrosis where seven patients were receiving oral bisphosphonate monotherapy, for the treatment of osteoporosis⁸. The bulk of the 3,000 reported cases in the world literature and Adverse Drug Report records of medicine agencies followed dental procedures such as extraction and periodontal treatment.

The Irish Medicines Board has received 16 reports of osteochemonecrosis of the jaw, to date, all of which were associated with use of zoledronic acid and two of which involved the use of both zoledronic acid and pamidronate. In the majority of the cases, the patients are documented as having underlying malignancy, which is also, of course, a known risk factor for osteonecrosis. In a few cases, concomitant use of cytotoxic agents is mentioned although a malignant condition is not specified.

The majority of worldwide cases appear to have been seen with zoledronic acid and in patients with underlying malignancy. The marketing authorisation holder for Zometa (Novartis) circulated a "Dear Doctor/Dentist" letter about the issue some time ago and early this year held an international conference focusing solely on this problem. However, in view of a possible class effect, the Pharmacovigilance Working Party of the Irish Medicines Board carried out a review of other bisphosphonates.

This review was recently completed and cases of osteochemonecrosis of

the jaw have been identified in relation to the use of six out of nine marketed bisphosphonates in the EU: alendronic acid, etidronic acid, ibandronic acid, pamidronic acid, risedronic acid and zoledronic acid. In these cases, the occurrence was positively associated with the potency of the bisphosphonate (Figure 1) and strongly related to underlying malignant conditions, as well as with intravenous administration. However, as stated earlier, there are also case reports of osteochemonecrosis in patients taking oral bisphosphonates. Female gender, advanced age, malignant disease and a mandibular location are the main characteristics of the cases. Time to event varies widely for the individual products as well as between products. A number of risk factors have been identified, e.g. malignant disease, *per se*, chemo/radiotherapy, concomitant treatment with corticosteroids, advanced age, malnutrition, vascular disorders and dental procedures (N Arthur, IMB, Personal Communication).

A particularly worrying feature of bisphosphonates is their extremely long half life, which may render the patient susceptible to this complication many years after a course of medication. It is also possible that predisposition to this complication may involve a total dose effect; therefore patients taking the low-dose medication orally for long periods of time may become as susceptible as patients receiving high doses of the drug intravenously.

Changes to the product information sheet have already been implemented for pamidronic acid and for zoledronic acid and may be introduced for other bisphosphonates.

Proposed mechanism

Normal bone remodelling involves osteoclasts resorbing bone and releasing bone producing factors such as insulin-like growth factor and bone morphogenic protein. These factors then stimulate existing osteoblasts to lay down new bone matrix and to recruit new osteoblasts to the remodelling bone from stem cell populations. New osteoblast recruitment is necessary as average osteoblast life span is only 150 days. Without this continual replenishment of osteoblast populations bone becomes progressively acellular (Figure 2) and turnover and therefore repair become impaired.

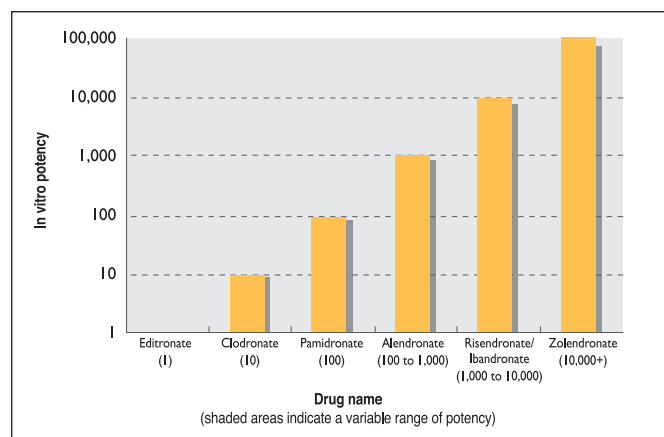


Figure 1: Relative potencies of bisphosphonate drugs on a logarithmic scale.

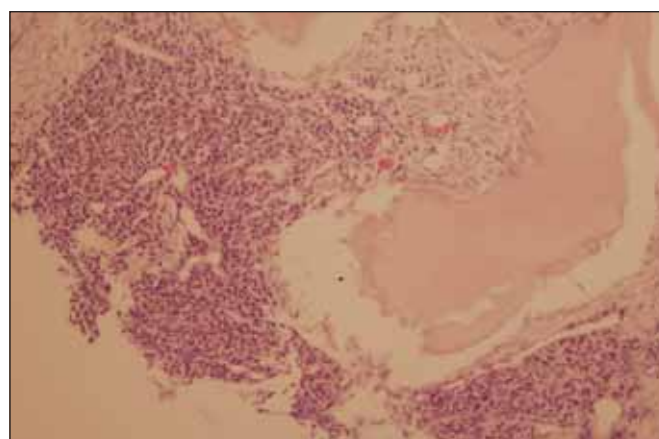


Figure 2: Histopathology of osteochemonecrosis. Note absence of osteoclasts, despite inflammation and necrosis.

By inhibiting the function of osteoclasts and blocking the above pathway, bisphosphonates reduce bone turnover rate, bone cellularity and bone healing. Bisphosphonates also have an anti-angiogenic property which may compound the problem but this anti-angiogenicity has, to date, only been demonstrated in animal models. Bisphosphonates accumulate in areas of high bone turnover. The presence of teeth and periodontal ligament in the alveolus and the chronic low grade trauma associated with the masticatory system make the jaws one of the most metabolically active bones in the body. Bisphosphonates therefore become more highly concentrated in the jaws than anywhere else in the body, which, along with the normally high bone turnover rate, and diversity of the oral flora, may explain why this condition manifests exclusively in the jaws. With bisphosphonate treatment, the jaw bones become unable to effectively repair microfractures that occur daily due to normal masticatory activity. If any traumatic or infective episodes occur then, the bone cannot respond adequately with increased turnover and healing so areas of acellular, damaged, sequestered bone result. Necrotic bone can therefore arise *de novo* or be triggered, although the exact mechanisms of osteochemonecrosis are yet to be elucidated.

Predisposing factors

Although bisphosphonate therapy is clearly the key factor in this form of osteonecrosis, several co-morbid factors exist that may increase a patient's risk of developing osteonecrosis¹³. They can be divided into systemic, local and dental co-morbidities.

Systemic factors which affect the patient's immune system and overall bone quality and turnover include alcohol use, smoking, advanced age, diabetes mellitus, the patient's overall systemic health and degree of immunosuppression as well as cancer related factors such as the overall tumour burden, stage of disease and extent of bony metastases. Other medications – both past and present - might also be relevant. Corticosteroids in particular should be noted, since they cause osteoporosis and bisphosphonates may therefore be co-prescribed to treat this¹³. Also of note, in patients with multiple



Figure 3: A mild case of osteochemonecrosis following simple extraction of a mobile, periodontally involved upper central incisor. The extraction was performed 18 months previously, but the socket has still not healed.

myeloma, are the anti-angiogenic agents used in treatment – thalidomide, glucocorticoids and bortezomib. The anti-angiogenic properties of these drugs may devascularise the bone and so predispose to the development of osteochemonecrosis or increase the severity of existing disease¹³.

Local factors thought to be important include a history of radiation therapy to the jaws and the presence of metastatic disease or myeloma in the jaws¹³. Due to the reduced healing ability of bisphosphonate-treated bone, the oral health status of the patient is also important and any infection present in either the oral hard or soft tissues may initiate osteonecrosis. However, up to 30% of osteochemonecrosis cases occur spontaneously, without any identifiable co-morbidity^{1,8}.

Periodontal disease was present in 84% of patients in one series¹. The high anaerobic bacterial counts in periodontal pockets may contribute to the initiation of osteochemonecrosis. Dental caries (28.6%), dental abscesses (13.4%) and failing root canal treatments (10.9%) have also been noted. Of interest, 10 of the 28 cases without co-morbidity in this series were over mandibular tori. This may be that due to the thinness of the lingual mucosa over tori being more susceptible to trauma and providing less protection for the underlying bone.

Local and dental factors are especially important, from the dental surgeon's viewpoint, since treatment of these conditions *before* the initiation of bisphosphonate therapy may help to prevent development of osteonecrosis.

Initiating factors

Unlike predisposing factors which may increase a bisphosphonate-treated patient's risk of developing osteochemonecrosis, initiating factors actually trigger the event. Specific initiating events are difficult to pinpoint and may not even be present - one series identified 30 cases out of 119 occurring spontaneously¹. However, when an initiating event was reported, it was usually a dental procedure, or dentally-related.

Dental extractions have been identified as the most common initiating factor, accounting for approximately 40% of cases. Periodontal treatment was thought to be related to the onset of 34 cases, implant placement to four cases and an apicectomy to one in the same series of 119 cases¹. Other factors include sharp denture flanges, ill-fitting dentures¹³ and sharp foods traumatising thin mucosa.

Clearly it is important for dentists to be aware of what treatments are appropriate for patients receiving bisphosphonates, and even more importantly which treatments should be avoided, if at all possible.

Presentation

The presentation of bisphosphonate-induced osteochemonecrosis is variable. The constant feature is exposed, dead bone (Figure 3). The severity of symptoms can range from asymptomatic exposed bone, noticed by the patient as roughness or unnoticed until routine dental examination, to a painful ulcer with necrotic bone at its base. Classically, a ragged ulcer first appears which progresses to expose bone in the oral cavity. The exposed bone then undergoes necrosis and is often surrounded by erythematous, inflamed mucosa.

SCIENTIFIC



Figure 4: Pathological fracture of the mandible in an osteochemonecrotic site following dental extraction two years previously. An attempt to treat the problem by resection led to further osteochemonecrosis at the resection sites.

Secondary infection on exposure to the oral environment leading to suppuration and severe pain can also occur¹². Other presentations are possible - one case report reported a one year history of intermittent pain in the maxilla which developed into a spontaneous oro-antral fistula¹⁵. Another series reported 37 patients (31.1%) presenting with asymptomatic exposed bone and 81 patients with exposed bone and pain¹. Other presentations include mobile teeth, cutaneous fistulae, paraesthesia, bone exposure through the skin and pathological fractures¹.

Radiographic findings are also variable and may depend on the length of time the osteonecrosis has been present. In the same series as above, 73.1% had positive radiographic findings which included osteosclerosis either alone or in combination with osteolysis. Widened periodontal ligament spaces, especially in furcation areas, have also been reported.

Once initiated, the osteochemonecrosis can progress to expose large areas of bone. There may also be significant cutaneous tissue loss and exposure of bone extra-orally through the skin.

Although both mandible and maxilla may be affected simultaneously, osteochemonecrosis occurring exclusively in the mandible is by far the most common presentation (68.1%), with the posterior molar area being the most frequent site. The maxilla is affected alone in approximately one third of cases⁸.

Management

With bisphosphonate therapy the entire skeleton is affected, although the concentration of the drug in the jaws appears to be higher than in other bones. Therefore, unlike in other necrotising diseases of bone like infective osteomyelitis, there will be no normal, healthy bone in the jaws (Figure 4) to which the diseased tissue can be resected¹⁴. Autologous bone grafting is also likely to be unsuccessful, since it too is affected. Resection and curettage have been attempted as treatments with limited success. Indeed, resection may compound the problem, by exposing further susceptible bone. Hyperbaric oxygen therapy is also probably ineffective as a treatment^{1,8}.

Management can be divided into those measures for active osteochemonecrosis, dental treatment during bisphosphonate treatment and preventive measures.

Active osteochemonecrosis

At present the recommended treatment for active osteochemonecrosis is irrigation with 0.2% chlorhexidine, removal of any sharp edges of bone causing discomfort and prescription of antibiotics^{1,13}. The recommended antibiotics at present are amoxicillin, clindamycin or tetracycline which should be continued until resolution of the acute infection¹⁷, with a short initiating course of metronidazole (long-term therapy may cause peripheral neuropathy, epileptiform seizures and leukopaenia). Pain relief may also be required. The patient should be advised to rinse four times daily with chlorhexidine. Pieces of necrotic bone may sequestrate from the lesion during healing. Healing is slow and may take months. The patient should also be advised that complete healing cannot be guaranteed or even expected.

During and post-bisphosphonate therapy dental treatment Patients currently receiving, or with a history of receiving, bisphosphonates should be treated with extreme care. Scaling and prophylaxis should be carried out as atraumatically as possible, with little or no soft tissue damage. Dental extractions should be avoided, unless teeth are grade three mobile or greater. If extraction is absolutely necessary, some authorities have suggested a stent be made prior to extraction to cover the healing socket. The patient should rinse with chlorhexidine immediately before the extraction, which should be atraumatic. The socket should be sutured. A Coe-Pak dressing should then be placed over the extraction site, under the stent. Antibiotics must be prescribed for at least five days – amoxycillin, clindamycin or tetracyclines are recommended. Extensively carious teeth should be endodontically treated and decoronated, not extracted, if possible. It cannot be stressed strongly enough that dental extractions are the most common initiating event for osteonecrosis in bisphosphonate-treated patients. Patients should be warned, if extractions are unavoidable, that this complication can occur.

In patients with a history of high-dose, high potency, intravenous therapy, implants are probably contra-indicated. In patients with a history of low-dose, low-potency, long-term oral therapy, implants are relatively contra-indicated. Osteochemonecrosis has been reported in these patients, albeit a rare event. This advice probably remains for patients who have had bisphosphonate treatment within the last ten years, given the long half-life of these drugs.

