WESTERN ARTICULATOR

ADAWA CPD SPECIAL EDITION

MAY 2020

MEET
Drs Paul Gorgolis and Asheen Behari

AUSTRALIAN DENTAL ASSOCIATION (WA BRANCH) INC

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AUSTRALIAN DENTAL ASSOCIATION
WESTERN AUSTRALIA

Australian Dental Association
Western Australian Branch Inc

All correspondence to:

PO Box 34, West Perth WA 6872

T: (08) 9211 5600

F: (08) 9321 1757

E: media@adawa.com.au

President
Dr Sean Archibald

Chief Executive Officer
Dr David Hallett

Editorial Team
Brooke Evans-Butler
Lisa Shearon

Designer
Carmen Collings

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ISSN 2207-9351 (Online)

The PRESIDENT'S REPORT

DR SEAN ARCHIBALD, ADAWA PRESIDENT

As we begin to emerge from arguably the most disruptive time in most of our lives, we are beginning to see the positive signs that things are slowly returning to normal.

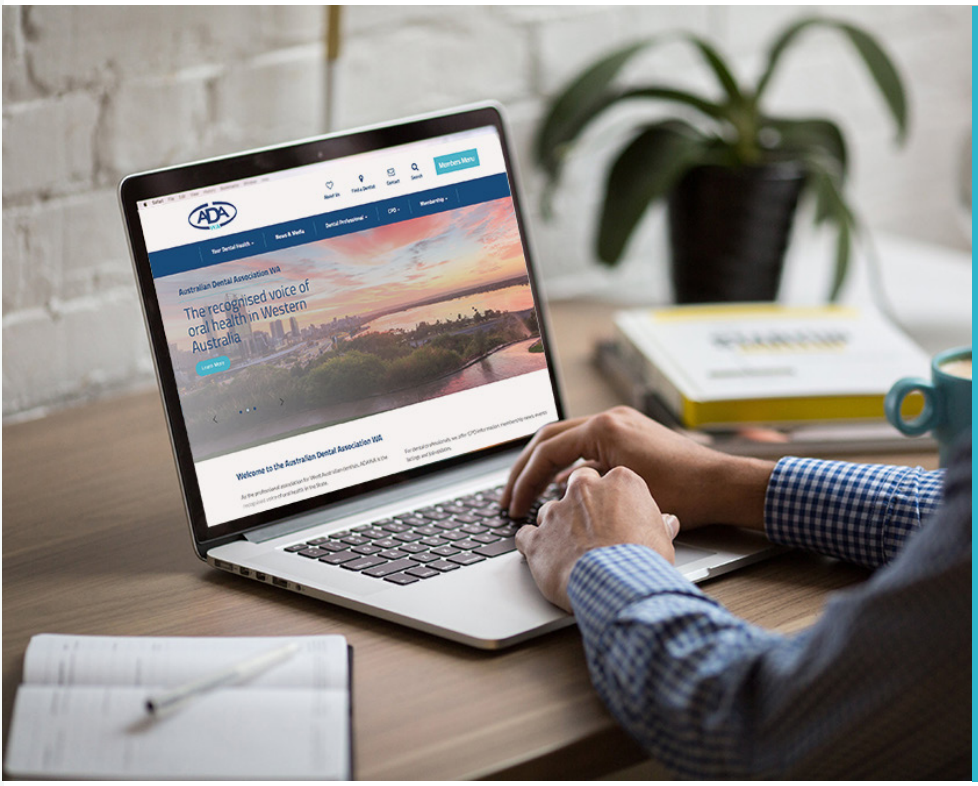
At a time when you have likely heard more from an ADAWA president than ever before, I will do my best to keep this message short. At the time I am writing this, it has been a week when we have all likely felt the tide change and things are looking more positive as we begin to get back to work. Western Australia, as always, gave us a weekend of sunny weather and I hold high hopes that by the time this goes to print, WA will have continued its positive trajectory with COVID-19 and we will have been able to move to Level 1 restrictions.