Preventive measures pre-bisphosphonate administration

As with other diseases, prevention is paramount, particularly as there is no certain management for osteochemonecrosis. It is important for us, as a profession, to impress on prescribing doctors that patients must be dentally fit *before* starting bisphosphonate therapy¹⁶. All patients should be seen by a general dental practitioner for a complete assessment prior to receiving bisphosphonates. Patients

should receive full mouth radiographs and full periodontal screening. The oral soft and hard tissues should be examined in their entirety for any signs of disease. Elimination of any potential sites of infection is critical. All dental disease should be aggressively treated and any doubtful teeth extracted. Healing must be allowed to take place before starting bisphosphonate therapy. Instructions should be given on oral hygiene measures and regular maintenance hygiene appointments arranged.

Conclusion

Bisphosphonate-induced osteochemonecrosis is a difficult condition to treat and may be intractable. It is now a recognised complication of both oral and intravenous bisphosphonates, a group of drugs which have been prescribed widely in the last decade, for diverse indications. As such, prevention is critical in the management of bisphosphonate-treated patients. General dental practitioners have a vital role to play in prevention, by liaising with the patient's medical team and carrying out pre-therapy examinations and treatments. In patients taking bisphosphonates, or with a history of bisphosphonate therapy, practitioners must also be aware of the risk of certain dental treatments initiating osteochemonecrosis.

The enormous benefits of these drugs in the treatment of serious illnesses like multiple myeloma and metastatic cancer to bone ensures that they will continue to be prescribed. Therefore, until such time as more evidence is gathered and more concrete guidelines can be formulated, increased vigilance and caution is necessary to document and publicise the problem, treat any oral disease necessitating invasive dental procedures in candidate patients before initiation of bisphosphonate treatment, and hopefully reduce the risk of osteochemonecrosis of the jaws.

References

- Marx RE, Sawatari Y, Fortin M **et al.** Bisphosphonate-induced exposed bone (osteonecrosis/osteopetrosis of the jaws): Risk factors, recognition, prevention and treatment. *J Oral Maxillofac Surg* 2005; 63: 1567-1575
- Beck ER, Lowick CWGM, Papapoulos SE. Bisphosphonates suppress bone resorption by a direct effect on early osteoclast precursors without affecting the osteoclastogenic capacity of osteogenic cells: The role of protein geranylation in the action of Nitrogen-containing bisphosphonates or osteoclast precursors. *Bone* 2002; 30: 64
- Rogers MJ, Gordon S, Benford HL **et al.** Cellular and molecular mechanisms of action of bisphosphonates: Skeletal complications of malignancy. *Cancer Suppl* 2000; 88: 2961
- Marketos M. The top 200 brand drugs in 2003 (by units). *Drug Topics* 2004; 148: 76
- Berenson JR, Hillner BE, Kyle RA **et al.** American Society of Clinical Oncology guidelines on the role of bisphosphonates in multiple myeloma. *J Clin Oncol* 2002; 20: 3719
- Hinos S, Murase R, Terakado N, Shintani S, Hamakawa H. Response of diffuse sclerosing osteomyelitis of the mandible to alendronate: follow up study by TC Scintigraphy. *Int J Oral Maxillofac Surg* 2003; 34: 576-578
- Kos M, Luczak K, Godzinski J, Klempous J. Treatment of monostotic fibrous dysplasias with pamidronate. *J Craniomaxillofac Surg* 2004; 32: 10-15
- Ruggiero SL, Mehotra B, Rosenberg TJ, **et al.** Osteonecrosis of the jaws associated with the use of bisphosphonates: a review of 63 cases. *J Oral Maxillofac Surg* 2004; 62: 527-34
- Melo MD, Obeid G. Osteonecrosis of the jaws in patients with a history of receiving bisphosphonate therapy. *JADA* 2005; 136: 1675-1681
- Estilo CL, Van Poznak CH, Williams T **et al.** Osteonecrosis of the maxilla and mandible in patients treated with bisphosphonates: a retrospective study. *Proc Am Soc Clin Oncol* 2004; 22: 750
- Durie BG, Katz M, Crowley J. Osteonecrosis of the jaw and bisphosphonates. *New Engl J Med* 2005; 353(1): 99-102
- Scully C, Flint SR, Porter SR, Moos K. Oral and Maxillofacial Diseases. *Taylor and Francis. London, 2004; pp 565*
- Miglioati CA, Casiglia DMD, Epstein DMD, Jacobsen PL, Siegel MA, Woo S-B. Managing the care of patients with bisphosphonate-associated osteonecrosis. *JADA* 2005; 136: 1658-1668
- Helstein JW, Marek CL. Bisphosphonate osteochemonecrosis (Bis-Phossy Jaw): Is this the phossy jaw of the 21st century? *J Oral Maxillofac Surg* 2005; 63: 682-689
- Wang J, Googner NM, Pogrel MA. Osteonecrosis of the jaws associated with cancer chemotherapy. *J Oral Maxillofac Surg* 2003; 61: 1104-7
- Balshi TJ, Wolfinger GJ, Thaler JJ. Osteonecrosis of the jaws associated with the use of bisphosphonates. *Prosthodontics intermedia: Special Report.*
- Domato K, Gralow J, Hoff A, Huryn J, Marx, Ruggiero S, Schubert, Toth B, Valero V. June 2004. Expert panel recommendations for the prevention, diagnosis and treatment of osteonecrosis of the jaws.

Irrigants in non-surgical endodontic treatment

Precis: This paper examines the requirements of an ideal root canal system irrigant and investigates the most effective contemporary protocol for chemical debridement and disinfection of the root canal system.

Abstract

This paper highlights that one of the main goals of root canal treatment is the elimination of microorganisms from the contaminated root canal system. Instrumentation alone will not allow for adequate debridement and disinfection of the complex and diverse root canal system. Chemomechanical debridement is required. The importance of the use of irrigants during non-surgical root canal treatment has frequently been neglected both during instruction of dental students and later in the clinical practice of endodontics. The article highlights 'shape, clean and fill' vs. 'clean, shape and fill' to enable chemomechanical debridement. Our protocol advises mechanical debridement and copious irrigation for a minimum of twenty minutes with 2.5% to 6% solutions of sodium hypochlorite, followed by a rinse with a 17% solution of ethylenediaminetetraacetic acid and a final rinse with 2% chlorhexidine. The canals are dried with high volume aspirators and sterile paper points.

Journal of the Irish Dental Association Volume 52: 84 - 92, 2006

John D Regan¹ Alex A P Fleury²

¹Associate Professor,
Department of Endodontics,
Baylor College of Dentistry,
Dallas, Texas, USA
and Private Endodontic Practice
Plano, Texas, USA

²Assistant Professor,
Department of Endodontics,
Baylor College of Dentistry,
Dallas, Texas, USA
and Private Endodontic Practice
Flower Mound, Texas, USA

Corresponding Author:
Dr. John D Regan
Associate Professor,
Department of Endodontics,
Baylor College of Dentistry,
Dallas,
Texas
USA

Introduction

In 1894, W. D. Miller demonstrated an association between the presence of bacteria and pulpal disease from his observations on the microflora of more than 250 infected pulps¹. However, the essential role of bacteria in the development of pulpal and periradicular disease was not fully understood until Kakehashi *et al.* (1965) showed that pulp and periradicular disease occurred in surgically exposed rat molar pulps only when bacteria were present in the oral cavity². In 1976, Sundqvist sampled intact human teeth that were devitalised following trauma. Bacteria were always found in root canals with radiographic evidence of periradicular bone destruction further confirming that bacteria cause pulpal and periradicular disease³ (Figure 1). Infected root canals have a complex microbial flora consisting of cocci, rods, spirochaetes, filaments and fungi⁴ that exist in the root canal system either as loose collections or as dense aggregates adhering to the dentine wall⁵. Since microbial infection of the root canal system may ultimately result in periradicular

periodontitis³, one of the main goals of root canal treatment is the elimination of microorganisms from the contaminated system.

As early as 1932 Skillen noted that "*From the anatomic standpoint alone, the root canal system seems a complicated structure to deal with. Apparently there is nothing constant about it, nothing upon which one may pin expectations*". It is now widely accepted and understood that the root canal system is an extremely complex configuration of anatomical spaces⁶⁻¹⁴. These spaces include the pulp chamber and main canal(s), accessory anatomical features such as anastomoses, webs, fins, and lateral canals (Figure 2). Taking into consideration the morphology of these anatomical spaces along with the tubular microscopic structure of dentine (Figure 3) it is evident that instrumentation alone will not allow for adequate debridement and disinfection of the root canal system.

The concept of chemomechanical debridement is not new and has been discussed by early workers in the field^{15, 16, 17}. However, the importance of the use of

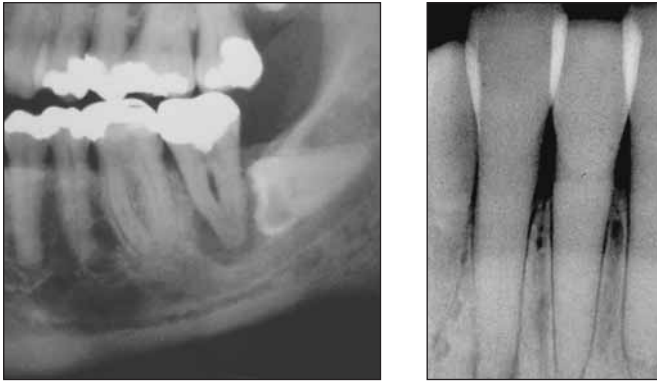


Figure 1a, 1b: Radiographs demonstrating presence of periradicular lesions associated with infected necrotic pulps.



Figure 2: Complexities of the root canal system as seen in a three-dimensional rendering of a mandibular molar. (Image courtesy of Dr Paul Brown and Dr Eric Herbranson; 3D Interactive Tooth Atlas)

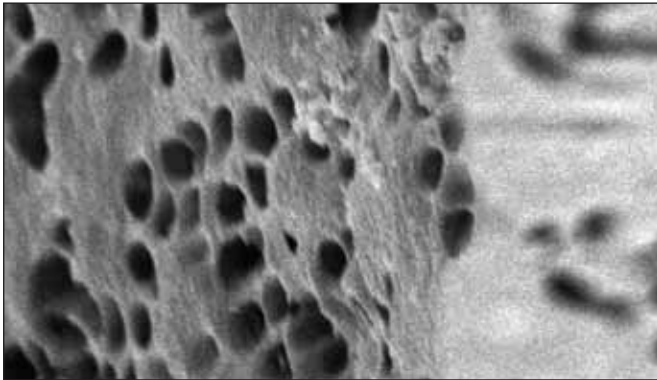


Figure 3: Scanning Electron Micrograph of the dentinal wall of a human tooth showing openings into the dentinal tubules.

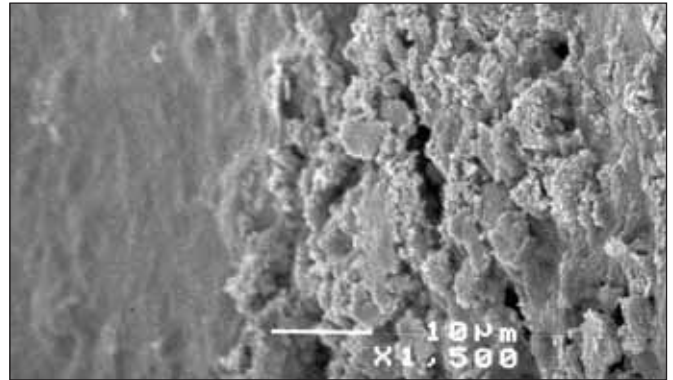


Figure 4: Scanning Electron Micrograph showing heavy smear layer deposits on the dentinal walls following instrumentation without irrigation.

irrigants during non-surgical root canal treatment has frequently been neglected both during instruction of dental students and later in the clinical practice of endodontics. A much greater emphasis has been placed on instrumentation systems and this has been especially apparent in recent years with the introduction of rotary and nickel-titanium instruments. In contrast to the traditional 'clean, shape and fill' endodontic triad it would appear that a more logical approach to root canal system preparation would be to shape the canals in order to facilitate cleaning and filling; hence 'shape, clean and fill'. Bystrom and Sundqvist demonstrated that mechanical instrumentation and irrigation with saline alone significantly reduced the number of bacteria but that bacteria remained in the canal systems in half the cases after four separate treatments¹⁸. They concluded that the supporting action of a disinfectant is necessary for successful extermination of microorganisms from root canals¹⁹. The purpose of this paper is to examine the requirements of an ideal irrigant and to investigate the most effective contemporary protocol for chemical debridement and disinfection of the root canal system.

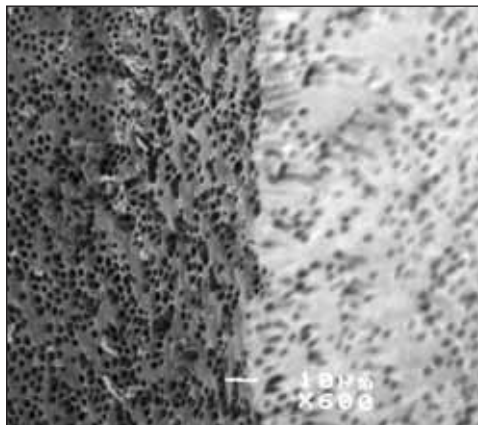
Properties of an ideal irrigant.

While the ideal irrigant has yet to be developed a number of desirable properties for a root canal irrigant can be listed. This 'ideal' irrigant will aid both in the debridement and disinfection of the root canal system,

ideally with sustained antimicrobial action²⁰⁻²³. It should act as a lubricant to facilitate the passage of instruments from the coronal to apical portions of the root. It will have the ability to dissolve tissue left in the complex anatomical spaces such as the fins and webs²⁴. It should have a low surface tension which will facilitate contact with the target tissues which is necessary for effective dissolution of the tissue²⁵. It will remove the smear layer. At the same time it will be non-toxic, non-antigenic, non-carcinogenic and cause no damage to the structure of the dentine. In addition, it should not cause damage to the periradicular tissues should it be extruded outside the root canal system²⁶. However, a balance should be struck between the inherent tissue toxicity and the antimicrobial and tissue-dissolving effects of the irrigant²⁷.

Debridement of the canal system involves removal of both organic and inorganic debris. Organic debris includes vital or necrotic pulp tissue, microorganisms, salivary or tissue fluids, endotoxin and other foreign components that have entered the complex canal system. The inorganic debris includes minerals deposited in the canal system and debris deposited on the wall during instrumentation of the root canal. Instrumentation of the root canal system invariably creates a smear layer²⁸⁻³⁰ (Figure 4) which is composed of both organic and inorganic components. This smear layer is organised into a superficial loose layer and a deeper adherent layer. The superficial layer contains

SCIENTIFIC



Far left: Figure 5: Scanning Electron Micrograph of the instrumented root canal wall following smear layer removal with sodium hypochlorite and EDTA.

Left: Figure 6: Sodium hypochlorite. Chlorox brand supplied as a 6% solution.

Below: Figures 7a – 7e: This series of five photographs shows the effect of 6% sodium hypochlorite on a piece of turkey meat over a four hour period.



7a; before application of sodium hypochlorite

7b; after 1 hour

7c; after 2 hours

7d; after 3 hours

7e; after 4 hours

the majority of the microorganisms found in contaminated root canal systems. The smear layer should be completely removed to allow antimicrobial agents to penetrate into the dentinal tubules^{21, 31}. In addition, many clinicians and researchers recommend removal of the smear layer as a means of enhancing the adaptation of the obturation material to the canal wall. This is beneficial when gutta percha is used as an obturating material but is essential if a resin-based obturating material is used³² (Figure 5). No clinically safe single irrigant is capable of totally removing the smear layer and so combinations of solutions are currently recommended. A number of the most commonly used endodontic irrigants will now be discussed.

Sodium Hypochlorite

Sodium Hypochlorite (Figure 6) is undoubtedly the most widely recommended endodontic irrigant. It is both an oxidizing and hydrolysing agent³³. Traditionally it has been produced by bubbling chlorine gas through a solution of sodium hydroxide (NaOH).



Alternatively it can be produced by subjecting a saturated saline solution to electrolysis, which produces free chlorine and sodium ions. The sodium ions diffuse through a membrane and combine with water to form sodium hydroxide. The free chlorine ions combine to form chlorine gas, which in turn dissolves in the sodium hydroxide to form sodium hypochlorite, salt and water³⁴.

A weak solution of sodium hypochlorite was initially used in medicine by Dakin in 1915 as a wound disinfectant on the battlefields of World

War I and has been credited with saving many lives that might otherwise have been lost to gangrenous infection. Dakin's solution was effective due to its ability to dissolve necrotic tissue at the edge of the battle wounds thereby exposing healthy wound extremities that were more likely to heal thereby preventing gangrene. It had only minor inflammatory effects on the adjacent vital tissues. Sodium Hypochlorite has been used as an irrigant in dentistry since Walker recommended its use in the treatment of pulpless teeth in 1936. Its tissue dissolving capabilities in root canal treatment has been widely reported^{24, 35, 36, 37, 38, 39}. Higher concentrations, up to 6% solutions, are significantly more effective at dissolving tissue than lower concentrations^{40, 41}. Exposure of the tissue to sodium hypochlorite for increasing time intervals also results in a significant increase in the tissue dissolving properties⁴¹ (Figures 7a, 7b, 7c, 7d, 7e). Likewise, increasing the temperature^{42, 43, 44, 45} and ultrasonically energizing⁴⁶⁻⁴⁸ the sodium hypochlorite solution enhances its tissue dissolving action. Abou-Rass and Oglesby showed that the best solvent power was obtained with a 5.25% solution at 60°C⁴⁹.

Ethylenediaminetetraacetic acid (EDTA)

While sodium hypochlorite is an effective disinfectant and organic tissue solvent it has little or no effect on the removal of the inorganic component of the smear layer. In order to do this a 17% solution of ethylenediaminetetraacetic acid (EDTA) (Figure 8) is recommended. EDTA is a weak acid and is a chelator that reacts with calcium ions in the hydroxyapatite crystals of the dentine to produce a metallic



Figure 8:
Commercially available 17% Ethylenediaminetetra acetic acid; REDTA from the Roth Corporation, Chicah, IL, USA.



Figure 9:
Smear Clear



Figure 10:
2% Chlorhexidine in an alcohol base.

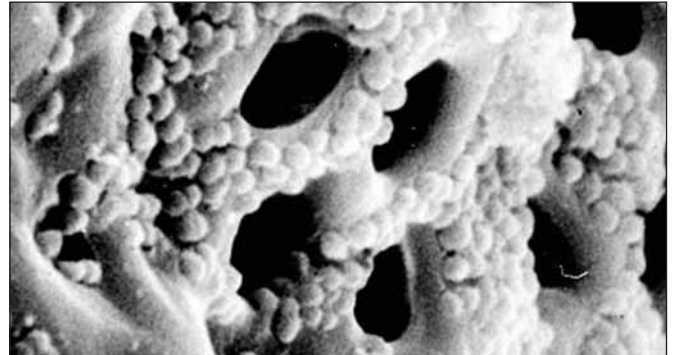


Figure 11: Structure of a Biofilm formed on a root surface.

chelate. Removal of calcium ions from the dentine softens the dentinal tissue, especially the hydroxyapatite-rich peritubular dentine and increases the diameter of exposed dentinal tubules. However this effect has been believed to be self-limiting⁵⁰ although it has recently been shown to cause erosion of the dentinal tubules following irrigation with sodium hypochlorite²⁵. An added benefit of EDTA is its antibacterial property that has been demonstrated to be as effective as 0.5% sodium hypochlorite against black pigmented anaerobes and facultative bacteria in the agar diffusion test model⁵¹. Other closely related chelating solutions include REDTA and EGTA. REDTA is a commercial EDTA preparation comprising EDTA, cetyl-trimethylammonium bromide, sodium hydroxide and distilled water and has very similar properties to EDTA. Ethylene glycol-bis tetraacetic acid (EGTA) is not as corrosive as EDTA however it is also not as effective in removing the smear layer. A commercial product called SmearClear[®] (Figure 9) containing 17%EDTA, cetrimide and proprietary surfactants is also available. When compared to other EDTA containing solutions, Smear Clear removed the smear layer more effectively at the coronal, middle and apical thirds of the root canal system⁵²

Chlorhexidine

Chlorhexidine gluconate (Figure 10) has shown promise as an endodontic irrigant^{20, 53}. It is a cationic bisbiguanide with optimal antimicrobial action ranging from pH 5.5 to 7.0. It has a broad spectrum of activity against Gram-positive and Gram-negative bacteria, bacterial spores, lipophilic viruses, yeast and dermatophytes, being bacteriostatic in low doses and bactericidal in high doses²². Its antimicrobial properties are thought to result from disruption of the bacterial cytoplasmic membrane causing leakage of intracellular contents. An added advantage of chlorhexidine gluconate is its 'substantivity' or residual action⁵³. Gomes *et al.* (2001) evaluated the effectiveness of various concentrations of chlorhexidine gluconate and sodium hypochlorite against *E. faecalis* in a broth dilution model⁵⁴. All irrigants were effective in killing the bacteria tested, but at different

times. Chlorhexidine gluconate liquid 1% and 2% and 5.25% sodium hypochlorite took less time (<30 seconds) to kill *E. faecalis* than the other solutions tested⁵⁴. Other studies have found chlorhexidine to be a useful antimicrobial agent but less effective than high concentrations of sodium hypochlorite^{51, 55}.

Electrochemically activated water

Historically, microbes were often thought of as existing solely as individual, rapidly dividing, free floating cells (planktonic form) whereas in fact most microbes live in communities called biofilms. Bacteria exist in water lines in industrial and medical facilities either in a planktonic form or as a biofilm (Figure 11). Their existence in biofilms confers on them properties that make them significantly more resistant to antimicrobial agents than those existing in the planktonic state⁵⁶. Recently new technology has been introduced in hospital settings specifically aimed at destroying biofilm on endoscopes and in waterlines. The same technology is now available for use in the dental surgery water lines and involves the production of an irrigant known as 'Electrochemically activated water'^{57, 58} or 'Oxidative potential water'^{59, 60}. These solutions are generated by electrolysing saline solution into anolyte and catholyte products.

The existence of biofilm in root canals has only recently attracted the attention of researchers⁶¹ and the effectiveness of existing irrigants in removing microorganisms is under review. The use of the products 'Oxidative potential water' or electrochemically activated water processes as endodontic irrigants have been investigated^{57-60, 62-64}. They have been shown to be antimicrobial^{62, 63, 65}, effective in canal debridement⁵⁸ and smear layer removal⁵⁹. Coupled with the reputed reduction in toxicity and damage to dentine structure, these solutions may offer an alternative to existing endodontic irrigants.

Photo activated disinfection.

Disinfection of root canals with laser irradiation of pre-tagged microorganisms has recently attracted some attention in the endodontic literature^{5, 66}. The microorganisms were 'sensitised' with

SCIENTIFIC



Figure 12a, 12b: MTAD (BioPure®) Dentsply, USA, contains doxycycline hydrochloride, citric acid and Tween-80 detergent. It is supplied in a powder/liquid presentation, which must be mixed freshly before use.

Toluidine Blue O (TBO) and irradiated with a helium-neon gas laser. It was shown to be bactericidal in root canals but less effective than a 3% solution of sodium hypochlorite.

MTAD (BioPure®)

Concern has been voiced in recent years about the potential damage being inflicted on the root dentine structure by endodontic irrigants. There is a widely held belief that root-treated teeth are weakened and more susceptible to fracture than vital teeth. The proposed main causes may be divided broadly into three areas. It is probable that these factors interact cumulatively to influence the possibility of fracture of the root. These main factors are loss of tooth tissue, altered physical properties of dentine and altered proprioception.

Intracanal irrigants, medicaments and materials may play a part in altering the physical and mechanical properties of dentine. Sodium hypochlorite has been shown to reduce the elastic modulus and flexural strength of the root dentine to a point that may weaken the tooth^{21, 25, 67-69}. EDTA chelates with Ca ions and other divalent cations and when used in combination with sodium hypochlorite not only removes the smear layer but may cause erosion of the dentine tubules⁷⁰.

In order to avoid this potential problem an irrigant has recently been developed which claims to remove the smear layer without significantly changing the structure of the dentinal tubules²⁵. This solution was first marketed in 2005 as BioPure®MTAD® (Figures 12a, 12b) from Tulsa Dentsply, USA, and consists of a mixture of doxycycline, citric acid and a detergent Tween-80 (Polysorbate-80). Doxycycline is a broad spectrum antibiotic effective against a wide range of microorganisms. It is bacteriostatic and like chlorhexidine has been shown to possess substantivity when used on the root surface. Doxycycline has a low pH, acts as a calcium chelator, and its application results in root surface demineralisation. It has been demonstrated to be effective in removing the smear layer⁷¹. Polysorbate-80 is a nonionic surfactant and emulsifier derived from sorbitol. It lowers

surface tension thereby facilitating the penetration of the irrigant in the canal system. Due to its low pH, citric acid is an effective chelating agent removing the smear layer at concentrations of 10%, 25% and 50%³⁵. Citric acid has also been shown to demonstrate antibacterial properties against anaerobic bacteria isolated from infected root canals⁷². BioPure®MTAD® is biocompatible⁷³ and has been shown to remove the smear layer following irrigation with sodium hypochlorite while maintaining the integrity of the dentinal tubules^{25, 74}. MTAD has been shown to bind to dentine, a property (believed to result from the affinity of doxycycline for dentine) that may confer the property of substantivity to the solution⁷⁵. A major disadvantage of MTAD is its lack of tissue dissolving properties⁷⁵ and therefore must be used in conjunction with sodium hypochlorite. When the MTAD protocol for clinical use is followed (20 minutes of 1.3% NaOCl followed by a five minute rinse of BioPure®MTAD®, MTAD does not appear to alter the physical properties of dentine²³ and creates a dentine layer acceptable for adhesive bonding⁷⁶. Torabinejad *et al.*⁷⁷ investigated the ability of MTAD to kill the microorganism *E. faecalis* that is frequently associated with refractory retreatment cases and compared its efficacy to that of NaOCl and EDTA. Their results suggest that BioPure®MTAD® was as effective as 5.25% sodium hypochlorite. However, a more recent study⁷⁸ showed that the BioPure®MTAD® was completely ineffective against *E. faecalis*. Further independent research is necessary before recommendations can be made regarding the efficacy of BioPure®MTAD® as an antimicrobial agent.

Which is the best protocol to follow for root canal irrigation?

At the present time there is no one solution that will fulfil all the requirements of an ideal root canal irrigant. However it is important to emphasise that the use of neutral solutions such as water, saline or anaesthetic solutions serves no useful purpose⁷⁹. However, a protocol that we currently recommend based on sound research involves copious irrigation for a minimum of

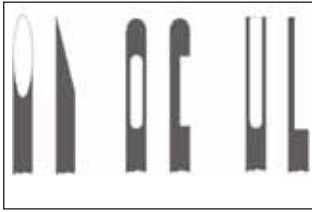


Figure 13a: Diagrams illustrating the tips of various needles available for use with endodontic irrigants. The needle on the left is a traditional needle tip and is not recommended for use in endodontics. The next two are both side venting needles which reduces the chance of extrusion of hypochlorite through the apex. The middle needle is a Maxi-Probe (**Figure 13c**) type needle which is supplied in a number of sizes from 23 to 30 gauge.



Figure 13b, 13c.

High power photographs of side venting needle tips.



Figure 13d: Extrusion of irrigant from the side-venting needle tip.