It is not often that I get the chance to publicly thank our ADAWA councillors, but over the last month they have gone above and beyond to make themselves available at short notice for incredibly complex decisions and have all put their hands up to provide extra assistance to myself, David and our branch. As unpaid volunteers I cannot thank them enough for the work they have put in during this time. The support for our branch hasn't stopped there and we have been overwhelmed with calls of support along with a few very welcome coffee deliveries from the wider membership, the importance of which also cannot be understated.

Unless you have come into the branch in the last six weeks it is unlikely that you are aware that our entire office has been working from home aside from our CEO, Dr David Hallett, who has worked especially hard over very long hours. Our branch staff have, without hesitation, adapted to working from home, and continued to provide the high-quality support with which we are familiar. In saying all of this, as we hopefully continue to return to normality, I will not miss the sight of David's West Coast Eagles shorts around the office.

Most members will already be aware via email that we have been able to negotiate a 25% discount on next year's indemnity policy through our branch scheme, and that your ADAWA council has approved a 25% discount on your branch membership for FY21. If you did not receive the email with all the details, please email the branch at adawa@adawa.com.au

Finally, you will notice that this edition of the Western Articulator is a little different and is focused on CPD. The magazine includes a wide variety of clinical articles and summaries from across our membership. These can be followed up with a quiz on our website, for which you can earn CPD hours.



CPD Online Quiz

Make sure you read the selection of clinical articles in this edition of The Western Articulator from our valued contributors. As well as being informative, reading these articles can also go towards your CPD.

Simply go to the following link and complete the quiz for 1 CPD hour **https://adawa.com.au/quizzes/western-articulator-cpd-quiz-may-2020/**

www.adawa.com.au

Dental Protection Limited Australia Update

Protecting members' wellbeing during COVID-19

Dental Protection understands that it is not only a financial strain that many members are experiencing, and so the membership organisation recently announced that they have extended the counselling service to any member who is experiencing any work-related stress, or stress that they feel the current situation is impacting on their practice.

Dental Protection's counselling service is provided through an external professional counselling partner and is completely confidential. As a benefit of membership there is no cost involved.

As a member-owned organisation, the sole focus of the organisation is to protect and support members, and never has this been more pertinent that during these unprecedented times. We want members to know that we are here and are ready to help, should they need us.

Access DPLA's Counselling Service by phoning ADAWA or DPLA on 1800 444542.

Workshops

The popular small group workshops have been suspended until 1 July 2020.

CPD

At a time when face-to-face CPD is not possible, dentists may find value in Dental Protection's online verifiable CPD. More than 60 hours of learning is available at no cost, including DPLA's recent webinars on OPG interpretation and Remote Consulting (Teledentistry). All this is available at Dental Protection Australia's website.

CEO'S COMMENT

DR DAVID HALLETT, ADAWA CEO

Brooke Evans-Butler's highly engaging story and Carmen Collings' delightful photography captured Dr Rob Bower as A Periodontist and a Gentleman in a way very few members would have had the privilege of knowing.

An innocuous typographical tagline error attached to the main photograph understated Rob's time as a WA Dental Cases Panel (DCP) Consultant by 10 years. This has proved a timely reminder that Rob fulfilled that role for nearly 20 years, as well as being an active participating ADAWA member for over 50 years.

Dr Andrew Hossen, DCP chairman, recently commented to me: "During the 20-year period DCP members and I were blessed with a special individual on the DCP Panel. The qualities that I witnessed were his authenticity, a 'straight shooter', humility and passion to the DCP and its social purpose to ADAWA members."

Rob is indeed a very exceptional man. Like Andrew, I have observed first-hand the respect and affection he engenders to patients and colleagues alike. Even in retirement he still willingly assists me with member mentoring and at times, confidential "difficult conversations", lectures to our DMD student members and one-on-one member education on various aspects of professional conduct.

The ADAWA Honours and Awards Committee and the ADAWA Executive recently recommended to Council that Rob be awarded ADAWA Branch Honorary Life Membership. It goes without saying, the vote was overwhelmingly unanimous.

WORKING, SURVIVING AND THRIVING AT HOME

THE END OF SOME PANDEMIC RESTRICTIONS MAY BE IN SIGHT, BUT FOR MANY OF US, OUR ROUTINE REMAINS FAR FROM NORMAL. BROOKE EVANS-BUTLER SPOKE TO THE EXPERTS ABOUT THE BEST WAYS TO WORK, SURVIVE AND THRIVE IN THE CURRENT SITUATION.