21 G \approx 80

23 G \approx 70

25 G \approx 50

28 G \approx 40

30 G \approx 30

Table 2: Approximate size of irrigating needles relative to instrument size.

twenty minutes with 2.5% to 6% solutions of sodium hypochlorite for tissue dissolution and disinfection followed by a rinse with a 17% solution of ethylenediaminetetraacetic acid for removal of the inorganic component of the smear layer. A final rinse with 2% chlorhexidine for additional disinfection effects with substantivity is also recommended. The canals are dried with high volume aspirators and sterile paper points. Many clinicians choose to enhance the drying of the canal by using isopropyl alcohol as a drying agent prior to obturation.

Effective delivery of solutions to all part of the canal system is crucial to the success of the débridement procedures⁸⁰. Portions of the canal system are routinely left untouched following root canal preparation^{81, 82} and this fact emphasizes the essential role of the chemical support for mechanical debridement. It has long been recognised that the apical extent of effectiveness of irrigation is a function of the depth of insertion of the needle and small bore needles are more effective than large ones⁸³. A recent study⁸⁴ demonstrated that delivery of the irrigant to within 1mm of the apex of the root is necessary for effective elimination of bacteria from the apical portion of the canal system. This supports the findings of an earlier study⁸⁰ that stated that the irrigating needle should reach to within 2mm of working length in order to achieve maximal debris removal. Disposable plastic syringes with 23, 25, 27 or 30-gauge, side venting, blunted needles (Figure 13a, 13b, 13c) are available for endodontic irrigation. The gauge of the needle should be small enough to allow for deep penetration of the canal system. The depth of penetration of the needle will be determined by the gauge of the needle and the size of the apical preparation. The approximate size of the needle as it relates to instrument size is shown in Table 2.

The needle may be bent in order to facilitate access to both anterior and posterior teeth. Irrigants can also be efficiently delivered to the apical extent of the canal using sonically or ⁸⁵



Figure 14: Unfortunate procedural error caused by extrusion of hypochlorite through a buccal perforation in the upper central incisor on a ten year old boy. The patient required extensive restorative and periodontal surgical treatment to correct the resulting defect.

ultrasonically energized files⁸⁶. Delivery is significantly enhanced in canals with greater taper preparations⁸⁷.

Irrigants must never be forcibly injected into the canal but instead should be delivered passively to prevent extrusion into the periapical tissues. This applies particularly to caustic irrigants such as sodium hypochlorite. A number of short- and long-term consequences have been reported following accidental extrusion of sodium hypochlorite beyond the confines of the root canal system (Figure 14). Immediately following extrusion of the hypochlorite the patient frequently reports intense pain, which is quickly followed by profuse bleeding from the canal and rapid facial swelling in the area of the procedural error⁸⁸⁻⁹⁰. The swelling can become so extensive that the airway is compromised and this constitutes a serious medical emergency necessitating immediate hospitalisation. Paresthesia may result and this can last

SCIENTIFIC

for extended periods of time²⁶. The tissue may slough and cause long-term soft tissue defects. Periapical tissue damage is likely to be more pronounced in teeth with root canals having large diameter apices⁹¹ and in cases with perforations. Great care must be taken in these situations to avoid unwanted sequelae. Hypersensitivity reaction to NaOCl have been reported⁹². The taste of NaOCl is very unpleasant and this alone justifies the placement of rubber dam even if one fails to consider other overriding factors. In addition, adequate protection must be provided for the patient's and dental personnels' eyes, skin and clothing.

Should hypochlorite be extruded into the periapical tissues it is important to immediately dilute the solution by irrigating the canal with saline or any readily available sterile solution. Local anaesthesia should be administered in order to relieve the pain and the patient should be reassured. Adjunctive therapies include the use of antihistamines, methylprednisolone such as a Medrol Dose Pak®, and broad-spectrum antibiotics.

Conclusion

In conclusion, chemomechanical preparation of the root canal system with appropriate chemical support effectively delivered is essential for the success of non-surgical endodontic treatment.

References

1. **Miller WD.** An introduction to the study of the bacteriopathology of the dental pulp. *Dent Cosmos* 1894;36:505-28.
2. **Kakehashi S, Stanley HR, Fitzgerald RJ.** The effects of surgical exposures of dental pulps in germ-free and conventional laboratory rats. *Oral Surgery, Oral Medicine, Oral Pathology* 1965;20:340-48.
3. **Sundqvist G.** Bacteriological studies of necrotic dental pulps [doctoral dissertation]. Umea, Sweden: University of Umea; 1976.
4. **Ramachandran Nair PN.** Light and electron microscopic studies of root canal flora and periapical lesions. *J Endod* 1987;13(1):29-39.
5. **Seal GJ, Ng YL, Spratt D, Bhatti M, Gulabivala K.** An in vitro comparison of the bactericidal efficacy of lethal photosensitization or sodium hypochlorite irrigation on *Streptococcus intermedius* biofilms in root canals. *Int Endod J* 2002;35(3):268-74.
6. **Mageean JF.** The significance of root canal morphology in endodontics. *J Br Endod Soc* 1972;6(3):67-70.
7. **Vertucci FJ.** The endodontic significance of the mesiobuccal root of the maxillary first molar. *US Navy Med* 1974;63(5):29-31.
8. **Skidmore AE, Bjorndal AM.** Root canal morphology of the human mandibular first molar. *Oral Surg Oral Med Oral Pathol* 1971;32(5):778-84.
9. **Fischer CH.** Accessory root canals. *Quintessence Int* 1972;3(11):33-5.
10. **Vertucci F, Seelig A, Gillis R.** Root canal morphology of the human maxillary second premolar. *Oral Surg Oral Med Oral Pathol* 1974;38(3):456-64.
11. **Walker RT.** Root form and canal anatomy of mandibular first molars in a southern Chinese population. *Endod Dent Traumatol* 1988;4(1):19-22.
12. **Manning SA.** Root canal anatomy of mandibular second molars. Part II. C-shaped canals. *Int Endod J* 1990;23(1):40-5.
13. **Manning SA.** Variations in root canal anatomy. *N Z Dent J* 1991;87(388):52-6.
14. **Witherspoon D.** Root canal preparation. *Tex Dent* 1997;114(10):58-65.
15. **Coolidge ED.** Endodontics in 1957. *J Am Dent Assoc* 1958;56(5):620-5.
16. **Stewart GG.** The importance of chemomechanical preparation of the root canal. *Oral Surg Oral Med Oral Pathol* 1955;8(9):993-7.
17. **Grossman LI.** [Endodontia.]. *Rev Asoc Odontol Argent* 1955;43(9):353-66.
18. **Bystrom A, Sundqvist G.** Bacteriologic evaluation of the efficacy of mechanical root canal instrumentation in endodontic therapy. *Scand J Dent Res* 1981;89(4):321-8.
19. **Bystrom A, Sundqvist G.** The antibacterial action of sodium hypochlorite and EDTA in 60 cases of endodontic therapy. *Int Endod J* 1985;18(1):35-40.
20. **Jeanson MJ, White RR.** A comparison of 2.0% chlorhexidine gluconate and 5.25% sodium hypochlorite as antimicrobial endodontic irrigants. *J Endod* 1994;20(6):276-8.
21. **Torabinejad M, Handysides R, Khademi AA, Bakland LK.** Clinical implications of the smear layer in endodontics: a review. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2002;94(6):658-66.
22. **Leonardo MR, Tanomaru Filho M, Silva LA, Nelson Filho P, Bonifacio KC, Ito IY.** In vivo antimicrobial activity of 2% chlorhexidine used as a root canal irrigating solution. *J Endod* 1999;25(3):167-71.
23. **Machnick TK, Torabinejad M, Munoz CA, Shabahang S.** Effect of MTAD on flexural strength and modulus of elasticity of dentin. *J Endod* 2003;29(11):747-50.
24. **Senia ES, Marshall FJ, Rosen S.** The solvent action of sodium hypochlorite on pulp tissue of extracted teeth. *Oral Surg Oral Med Oral Pathol* 1971;31(1):96-103.
25. **Torabinejad M, Khademi AA, Babagoli J, Cho Y, Johnson WB, Bozhilov K, et al.** A new solution for the removal of the smear layer. *J Endod* 2003;29(3):170-5.
26. **Reeh ES, Messer HH.** Long-term paresthesia following inadvertent forcing of sodium hypochlorite through perforation in maxillary incisor. *Endod Dent Traumatol* 1989;5(4):200-3.
27. **Spangberg L, Engstrom B, Langeland K.** Biologic effects of dental materials. 3. Toxicity and antimicrobial effect of endodontic antiseptics in vitro. *Oral Surg Oral Med Oral Pathol*; 1973. p. 856-71.
28. **Mader CL, Baumgartner JC, Peters DD.** Scanning electron microscopic investigation of the smeared layer on root canal walls. *J Endod* 1984;10(10):477-83.
29. **McComb D, Smith DC.** A preliminary scanning electron microscopic study of root canals after endodontic procedures. *J Endod* 1975;1(7):238-42.
30. **Moodnik RM, Dorn SO, Feldman MJ, Levey M, Borden BG.** Efficacy of biomechanical instrumentation: a scanning electron microscopic study. *J Endod* 1976;2(9):261-6.

31. **Orstavik D, Haapasalo M.** Disinfection by endodontic irrigants and dressings of experimentally infected dentinal tubules. *Endod Dent Traumatol* 1990;6(4):142-9.
32. **Shipper G, Orstavik D, Teixeira FB, Trope M.** An evaluation of microbial leakage in roots filled with a thermoplastic synthetic polymer-based root canal filling material (Resilon). *J Endod* 2004;30(5):342-7.
33. **Pashley EL, Birdsong, N. L., Bowman, N. L., Pashley, D. H.** Cytotoxic effects of NaOCL on vital tissues. *Journal of Endodontics* 1985;11:525-8.
34. **Clarkson RM, Moule AJ.** Sodium hypochlorite and its use as an endodontic irrigant. *Aust Dent J* 1998;43(4):250-6.
35. **Baumgartner JC, Brown CM, Mader CL, Peters DD, Shulman JD.** A scanning electron microscopic evaluation of root canal debridement using saline, sodium hypochlorite, and citric acid. *J Endod* 1984;10(11):525-31.
36. **Moorer WRaW, P. R.** Factors promoting the tissue dissolving capability of sodium hypochlorite. *International Endodontic Journal* 1982;15:187-96.
37. **Hand RE, Smith ML, Harrison JW.** Analysis of the effect of dilution on the necrotic tissue dissolution property of sodium hypochlorite. *J Endod* 1978;4(2):60-4.
38. **Koskinen KP, Stenvall H, Uitto VJ.** Dissolution of bovine pulp tissue by endodontic solutions. *Scand J Dent Res* 1980;88(5):406-11.
39. **Rosenfeld EF, James GA, Burch BS.** Vital pulp tissue response to sodium hypochlorite. *J Endod* 1978;4(5):140-6.
40. **Chu GT, Fleury, A. A. P., Murray, P., Flax, M. D.** The ability of different concentrations of NaOCL to dissolve and reduce the weight of bovine pulp tissue in vitro. *Journal of Endodontics* 2004;30(4):274.
41. **Miller SO, Johnson JD, Allemang JD, Strother JM.** Cold testing through full-coverage restorations. *J Endod* 2004;30(10):695-700.
42. **Berutti E, Marini R.** A scanning electron microscopic evaluation of the debridement capability of sodium hypochlorite at different temperatures. *J Endod* 1996;22(9):467-70.
43. **Cunningham WT, Balekjian AY.** Effect of temperature on collagen-dissolving ability of sodium hypochlorite endodontic irrigant. *Oral Surg Oral Med Oral Pathol* 1980;49(2):175-7.
44. **Gambarini G, De Luca M, Gerosa R.** Chemical stability of heated sodium hypochlorite endodontic irrigants. *J Endod* 1998;24(6):432-4.
45. **The SD.** The solvent action of sodium hypochlorite on fixed and unfixed necrotic tissue. *Oral Surg Oral Med Oral Pathol* 1979;47(6):558-61.
46. **Cunningham WT, Martin H, Forrest WR.** Evaluation of root canal debridement by the endosonic ultrasonic synergistic system. *Oral Surg Oral Med Oral Pathol* 1982;53(4):401-4.
47. **Martin H, Cunningham W.** Endosonics—the ultrasonic synergistic system of endodontics. *Endod Dent Traumatol* 1985;1(6):201-6.
48. **Cameron JA.** The synergistic relationship between ultrasound and sodium hypochlorite: a scanning electron microscope evaluation. *J Endod* 1987;13(11):541-5.
49. **Abou-Rass M, Oglesby SW.** The effects of temperature, concentration, and tissue type on the solvent ability of sodium hypochlorite. *J Endod* 1981;7(8):376-7.
50. **Goldberg F, Spielberg C.** The effect of EDTAC and the variation of its working time analyzed with scanning electron microscopy. *Oral Surg Oral Med Oral Pathol* 1982;53(1):74-7.
51. **Siqueira Junior J, Rocas IN, Oliveira JC.** Prevalence of *Prevotella intermedia* and *Prevotella nigrescens* in infected root canals from a Brazilian population. *Aust Endod J* 2000;26(3):110-2.
52. **Jantarat J, Yanpiset K, Harnirattisai C.** Evaluation of smear layer removal by a new EDTA formula on root canal dentin: a scanning electron microscopic study. Submitted for publication 2004.
53. **White RR, Hays GL, Janer LR.** Residual antimicrobial activity after canal irrigation with chlorhexidine. *J Endod* 1997;23(4):229-31.
54. **Gomes BP, Ferraz CC, Vianna ME, Berber VB, Teixeira FB, Souza-Filho FJ.** In vitro antimicrobial activity of several concentrations of sodium hypochlorite and chlorhexidine gluconate in the elimination of *Enterococcus faecalis*. *Int Endod J* 2001;34(6):424-8.
55. **Spratt DA, Pratten J, Wilson M, Gulabivala K.** An in vitro evaluation of the antimicrobial efficacy of irrigants on biofilms of root canal isolates. *Int Endod J* 2001;34(4):300-7.
56. **Wilson M.** Susceptibility of oral bacterial biofilms to antimicrobial agents. *Journal of Medical Microbiology* 1996;44:79-87.
57. **Marais JT.** Cleaning efficacy of a new root canal irrigation solution: a preliminary evaluation. *Int Endod J* 2000;33(4):320-5.
58. **Solovyeva AM, Dummer PM.** Cleaning effectiveness of root canal irrigation with electrochemically activated anolyte and catholyte solutions: a pilot study. *Int Endod J* 2000;33(6):494-504.
59. **Hata G, Uemura M, Weine FS, Toda T.** Removal of smear layer in the root canal using oxidative potential water. *J Endod* 1996;22(12):643-5.
60. **Serper A, Calt S, Dogan AL, Guc D, Ozcelik B, Kuraner T.** Comparison of the cytotoxic effects and smear layer removing capacity of oxidative potential water, NaOCl and EDTA. *J Oral Sci* 2001;43(4):233-8.
61. **Sen BH, Safavi KE, Spangberg LS.** Antifungal effects of sodium hypochlorite and chlorhexidine in root canals. *J Endod* 1999;25(4):235-8.
62. **Marais JT, Williams WP.** Antimicrobial effectiveness of electrochemically activated water as an endodontic irrigation solution. *Int Endod J* 2001;34(3):237-43.
63. **Gulabivala K, Stock CJ, Lewsey JD, Ghori S, Ng YL, Spratt DA.** Effectiveness of electrochemically activated water as an irrigant in an infected tooth model. *Int Endod J* 2004;37(9):624-31.
64. **Hata G, Hayami S, Weine FS, Toda T.** Effectiveness of oxidative potential water as a root canal irrigant. *Int Endod J* 2001;34(4):308-17.

SCIENTIFIC

65. **Horiba N, Hiratsuka K, Onoe T, Yoshida T, Suzuki K, Matsumoto T, et al.** Bactericidal effect of electrolyzed neutral water on bacteria isolated from infected root canals. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1999;87(1):83-7.
66. **Poh Y-J NY-L, Spratt D, Gulabivala K, Bhatti M** Lethal photosensitisation of root canal *Fusobacterium nucleatum* isolates. (abstract). *Internation Endodontic Journal* 2000 33:74.
67. **Sim TP, Knowles JC, Ng YL, Shelton J, Gulabivala K.** Effect of sodium hypochlorite on mechanical properties of dentine and tooth surface strain. *Int Endod J* 2001;34(2):120-32.
68. **Goldsmith M, Gulabivala K, Knowles JC.** The effect of sodium hypochlorite irrigant concentration on tooth surface strain. *J Endod* 2002;28(8):575-9.
69. **Grigoratos D, Knowles J, Ng YL, Gulabivala K.** Effect of exposing dentine to sodium hypochlorite and calcium hydroxide on its flexural strength and elastic modulus. *Int Endod J* 2001;34(2):113-9.
70. **Calt S, Serper A.** Time-dependent effects of EDTA on dentin structures. *J Endod* 2002;28(1):17-9.
71. **Barkhordar RA, Watanabe LG, Marshall GW, Hussain MZ.** Removal of intracanal smear by doxycycline in vitro. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1997;84(4):420-3.
72. **Georgopoulou M, Kontakiotis E, Nakou M.** Evaluation of the antimicrobial effectiveness of citric acid and sodium hypochlorite on the anaerobic flora of the infected root canal. *Int Endod J* 1994;27(3):139-43.
73. **Zhang W, Torabinejad M, Li Y.** Evaluation of cytotoxicity of MTAD using the MTT-tetrazolium method. *J Endod* 2003;29(10):654-7.
74. **Torabinejad M, Cho Y, Khademi AA, Bakland LK, Shabahang S.**
The effect of various concentrations of sodium hypochlorite on the ability of MTAD to remove the smear layer. *J Endod* 2003;29(4):233-9.
75. **Beltz RE, Torabinejad M, Pouresmail M.** Quantitative analysis of the solubilizing action of MTAD, sodium hypochlorite, and EDTA on bovine pulp and dentin. *J Endod* 2003;29(5):334-7.
76. **Machnick TK, Torabinejad M, Munoz CA, Shabahang S.** Effect of MTAD on the bond strength to enamel and dentin. *J Endod* 2003;29(12):818-21.
77. **Torabinejad M, Shabahang S, Aprecio RM, Kettering JD.** The antimicrobial effect of MTAD: an in vitro investigation. *J Endod* 2003;29(6):400-3.
78. **Dunavant RT, Regan JD, N. GG, S. SE, L. HA.** Comparative effectiveness of endodontic irrigants against enterococcus faecalis biofilms. *Journal of Endodontics In Press.* 2006;32.
79. **Gutmann J, Dumsha, T., Lovdahl, P. E.** Problem solving in the use of irrigants, chelating agents, and disinfectants: their role in tissue removal and microbial control. 4th. ed. St. Louis, Missouri.: Elsevier Mosby; 2005.
80. **Abou-Rass M, Piccinino MV.** The effectiveness of four clinical irrigation methods on the removal of root canal debris. *Oral Surg Oral Med Oral Pathol* 1982;54(3):323-8.
81. **Mayer BE, Peters OA, Barbakow F.** Effects of rotary instruments and ultrasonic irrigation on debris and smear layer scores: a scanning electron microscopic study. *Int Endod J* 2002;35(7):582-9.
82. **Hulsmann M, Gressmann G, Schafers F.** A comparative study of root canal preparation using FlexMaster and HERO 642 rotary Ni-Ti instruments. *Int Endod J* 2003;36(5):358-66.
83. **Chow TW.** Mechanical effectiveness of root canal irrigation. *J Endod* 1983;9(11):475-9.
84. **Sedgley CM, Nagel AC, Hall D, Applegate B.** Influence of irrigant needle depth in removing bioluminescent bacteria inoculated into instrumented root canals using real-time imaging in vitro. *Int Endod J* 2005;38(2):97-104.
85. **Panitvisai P.** [Endosonics: a new era of endodontic therapy?]. *J Dent Assoc Thai* 1990;40(3):129-38.
86. **Ahmad M, Roy RA, Kamarudin AG.** Observations of acoustic streaming fields around an oscillating ultrasonic file. *Endod Dent Traumatol* 1992;8(5):189-94.
87. **van der Sluis LW, Wu MK, Wesselink PR.** The efficacy of ultrasonic irrigation to remove artificially placed dentine debris from human root canals prepared using instruments of varying taper. *Int Endod J* 2005;38(10):764-8.
88. **Ehrlich DG, Brian JD, Jr., Walker WA.** Sodium hypochlorite accident: inadvertent injection into the maxillary sinus. *J Endod* 1993;19(4):180-2.
89. **Becking AG.** Complications in the use of sodium hypochlorite during endodontic treatment. Report of three cases. *Oral Surg Oral Med Oral Pathol* 1991;71(3):346-8.
90. **Becker GL, Cohen S, Borer R.** The sequelae of accidentally injecting sodium hypochlorite beyond the root apex. Report of a case. *Oral Surg Oral Med Oral Pathol* 1974;38(4):633-8.
91. **Salzgeber RM, Brilliant JD.** An in vivo evaluation of the penetration of an irrigating solution in root canals. *J Endod* 1977;3(10):394-8.
92. **Kaufman AY, Keila S.** Hypersensitivity to sodium hypochlorite. *J Endod* 1989;15(5):224-6.

An implant aesthetic hierarchy for optimal outcomes

George Priest
DMD Specialist Prosthodontist, Atlanta, Georgia, USA.

To achieve optimal aesthetics, the restorative influence must begin at the earliest phase of implant treatment, and not at the restorative phase. All members of the implant team must visualise the same end result. This presentation introduces an Implant Aesthetic Hierarchy.¹ The base of the hierarchy is site development, proceeding to implant placement, followed by soft tissue form, and at the apex, the restoration itself (Figure 1). As the peak is approached, the levels of the pyramidal-shaped hierarchy become smaller, illustrating that the restorative dentist has decreasing control as treatment progresses.

The base of the hierarchy is site development. If the site is not ideal, it must be developed first. The overriding prerequisite for predictable aesthetics is a pristine site for optimal implant placement (Figure 2). Atraumatic surgical techniques, superior bone grafting materials, and resorbable membranes have enhanced dentists' abilities to create optimum ridge form.

The second level of the hierarchy is implant placement. A well-developed site must be accompanied by an implant that is ideally positioned, preferably predicated on a restorative driven surgical guide (Figure 3). Aesthetic compromises in ideal sites can occur because the implants were placed with inadequate planning for the end result. The surface and design specifics of the implant can have a profound effect on bone maintenance and preservation.

Soft tissue form, the third level of the hierarchy, is determined by successful outcomes at the first two levels. The volume of soft tissue that exists around an implant, defined as the biologic width, is ultimately established by the bone that supports it. The dentist and technician redistribute a fixed volume of soft tissue with the abutment and restoration to simulate normal gingival architecture. Computer-aided designed and computer-aided manufactured (CAD/CAM) patient specific abutments provide the necessary subgingival support to optimise peri-implant levels (Figure 4).

At the restorative phase of therapy, the apex of the hierarchy, the aesthetic potential of the implant restoration has been pre-determined by the outcomes of the previous three levels. At this point, only shade and crown contours can be manipulated. Restorative dentists must have a thorough understanding of tooth colour and crown contours to objectively communicate with the laboratory technician in order to meet their patients' aesthetic expectations (Figure 5).

¹ Priest, GF. Implant esthetics: Toward predictable outcomes. *Dental Practice Report* 2005;13(9):50-54.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

ABSTRACTS

Systematic review of survival rates for immediately loaded dental implants

Del Fabbro, Massimo *et al.*

Abstract

The primary goal of this paper was to determine the survival rate of immediately loaded (IL) dental implants based on a systematic review of the literature. Secondary goals were to determine the influence of several factors on the implant survival rate, such as the type of reconstruction, implant location, and implant surface characteristics. An electronic search of databases was performed, in addition to a hand search of the most relevant journals. All relevant articles were independently screened according to specific inclusion criteria. The selected papers were reviewed. The literature search yielded 270 applicable articles up to December 2005. Of these, 71 met the inclusion criteria for qualitative data analysis. Eight articles were randomised controlled trials. The overall implant survival rate for the included studies was 96.39%. The database included 10,491 IL implants placed in 2,977 patients, with a maximum follow-up of 13 years. IL is well documented and predictable for the edentulous mandible (overdentures and full-arch prostheses) and for maxillary single crowns. Fewer data were found for maxillary full-arch reconstructions, fixed partial prostheses, and mandibular single crowns. For the latter two types of reconstructions, implants placed in anterior sites generally displayed a higher survival rate versus those placed in posterior sites. Rough surfaces displayed a higher survival rate than machined surfaces in all types of reconstructions. Most failures (97.1%) occurred within the first 12 months of loading. This review showed that it is possible to apply IL with excellent survival rates. Implant micromorphology and careful patient selection may affect treatment outcomes.

International Journal of Periodontics and Restorative Dentistry, May/June 2006, Volume 26, Issue 3.

Further dental treatment needs of children receiving exodontia under general anaesthesia at a teaching hospital in the UK

Kakaounaki, E. *et al.*

Abstract

The aim of this study was to investigate the subsequent dental treatment needs of children who had dental extractions under general anaesthesia (GA) in 1997 in the Day Case Unit at Leeds Dental Institute (LDI), Leeds, UK, and the reasons for repeat dental GAs (DGAs).

Study design

The authors conducted a retrospective longitudinal analysis.

Subjects and methods

Information collected from hospital records for the six-year period following the first DGA included: reasons for the DGA in 1997 and teeth extracted; the number of subsequent DGAs, reasons and treatment; incidents of and reasons for toothache or swelling after 1997; treatment under local anaesthesia (LA) or inhalation sedation (IS) at LDI during the 6 years following the DGA in 1997.

Results

The study population consisted of 484 children, who received GA exodontia at LDI with a mean age of 6.35 years [95% confidence interval (CI) = 6.1, 6.6] and age range of 1-16 years. The most common reason for extractions at the original DGA in 1997 was dental caries, and the mean number of extractions was 4.24 (95% CI = 4.05, 4.43). Primary teeth extractions accounted for 82% of the cases. In total, 143 children (27.5%) had a record of follow-up treatment at LDI. Of these children, 32% had treatment under LA, 7% under LA and IS, and 15% received preventive care only. The overall repeat rate for DGA was 10.7%, with caries (84%) being the main reason for this. Of the teeth subsequently extracted, 72% were recorded as caries-free or unerupted at the time of the DGA in 1997.

Conclusions

A large proportion of the follow-up visits were to treat newly developed dental disease during the 6 years following the DGA in 1997. A more proactive approach towards preventive care may have resulted in the reduction of the development of new dental disease.

International Journal of Paediatric Dentistry, 2006, volume 16, issue 4, page 263.

Abscess of the orbit arising 48 hours after root canal treatment of a maxillary first molar

Koch, F., *et al.*

Abstract

Aim

To discuss a rare, but severe complication arising following routine root canal treatment.

Summary

An orbital abscess is reported that occurred following routine root canal treatment. A young, healthy female patient, with no history of chronic paranasal infection had undergone root canal treatment of the right maxillary first molar. On hospital admission, she presented with extensive periorbital swelling and discreet diplopia. Computed tomography imaging identified massive purulent sinusitis and subsequent involvement of the orbit via the inferior and medial orbital wall within 48 hours after completion of root canal treatment. Immediate surgical drainage of the maxillary sinus and the orbit was established and a high dose of perioperative antibiotics (Amoxicillin/Clavulanic acid, Gentamycin, Metronidazole) were administered. Vision remained undisturbed and mobility of the globe recovered within 10 days.

Key learning points

- Rapid exacerbation of a periapical inflammation may occur following root canal treatment and may even involve the orbit.
- A typical speed of disease progression or ophthalmic symptoms should alert the clinician to at least consider unusual early orbital spread of odontogenic infection.
- When extra-alveolar spread and especially orbital spread is suspected, immediate referral to a maxillofacial or other specialised unit is mandatory.

International Endodontic Journal, 2006, volume 39, issue 8, page 657.

Biphosphonate-associated osteonecrosis of the jaws: a guide for the general dental practitioner

Barker, Kate and Rogers, Simon.

Abstract

Bisphosphonates are used most commonly in the management of metastatic malignant disorders to bone and for osteoporosis. The number of patients on treatment is increasing. Although there is clear evidence of medical efficacy, there are increasing numbers of reports concerning bisphosphonate-associated osteonecrosis of the jaws. This side-effect poses significant problems and is very difficult to treat. The aim of this article is to outline the proposed pathogenesis, incidence, presenting signs and symptoms, and risk factors. Also, suggestions are made as to the most appropriate measures for prevention and management of bisphosphonate-associated jaw osteonecrosis.

Clinical Relevance: General dental practitioners have a key role to play in identifying patients at risk of developing bisphosphonate-associated osteonecrosis of the jaws, preventing occurrence of the condition and initiating early specialist referral.

Dent. Update 2006; 33: 270-275.

Answers to the quiz on page 106	(unlikely in age group)
What do you believe is the diagnosis?	1) Well defined radiolucency with a cortical margin
What tests would you undertake?	2) Ovoid or heart shaped due to presence of anterior nasal spine/septum and bilateral lamina dura
Further radiographs, periapical vitality test incisors. These are usually vital if the diagnosis is a nasopalatine cyst	3) Usually intact lamina dura around teeth
Pathological diagnosis – aspiration and excision biopsy	4) Usually no dental resorption
odontogenic cyst	What is the differential diagnosis?
Dental infection/dental cyst	1) Odontogenic or non-
Nasopalatine cyst	2) Normal anatomy (unlikely because of size < 6 mm)
Keartacocyst	3) Brown tumour
	4) Nasal lesion (hypoparathyroidism)
	5) Lymphoma
	6) Tumour

Selling a dental practice?

Roy Keane famously equated a failure to plan with planning to fail. In this article, DR NIAL JENNINGS of Innovative Irish Dental Services makes the same connection between dentists who fail to plan their exit from the profession when retirement beckons.



Many dentists are under the false impression that their dental practice is some sort of pension fund and that they can retire comfortably based on the proceeds of the sale of this asset. Even worse, they feel that they can pick and choose nearly to the month when they will hang up their spurs. This is an out-dated opinion. They could not be more wrong. Dental practices, in the present climate, even with everything going for them, usually take six to 12 months to sell. Often the sale will drag on for up to two to three years, even in prime locations. This difficulty is not just based on price alone. In fact, money supply is not the problem as there are some very favourable deals out there with two or three specific banks. These deals can usually be accessed by the purchaser having a proper business plan.

Facilities often don't match service

As stated in previous articles, the vast majority of practices for sale in Ireland at present are still single-handed. Many of the owners are long-established, solid practitioners who have provided excellent service to the public for many years. Unfortunately, the same practitioners have not felt a need to match their facilities and ambience of their practices with their excellent dentistry. New, young, prospective purchasers (females currently account for over 40% and this is rising rapidly) are often astounded at the antiquated condition of many of the practices that are for sale.

The potential of the practice is being lost somewhere in their thoughts of:

- where do I even start to turn this practice around?; and,
- can I see myself working in these premises for the next 20 – 30 years?

Remember the vast majority of these prospective purchasers have never owned a practice before. Many are returning from the UK where the facilities are, in general, superb. (Statistics show that more foreign nationals registered last year with the Dental Council than Irish nationals). They are often astounded at the state of some of the practices.

In addition, many practices are not observing the recent health and safety and employment legislation in Ireland. For example, how many practices have actually got around to introducing staff contracts? My experience shows it is probably less than 10%. (See Dr. G. Heavey's Practice Management Course). This is illegal, dangerous and often leads to significant problems with the sale of a practice.



The big questions

1. Why are you selling?

This must be asked of yourself because the prospective purchaser will ask you directly. Are you burnt out, totally fed up with coal-face dentistry and want to retire fully? Or is it that you are tired running the show all on your own and you wish to reduce your hours, spreading the responsibility load?

There are two main options:

Option 1: you can sell and work as an associate for a number of years. (This is increasingly common.)

Option 2: establish an expense sharing relationship. This is best done when you still have energy and commitment to the practice. It is not to be undertaken when you have entered your comfort zone in your late 50s and early 60s. By this stage in your life you have already entered the comfort zone. You have got used to your surroundings and so have your established patients but, by staying solo, you are missing out on a whole new generation of patients who see the practice and you as not being modern and up-to-date. Many of these practices still don't have fibre optic hand pieces - high intensity lights, intra-oral cameras are frowned upon and digitalised x-rays are "useless for diagnosing" and unreliable. Yet prospective purchasers expect these. Remember that the vendor sees the finishing line on the horizon while prospective purchasers can only see the start line.

2. What are you selling?

Property – Leasehold/Freehold? The practice must have full planning permission and this must be as clean and straight-forward as possible. If you own the property, one needs to get an up-to-date valuation on the freehold and approximate rents that a prospective purchaser would be paying if a lease is to be established.

Warning: most estate agents have no concept of the dental scene and often grossly over-inflate the rents possible with the result that prospective purchasers run a mile. A good, honest valuation should cost in the region of €500 - €600 plus VAT.

During 2005, Innovative Irish Dental Services sold 19 practices only one of which was freehold. Often the banks are much more comfortable in loaning monies to buy the dental practice first with a long lease having been established. They then come up with further funds to exercise the option to buy the freehold of the premises, based on good sets of accounts over four or five years. This option of later property purchase needs to be built into the initial contract.

If the premises is leasehold, try not to sell the practice when the contract is due for renewal, or a rent review is imminent. The solicitor acting for the prospective purchaser will put the onus on to the vendor to sort out these problems prior to transfer and this often results in further delays.

You cannot buy a dental practice without a proper business plan. (There are expert advisors available to facilitate this important aspect of the transaction.) Your local accountant is often not the way to go as he will direct you where it is often easiest for him. At the bank level these advisors should be dealing with senior and not just local managers.

The banks' questions

The knowledgeable banks will ask questions about all aspects of the practice that is being purchased.

Surgery: What size is the practice? Has it one or two surgeries? Has it room to expand into three or four surgeries? This is the way the vast majority of the dental world has developed.

Equipment: Is it reasonably modern or for the skip? What is the cost factor for the prospective purchaser? If there are leases outstanding on new, modern equipment, solicitors will insist that these be paid up prior to transfer. An OPG X-Ray offers €20,000 - €25,000 potential profit to the practice per annum.

Staff: a good employment history is critical. Employees are a liability that are transferred over with the sale of a business. Employment Law is very strong on behalf of the employee and this is a very significant factor in any sale.

Hygienist: does the practice have a hygienist working? There is a potential to generate approximately €15,000 per day of working per annum (so if the hygienist works three days per week that is equivalent to €45,000 profit to the practice per annum). Interestingly, this has become almost the number one question with patients when they consider joining a new practice.

Medical Card: is the practice in the GMS? The average practice in Ireland generates 30% of the total gross fees from the GMS Payments Scheme.

New patients: what are the numbers of new patients per annum? A single-handed practice with 150 new patients per year is only standing still. Good growth is considered to be 400 – 500 new patients a year.

Emergency Protocol: – does one exist in the practice? This is very important for health and safety legislative requirements. A Conflict Resolution Policy and Protocol is also important.

Laboratory and Material Costs: together these are usually equivalent to the wages overhead, so it is important that your accountant separates materials from laboratory expenditure.

Goodwill: this is a conglomerate of a range issues including: the range of bad debts; the average age of patients; the socio-economic grouping of patients; price lists of range of treatments in both reception and surgeries; how long the practice is established; if there are any medical legal cases pending; and other related items.

Fixtures and fittings: this is probably the single most important item and creates first and lasting impressions. When you go to sell a house you do not sell it in a run down, uncared for, 1970 style.

Range of sale prices

In the last four to five years, spread over 80 practice sales throughout Ireland, the average practice has sold for €250,000, inclusive of the property in some cases.

Yet this is higher than anywhere else in the western world. This range is 50% - 85% of last year's gross fees, with overhead expenditure in the region of 45% - 55%. Less than 10% of practices have been sold higher than 85% of last year's gross fees.

The banks are extremely reluctant to loan higher than these percentages. As a result, if the prospective purchaser is prepared to go outside this range, he will have to fund the difference himself. How many of these prospective purchasers have €30,000 - €60,000 spare cash floating around to put towards a practice purchase?

Ambience

The achievable sale prices will dramatically increase if money has been spent on the practice to make it a more saleable product. It's just the same as selling a house.

Planning prior to the sale should incorporate at least a makeover. Additionally, plans for a modern design showing what a prospective purchaser could do with the practice are important. This is hugely helpful in assisting the prospective purchaser to see into the future. Again, I emphasise, one must remember that 95% of these purchasers have never owned a practice themselves.

As the seller, you must get professional guidance in seeing your practice from a prospective purchaser's point of view. This is often in harmony with what new patients want to see in a practice.

A higher price and a quicker sale

The €10,000 - €20,000 you put into the practice makeover is fully tax relievable. Inevitably the price achieved is markedly higher and the sale is infinitely faster. In the last six months, three practices that were on the market for over two years were sold within three months of instituting the above programme. One practice was sold on a time scale of only one month.

So the best advice I can give any dentist considering selling his or her practice is to get proper professional advice and plan, plan, plan.

The longest holiday

EMMET GIBSON of PricewaterhouseCoopers Pension Solutions Group (which provides pension services to the Association) outlines the incentives to invest SSIA proceeds into your pension.



Most dentists have SSIA's and with the first batch having recently matured, some of you may be trying to decide how to spend your hard saved money. Some might be considering buying a new car, putting in a new kitchen or even taking a well deserved holiday. Let me stop you while you dream of far off lands and warmer climes! My actuarial colleagues tell me that a 60 year old male will live 23 more years on average and a 60 year old female will live a further 28 years on average. In addition people are living healthier longer and most people today can look forward to a long and active retirement – the longest holiday of your life! With this in mind I will outline some points to consider regarding pensions as well as recent legislative changes to encourage you to use some of your SSIA money to provide for your retirement.

The challenge

Increased life expectancy combined with reduced birth rates is part of the reason phrases like “pensions time bomb” and “pensions crisis” have appeared recently in the media. Basically we're living longer and fewer people are being born to support us in our retirement. This is already a serious problem for some European countries. However, because of our relatively young population, Ireland has a stay of execution. This hasn't stopped the Government taking radical measures and in 2001 the Government established the National Pension Reserve Fund. The objective of the fund to meet as much as possible of the costs of social welfare and public service pensions from 2025 onwards. As of March 2006, there is €16.6 billion in the fund – clearly pension funding is something the Government believes should be taken very seriously. Although the existing pensions' framework offers very attractive tax benefits for pension funding, the Government has also introduced additional measures in the Finance Act 2006 to further encourage us



to provide for our own retirement – and, of course, relieve pressure on the State. I will talk about tax breaks later, but first here is the scary stuff!

Scary stuff 1 - providing for two decades

As the actuaries tell us, in your retirement you will have to provide for yourself (and any dependents) for more than two decades on average. Currently the state pension is paid from age 65 and is less than €200 per week for a single person. If you are relying on the state pension in retirement, you will experience a very significant drop in your income and your prospects of retiring before age 65 disappear!

A private pension is a very efficient way to plug this income shortfall.

Scary stuff 2 - the cost of waiting

Under Revenue rules, individuals can fund a maximum pension of two-thirds of their final remuneration. So, for example, a dentist aged 60 earning €50,000 could, under Revenue rules, have a pension of €33,000pa.

To illustrate the cost of buying a pension at various ages, consider the following example of how much it costs to purchase a joint life pension of €10,000 per year for life from age 65. The following table illustrates that the longer you leave pension funding the more expensive it gets:

Starting age	Portion of salary required pa
30	14%
35	17%
40	21%
45	28%

PRACTICE MANAGEMENT

This highlights the importance of starting a pension early. In short, pensions are very expensive and the sooner you start the better.

The tax carrot

To encourage us to fund our own pensions, the Government gives us three very attractive tax incentives in the form of:

- tax relief on contributions;
- tax-free investment return; and,
- a tax-free lump sum at retirement.

Pension funding is essentially a very efficient way to defer (or even avoid) tax while getting the benefit of tax-free investment return on those contributions. The income tax exemption limits for retirees are significant; currently the limit for a couple over 65 is €34,000pa. Therefore pensions offer a means of avoiding income tax on significant levels of contributions.

Recent changes

To continue the theme of the Government encouraging people to fund their own retirement, I will summarise some of the changes introduced by Minister Brian Cowen in the Finance Act 2006. The Minister introduced additional age-related bands for the 55-year-olds and over and the 60-year-olds and over to increase the amount of pension contributions on which income tax relief can be claimed in a given tax year. The age related bands are now:

Age During Tax Year	Maximum Relief
Less than 30	15%
30 but less than 40	20%
40 but less than 50	25%
50 but less than 55	30%
55 but less than 60	35%
60 and over	40%

For example, a dentist aged 57 could make a pension contribution of 35% of earnings and receive full marginal rate income tax relief on that contribution.

Putting your SSIA towards the longest holiday of your life

The Minister introduced an SSIA pension incentive scheme. This means that certain SSIA investors can benefit from an additional top-up when all or part of their net SSIA proceeds after maturity is re-invested into an approved pension product (e.g., a personal retirement savings account or a personal pension plan). There are two elements to the incentive:

- 1) For every €3 of SSIA proceeds reinvested, the Government will contribute €1 by way of a tax credit. The tax-credit cannot exceed €2,500 (this effectively means a contribution of at least €7,500 by the SSIA holder to benefit from the €2,500 tax credit).

- 2) An additional tax credit in relation to the tax deducted from the SSIA on maturity will also be paid, depending on the proportion of the SSIA proceeds that is reinvested in a pension product. For example, if you reinvest 50% of your SSIA proceeds in a pension product then the additional tax credit will be 50% of the tax deducted on your SSIA.

You are eligible for the incentive if:

- your gross income is less than €50,000 in the year before your SSIA matures;
- you do not claim a normal income tax deduction in respect of your reinvested proceeds;
- you do not reduce the amounts that you are currently required to pay into a pension product in the year that the SSIA proceeds are re-invested.

Please note that there is a deadline related to this Government offer

- you must transfer your money from your SSIA payout to your pension fund within three months of your SSIA maturing in order to claim the Government bonus.

What must you do if you want to avail of this SSIA incentive ?

To avail of the new pension incentive you should, when your SSIA matures:

- obtain an SSIA Maturity Statement from your SSIA provider;
- forward the Maturity Statement to your pension provider.

The pension provider will then request you to complete and sign a declaration form and make your contribution to your chosen pension product. Once this has been done, the Government contributions under the pensions incentive will be claimed by your pension provider and invested in your pension. It is important to be aware that the incentive scheme is open to both 20% and 42% taxpayers as long as they meet the other criteria. However, this incentive is only advantageous to people paying income tax at the lower rate of 20% as normal tax relief is generally more beneficial for those on the higher 42% tax rate. For example, a lower rate tax payer (20%) paying €7,500 into their pension would normally get tax relief of approximately €1,500 (i.e. 20% of €7,500) which makes the above scheme attractive, i.e., they get €2,500 instead. However, a higher rate tax payer (42%) paying €7,500 into their pension would get tax relief of approximately €3,150 (i.e. 42% of €7,500) which is clearly more attractive. With the government trying hard to encourage pension funding, this is a welcome measure and we may see additional measures such as tax relief being given at the higher rate for all taxpayers.

SEPTEMBER 2006

September is Colgate Oral Health Month
Colgate Oral Health Month will take place during the month of September 2006. The programme is designed to promote the benefits of good oral health, inform the general public of the importance of looking after their teeth and to encourage communication between dental professionals and patients. For further information contact Colgate on 01 4039860.

Prize Outing

Date: September 9, 2006
Venue: Carlow Golf Club
For further information please contact Dr Ciaran Burke, Tel: 4574733.

Kerry Branch, Irish Dental Association – Scientific Meeting

Date: September 14, 2006
Materials for Restorative Dentistry, Dr Frank Quinn. Further details will follow when available.

Annual Periodontal Society Seminar

Date: September 15, 2006
Venue: Royal College of Physicians of Ireland
Changing Concepts in Clinical Periodontology
– For further information contact Dr John Molloy Dock Road, Galway.
Tel: 091 .

American Dental Association – New Hampshire Dental Society

Date: September 15, 2006
Venue: Concord, New Hampshire
"Everything you wanted to know about street drugs but were afraid to ask" – For further information contact Mr James Williamson,
Tel: 00 1 603 225 5961.

FDI World Dental Congress – Shenzhen 2006

Date: September 22-25, 2006
For further details contact www.fdiworldental.org

Northern Ireland Dental Day

Date: September 23, 2006
Venue: Waterfront Hall Conference and Exhibition Centre, Belfast
For more information contact Kim O'Connor on 0870 747 3091.

Metropolitan Branch, IDA – Easier Endo: What you should be doing right now

Date: September 28, 2006
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Speaker is Dr Teresa Lynn. Further information will follow when available.

Joint Endodontic/Metropolitan Branch, IDA Meeting – "Gadgets and Gizmos – What you should buy"

Date: September 28, 2006
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Speaker is Dr Ciaran O'Driscoll. Further information will follow when available.

Advanced Rotary Hands On Course

Date: September 28, 2006
Venue: The Conrad Hotel, Dublin
Speaker: Dr Patrick O'Driscoll
This one-day, hands-on course gives delegates the opportunity to successfully shape and fill root canals in extracted teeth using rotary NiTi endodontic instruments, magnification, apex locators, digital radiography and ultrasonic.
In addition, delegates will be given information on dismantling crown and bridges, core and post removal and effective removal of GP, including carrier-based systems. The role of root repair material will also be discussed.

The Irish Academy of American Graduate Dental Specialists (IAAGDS) Annual Scientific Meeting
Date: September 30, 2006
Venue: Conrad Hotel, Earlsfort Terrace, Dublin - from 9am to 1pm.
For further information contact John Lordan, IAAGDS, Tel: 01 4970491.

OCTOBER 2006

American Dental Association – 3 Rivers Dental Conference. "Blood, Sweat and Tears: Frontline Management of Dental Trauma"
Date: October 3, 2006
Venue: Monroeville, Pennsylvania
Speaker: Dr Edward J Barrett. For further information contact Dr Jef Mertens, Tel :00 1 724 941 4990.

9th European Health Forum Gastein – Health Sans Frontieres

Date: October 4 – 7, 2006
Venue: Bad Hofgastein, Salzburg, Austria
Further information available on www.ehfg.org

Irish Dental Association, North Western Branch in conjunction with the North Western Regional Postgraduate Dental Committee

Two Day Conference
Date: October 6 - 7, 2006
Venue: Clarion Hotel, Ballinod, Co Sligo
Lectures will include the following topics: "Update on dento-alveolar trauma and outcome", "Hypomineralisation defects – Diagnosis and Management", "Recent Developments in all Ceramic Crowns", "New Implant Approaches" "CAD-RAM Restorations" and "Adhesive Luting Techniques", "Endontics", "Financial Engineering".

Irish Dental Association – Munster Branch, Annual Scientific Conference

Date: October 13, 2006
Venue: The Clarion Hotel, Lapps Quay, Cork
The ASC of the Munster Branch of the IDA will take place from 9.00am to 4.00pm on Friday October 13, 2006. If you have any queries on it please contact Dr Eamonn Murphy on 021 4294590 or Dr Michael Hartnett on 021 4291466.

Prague Dental Days 2006 – Annual International Congress

Date: October 11 - 14, 2006
Venue: National House, Vinohrady, Prague
For further information tel: 00 420 224 918 613 or email stepankova@dent.cz

147th American Dental Association Annual Scientific Session and Marketplace Exhibition

Date: October 16 – 19, 2006
Venue: Las Vegas, USA
Scientific Sessions, October 16 - 19. Marketplace Exhibition, October 17 - 19.
The ADA Annual Session offers a comprehensive scientific program featuring the state-of-the-art courses in dental research, evidence-based dentistry, art of dentistry, practice of dentistry, dental technology and patient care. Visit www.ada.org/goto/international for more information.

Irish Dental Association, Public Dental Surgeons Seminar

Date: October 18, 19, 20 2006
Venue: The Dunraven Arms Hotel, Adare, Co Limerick

Metropolitan Branch, IDA – "Tips to avoid a bloody mess"

Date: October 19, 2006
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Tips in minor oral surgery, flap design and bone preservation.
Speaker is Professor Leo Stassen.
Further information will follow when available.

DIARY OF EVENTS

Metropolitan Branch, IDA
– “Medical Emergencies for the Team”
Date: October 19, 2006
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Speaker is Dr Stephen Flint. Further information will follow when available.

Faculty of Dentistry, Royal College of Surgeons in Ireland –
Annual Scientific Meeting - “Team Dentistry Today – the
Multidisciplinary Approach”
Date: October 25-27, 2006
For further information see www.fodasmrcsi.ie

Kerry Branch, Irish Dental Association – Scientific Meeting
Date: October 30, 2006
Tips for Radiography – Dr Donal McDonal. Further details will follow
when available

NOVEMBER 2006

Advanced Rotary Hands On Course
Date: November 8, 2006
Venue: Culloden Hotel, Belfast
Speaker: Dr Patrick O'Driscoll
This one-day, hands-on course gives delegates the opportunity to
successfully shape and fill root canals in extracted teeth using rotary NiTi
endodontic instruments, magnification, apex locators, digital radiography
and ultrasonic.
In addition, delegates will be given information on dismantling crown
and bridges, core and post removal and effective removal of GP,
including carrier-based systems. The role of root repair material will also
be discussed.

Metropolitan Branch, IDA
– “Mum and Granny are having Orthodontics too”
Date: November 16, 2006
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Speaker is Dr Marielle Blake. Further information will follow when
available.

Metropolitan Branch, IDA
– “Reality check: what restorative materials work”
Date: November 16, 2006
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Review of materials used in practice (what works). Speaker is Professor
Edward Lynch.

American Dental Association – Springfield Dental Society.
Paediatric Dentistry: Are we having fun yet?
Date: November 17, 2006
Venue: Springfield, Missouri
Speaker: Dr Marvin H Berman. For information contact Dr Brad Burks, Tel:
00 1 417 882 4460.

Kerry Branch, Irish Dental Association
– Scientific Meeting
Date: November 26, 2006
Medical Emergency – Dr Mark Brett (Consultant Anaesthetist). Further
details will follow when available.

DECEMBER 2006

5th Triennial Meeting of Commonwealth Dental Association.
Hosted by the Sri Lanka Dental Association
Date: December 1 – 3, 2006
Venue: Colombo, Sri Lanka
For further information contact slda@slt.lk or hillarycooray@slt.net.lk.

Metropolitan Branch, IDA – Christmas Party
Date: December 2, 2006
Venue: RDS, Ballsbridge, Dublin 4
Dinner, drinks and dancing to a live band. Further information will follow
when available.

JANUARY 2007

Metropolitan Branch, IDA – “Non Accidental Injury”
Date: January 18, 2007
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Speaker is Dr Sabine Maguire, Paediatrician from the UK. Further
information will follow when available.

Metropolitan Branch, IDA – “Incisor Trauma – An update on
best practice”
Date: January 18, 2007
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Traumatised incisors in adults/older kids. Case review/decision making.
Speaker is Dr Anne O'Connell.

FEBRUARY 2007

Metropolitan Branch, IDA – Non Dental Evening and Award
Ceremony – “Telling my story: team motivation”
Date: February 15, 2007
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Speaker is Dr Caroline Casey. Further information will follow when
available.

Metropolitan Branch, IDA – Annual Scientific Meeting – “Drink
from the fountain of knowledge”
Date: February 16, 2007
Venue: O'Reilly Hall, UCD
Further information will follow when available.

MARCH 2007

Metropolitan Branch, IDA – “Restorative Dentistry in 2007”
Date: March 15, 2007
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Speaker is Dr Billy Davis. Further information will follow when available.

Metropolitan Branch, IDA – Annual General Meeting
Date: March 15, 2007
Venue: Hilton Hotel, Charlemont Place, Dublin 2
Further information will follow when available.

APRIL 2007

IDA Annual Scientific Conference – Cork 2007

Date: April 18 to 21, April 2007
Venue: Rochestown Park Hotel, Cork
More details available on www.dentist.ie

MAY 2007

3rd Asia Pacific Congress on Craniofacial Surgery and
Distraction Osteogenesis
Date: May 1-4, 2007
Venue: Republic of Maldives
There will be four live surgical demonstrations and four-hands-on
workshops using state-of-the-art distractors and other craniomaxillofacial
surgical equipment. A good number of eminent surgeons have consented
to participate as faculty and around two hundred surgeons have
expressed interest in participating in the congress. (The faculty list can be
viewed online at www.distraction2007.com For further queries about the
conference write to smbalaji@eth.net

Classified advert procedure

Please read these instructions prior to sending an advertisement. On right are the charges for placing an advertisement for both members and non-members. Advertisements will only be accepted in writing via fax, letter or e-mail (fionnuala@irishdentalassoc.ie). Non-members must pre-pay for advertisements, which must arrive no later than October 4, by cheque made payable to the Irish Dental Association. If a box number is required, please indicate this at the end of the ad (replies to box number X). Classified ads placed in the Journal are also published on our website www.dentist.ie within 48 hours, for 12 weeks.

Advert size	Members	Non-members
up to 25 words	€75	€95
26 to 40 words	€90	€110

Non-members must send in a cheque in advance with their advert. The maximum number of words for classified ads in 40.

Only if the advert is in excess of 40 words, then please contact:
Think Media

The Malthouse, 537 North Circular Road, Dublin 1.

Tel:01-856 1166 Fax:01-856 1169 E-mail: Studio@thinkmedia.ie

POSITIONS REQUIRED

German dental surgeon with skills in prosthetics, aesthetic restoration and implantology is seeking a position. 20 years work experience. Registered with Dental Council Available 2-3 days per week. CV available on request. Email: hjgelbert@hotmail.com. Telephone: +49 171 3630183.

Motivated Italian dentist is seeking a part-time position in Dublin area, 2-5 days every fortnight. Starting mid-August-early September. Already registered with the Irish Dental Council. CV available on request. Email: volpatoale@yahoo.it Tel: 086 8457957 or 00 39 3497437536.

Dentist and OMF-Surgeon, working either field committed to excellence. Scope includes implants, bone augmentation/sinus lift, prosthetics, TMJ, gnathological and aesthetic restorations, GTR-periodontics. Seeking part-time position in challenging environment. Tel: 0049 89 28787509 or email: kjevekirurg@excite.com

Experienced reliable dental locum available immediately. Contact 085 7152287.

Experienced Irish dentist seeks position in the Galway city area. Begin August/September. Tel: 087 2784241.

Highly motivated experienced French dentist seeking position in or near Dublin. CV on request. Registered with Dental Council. Email: nicobolot@wanadoo.fr. Tel: 00336 62 25 50 85.

POSITIONS VACANT

Oral Surgeon required to visit a prestigious general dental practice in Cavan town which offers high calibre support staff and facilities. Our team includes Dental Surgeons, visiting Orthodontist and full time hygienist. Contact Joanne on: 087-8641990/049-4332488. Email: churchstreetdental@eircom.net.

Buncrana, Co Donegal. Dentist required for busy three surgery practice. Good mix of private, PRSI and Medical Card patients. 25 minutes from Derry. Please forward CV to M. Mulholland, Westend Dental Surgery, Buncrana, Co Donegal or Tel 074 9362666.

Full/Part-time Dentist required in stunning west coast town. June/July start. Bright modern three surgery practice in vibrant town centre. Full book, mixed practice, hygienist, digital radiography etc. Free two-bed apartment available, first month. Please phone 086 3949277 / 087 2461813.

Superb seven-day Dublin city centre general practice with Cerec, Digital OPG/IO, Cameras, seeks dentist with emphasis on excellence. Telephone Emmet on 086 8187373 or 01 6728928.

Locum dental surgeon required for busy modern dental practice in Monaghan Town for month of August. Phone 047 81032 Work or 048 South 028 North 37510100 evenings.

Locum dentist required in Kilkenny City, October 2006 to cover maternity leave. Tel: 056-7765613.

Locum Dental Surgeon, September 2006 – March 2007 for group practice, Dundalk. Wide range of work. Excellent conditions/remuneration. New, air conditioned surgery, computerised with digital x-ray and all mod cons. Email info@dbholly.com Contact: Ann (042) 9331771 Surgery Hours, Evenings 087 2879858.

Locum urgently required for 6-12 weeks, immediate start due to sudden illness of Associate, Tallaght area, general and cosmetic dentistry. Tel: 087 9727091.

Locum dentist required for busy modern Limerick city practice from August 2006 until November/December 2006. Please phone 061 335226 or 087 9977763.

Locum with a view to associateship required for a busy practice in Westport, Co Mayo from November 1, 2006. Tel: 087 7550673 after 6pm.

Dental Associate required for modern busy dental practice in Galway. Full/part-time. Terms negotiable. Tel: 087 9972877.

Experienced Dental Associate required for full-time position, to replace departing colleague, in busy mid-Cork dental practice. Tel: 086 8070025 (after 6.30 p.m.)

Dental Associate required for busy practice in the north East. Full/Part-time. Hygienist, OPG available. Tel: 086-3971113.

West of Ireland. Associate wanted for busy modern computerised 4-surgery practice with I/O, OPG + dig. X-ray. Full book/permanent position. Generous remuneration. Tel: 00-353-87 8233313/00-353-86 6001719 or e mail: leo@tobindental.com

Experienced associate required 4/5 days pw for general practice, north central Dublin. Fully computerised. E mail cv to rodandcatherine@hotmail.com or call 087 7721 828 eves/weekend.

Full-time/Part-time associate required for busy mixed practice Nth. Co Wexford July/August. OPG, Hygienist, Modern Equipment. Late evenings or Saturdays optional. Tel: 087 8391918 after 6pm.

South Tipperary. Dental associate required, full or part-time in busy modern practice. Replacing departing dentist. To start mid August. Tel: 086 3663604.

Experienced Dental Associate required to replace departing colleague. Midland area. Excellent prospects. Full book assured. Email: oralcentre@hotmail.com or telephone: 086 8536342 between 8:00 pm and 10:00 pm.

Galway, Ireland. Associate dentist required for modern busy city centre practice in Galway. Computerised, digital radiograph, OPG, Hygienist. For further information tel: 00 353 91 531531 or email asta@galwaydentist.com

Associate required North Kildare practice to replace departing colleague. Mid-July start. View to partnership. Tel: 087 2684809.

CLASSIFIED

Associate required in busy West coast practice. June/July start. Modern three surgery practice in town centre. Full book, hygienist, digital radiography etc. Tel: 086 3949277.

Part time Associate required for Drogheda practice. Thriving modern general practice with private/PRSI patient mix. Two-surgery practice (Principal plus hygienist). Experience desirable.
Tel: 041 9846333 (w), 086 8583366 (e).

Associate required. Modern three-surgery-practice 20mins ex-Galway city. Newly equipped, computerised, digital-radiography incl. OPG. Excellent support staff, hygienists. Will suit enthusiastic, ethical dentist: be part of motivated young team. Start Sept/Oct, sooner for ideal candidate.
Call 00 353 (0) 9360333 surgery, 00 353 (0) 86 1636526 after.

Associate required three days weekly in modern two surgery practice in Dublin. New equipment, ethical. Excellent support staff, hygienist. September start. Tel: 00 353 (0) 86 1686056.

Full time associate sought for busy, recently refurbished, state of the art dental surgery, 20 mins from Galway city centre. PRSI and private fees. Support staff include hygienist and orthodontist. Begin November 2006.
Tel: 086 0708250.

Associate wanted. Associate required for busy thriving practice in Co Tipperary, Ireland. Modern fully equipped surgery, OPG, Hygienist and excellent support team. For further information contact Linda at 087 2281282 or themallpractice@eircom.net

Part-time Associate wanted for practice in South East. Full facilities, OPG, computerised, dental hygienist, friendly staff. Tel: 087 2666524.

Midlands, Ireland. Associate required to replace departing colleague. Long established modern, fully equipped, thriving practice with computerised digital OPG. Good mix of private/GMS/PRSI. Excellent prospects. For further information telephone: 00 353 868536342 (after 8pm).

Full-time associate sought. Thriving, modern, two surgery practice. Ten minutes ex centre Letterkenny, Co Donegal. Newly equipped, full computerisation, digital radiography, OPG, rotary endo etc. Good mix Private, PRSI, Med Card. Immediate start preferable. Call Derval: 074 9152728/Rachel: 086 8514826/ Email: darareynolds@mail2ireland.com.

Associate required for sessional work in North Dublin family practice.
Tel: 01 8460055.

Part time Associate wanted. Modern three-surgery practice. West Dublin.
Tel: 086-2245017 or email: www@gums.ie

Associate required to replace colleague. North Dublin practice. Five minutes airport. Excellent opportunity for skilled practitioner interested in cosmetic, high quality dentistry. Modern established newly refurbished surgery with supportive team. Digital radiographs and shade selection, Diagnodent, HealOzone, Zoom. Tel: 087 9973132.

Immediate vacancy for full or part time Dental Associate in busy modern practice in South Tipperary. Please phone 052-21263 or 086-3663604.

Qualified Dental Nurse required for busy southside oral surgery practice. Terms and conditions negotiable dependant on experience.
Tel: 087 6329204.

Hygienist required Ennis town. Long established busy multi practice. Immediate start, full time position. Dedicated hygienist surgery.
Contact: Mary 065 6828227.

Part-time Hygienist required for busy practice in the South East. Immediate start in fully computerised modern practice. Tel: 051 421318.

Part-time hygienist required for busy practice in west coast town. July/August start. Bright modern three surgery practice in vibrant town centre. Dedicated hygienist surgery. Please phone 086 3949277.

DSA/Receptionists required for large practice full-time, five day week. Salaries dependent on experience. Experience essential. Apply by fax (01 2866231) or email, drmurphyjohnnj@yahoo.co.uk including CV.

Experienced DSA required for busy modern Southside practice. Great conditions and pay. Email CV to: southsidedsa@yahoo.ie or post to Box No. J306.001.

PRACTICES FOR SALE/TO LET

For Sale – Dublin. City Centre three miles. Excellent location, two surgeries. OPG. Very busy. High new patient numbers. Great figures. Realistic price. Leasehold. Reasonable rent. Tel: 086 8075273.

For Sale – Limerick City. Great location. Single handed. Huge room to expand. Long established. No medical card. Dentist retiring. Realistic price for practice/goodwill negotiable. Tel: 087 2327557.

Practice for Sale, Drogheda, Co Louth. Two surgeries. Good equipment. OPG. Computerised. Enquiries to 01 8226480 or email casta@indigo.ie

For Sale – Clare. Excellent thriving modern practice. Two surgeries. Large area room to expand. Very busy, good equipment, low rent. Huge new patient numbers. Idyllic location. Tel: 087 2327557.

For Sale – Galway City. Single handed long established, two busy surgeries. Huge potential. Immediate sale. Strictly Private/PRSI. Realistic price. Freehold/goodwill options, modern units adjacent. Tel: 086 8075273.

For Sale: Dublin South. Superb location – Dart. Single-handed OPG Hygienist. Two surgeries modern equipment. Leasehold – low rent. Very busy. Great figures. Expansion possible. Competitively priced.
Tel: 086 8075273.

For Sale – Mayo. Superb opportunity. Modern computerised, single-handed. Huge potential for expansion. Great equipment. Leasehold. Very busy. Excellent figures. Realistic price. Immediate sale. Tel: 086 8075273.

For Sale – Midlands. Long established. Great location, 45 mins Dublin. Fantastic potential. Leasehold low rent. Very busy. 3 surgeries. Reasonable equipment. Expense sharing. Great figures. Tel: 086 8075273.

Surgery available in specialist practice in Smithfield, Dublin 7 for specialist use. Flexible arrangements. Tel: 01 8780044 or email info@smithfieldclinic.ie

Successful group practice with strong existing patient base For Sale. Excellent turnover, located in thriving Mallow, Co Cork, Ireland.
Contact: 00353 86 8077604.

Galway City Centre. Rooms available for specialist dentist, would suit Oral Surgeon, Endodontist, Periodontist. Tel: 091 562932.

Dental surgery available to let 2/3 days per week in Dundrum area next to Luas station. Suit specialist. Tel: 086 8170562.

EQUIPMENT FOR SALE

For Sale: Panoramic 1000 OPG/CEPH Xray Unit and Durr Developer. Dublin area. Buyer collects. Tel: 01-8456808.

For Sale. Gendex OPG –GWO. Velopex Developer (two years old). Compressors, Durr Suction (three surgeries). Dental chairs, Auto Claves, Mini Pisons, Ultra Sonic Baths, All Hand Instruments. All in good working order. Tel: 8312814 9am to 5pm.

For Sale. Developer Durr XR 24 PRO and Durr DL 26 Daylight loader, perfect condition. Tel: 087 2485663 after 6 p.m.

For Sale: As new, never used Progres Dentist Chair with built-in light and bracket. Genuine offers only. Tel: 086 8099789.



We value your views

The Editorial Board of the *Journal of the Irish Dental Association* welcomes the views of readers. Please take a few minutes to rate those sections of the Journal that you find most useful, and to indicate any other areas that you would be interested in reading about.

RATING (please ✓)

VERY POOR POOR FAIR GOOD VERY GOOD

Editorial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
President's News	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IDA News	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business News	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scientific papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Abstracts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Practice Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diary of Events	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Classified adverts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quiz	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Design/Presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

COMMENTS

YES NO

Do you read any other scientific journals?

If so, which journals? _____

YES NO

Do you read any dental magazines?

If so, which magazines? _____

Compared to other publications is the JIDA...

VERY POOR POOR SAME BETTER MUCH BETTER

I would like to see _____

Name _____

Address _____

Signed _____

Win a €250 voucher

HOUSE of IRELAND
FOR THE WAY YOU LIVE, DECORATE & ENTERTAIN

As an incentive, there will be a draw amongst all signed replies for a voucher for House of Ireland.

House of Ireland, 37 Nassau Street, Dublin 2. Tel: 01 671 1111 and at Dublin Airport.

www.houseofireland.com



RETURN COMPLETED FORM BY POST OR FAX TO:

IRISH DENTAL ASSOCIATION, Unit 2 Leopardstown Office Park, Sandyford, Dublin 18.
Tel: +353 1 295 0072 | Fax: +353 1 295 0092 | Email: info@irishdentalassoc.ie | www.dentist.ie

QUIZ



Autumn quiz

Presentation

This 25 year old man presented with a salty nasty taste in his mouth and an odd sensation on his palate. This is the radiograph.

What does it show?

What is the differential diagnosis?

What do you believe is the diagnosis?

What tests would you undertake?

Prepared by Prof. Leo F A Stassen Dublin Dental School and Hospital and St. James's Hospital

Answers can be found on page 95

Answer to summer quiz



A 33 year old married lady was referred to the Dept. of Oral and Maxillofacial Surgery because of recently developing loose upper anterior teeth. Radiographs (Periapical) showed loss of bone around the four central incisors. This was an acute change from radiographs taken six weeks previously, which were normal.

What is the dental diagnosis?

What is the likely clinical diagnosis?

What is the differential diagnosis?

What investigations are required?

Answer:

Dental Diagnosis:

- Pink spot secondary to internal resorption upper left central incisor.
- Gingival recession with loss of dental papillae between the anterior teeth.
- a composite labial restoration upper left lateral incisor

Clinical diagnosis:

Internal (dental) resorption secondary to an external aetiology – inflammation, infection, trauma, metabolic, tumour (1' or 2')

Differential Diagnosis:

Infection 2' to dental cause, trauma, Brown Tumour of hyperparathyroidism, tumour primary tumour of bone or metastatic disease.

Investigations:

Vitality testing, plain radiographs, bloods (FBC, CRP, calcium, albumin, protein, phosphate, alkaline phosphatase), electrophoresis, biopsy, CT scan

Diagnosis:

B Cell Lymphoma.

There were no correct entries