YOUR MENTAL HEALTH

Psychology consultant and author, Dr Jo Lukins, says the challenge for a professional when suddenly and unexpectedly unable to work is the impact on both our mental wellbeing and sense of identity.

"The positive psychology literature is clear: work matters," she says, adding that professionals in part define themselves by their work because work provides routine, a sense of purpose and an opportunity to make a difference.

"Dentistry is a helping profession and we know that when our work allows us to help others, it benefits not only the patient but is meaningful and a source of wellbeing for ourselves," Jo explains. "It would be normal for a dentist who has had to scale back or stop work to experience a grief response, not dissimilar to the grief we experience with any sort of loss. There will be a melting pot of emotions including disbelief and denial, fear, anger, sadness, and bargaining.

"Importantly, the grief response often (eventually) leads us to a point of acceptance," she says. "We don't have to like a situation, but when we do come to the point of acceptance – we can then move through the grief process.

"With regards to professional identity, this is a situation that probably no one could have imagined, and many dentists would have understandably assumed they would work in the profession until they chose to leave. For most, at retirement."

Jo says most people like to feel a sense of control and predictability about their lives. COVID-19 has robbed us of this.

"Most people are challenged when their sense of control is taken away, so it would be a normal response if dentists have felt anxious, worried, depressed, angry, had trouble sleeping, loss of appetite, are overeating, bored, or overwhelmed," she says. "The good news is that once the grief process has moved through, there are ways to rethink this experience - seek the good and find the opportunities."

Jo offers the following advice:

- Pay attention and notice the emotions you are feeling – all emotions are functional. They are giving you feedback on how you are feeling, so that information is helpful.
- Know that our actions and feelings are intertwined. If you spend longer than you need grieving for what you've lost, you lose the opportunity to move forward to the next possibility.
- Ask yourself the question: what is helpful now? Is there a different way to think or something different that you can do? Can you tell yourself something that is more positively reframed? It might be some statements of reassurance or going outside with a cup of tea.
- Stay connected. Who can help you with your current circumstances? Can you stay connected with your employer or your staff or colleagues?
- Be creative. This will be a time of opportunity. Is there new learning you can adopt? Can you use your skills in different ways? Is there an education option for you? What can you do now, so that you might one day look back and see this time as a blessing?
- Ask for help. Don't travel through this alone. People matter, and people want to help you

Jo has a number of resources and videos relating to managing through COVID-19.

MAINTAINING SELF-CARE

Tasha Broomhall, director of Blooming Minds gives her advice about maintaining self-care:

BEYOND BLUE SUPPORT

A free dedicated Coronavirus mental wellbeing support service (funded by the Australian Government) is now available. The service includes access to wellbeing tips, self-help tools and phone counselling. Go to coronavirus.beyondblue.org.au

Maintain daily movement

"Get out for a walk, go for a cycle, do a home exercise class," she recommends. "Movement helps moderate mood, energy and sleep cycles."

Maintain good nutrition

"Don't eat like you're on holidays," she warns. "Keep a balanced nutritional intake. And don't use alcohol as a coping strategy. If you are feeling overwhelmed find other healthy coping strategies, such as exercise, social connection, journaling, meditation."

Maintain and foster positive connections

Tasha recommends maintaining positive connections with friends and loved ones (online, on the phone, write a letter); positive connections with yourself (meditation, journaling, yoga); and disconnection form technology. "Use technology consciously to stay positively connected but avoid just scrolling for hours through newsfeeds," she advises. "Have some no-tech time as well."

Maintain good sleep hygiene

"Stick with your usual wake up and sleep routines," she says.

Maintain time in nature

"Don't get stuck inside," she advises. "Aim for time out in nature every day, either exercising or sitting and having a cup of tea on your front step." Bloomingminds.com.au

MEDITATE

Meditation teacher Stephanie D'Ovidio says meditation can help lower stress levels, improve sleep and aid emotional health. She shares her advice:

- Meditate in a space you feel safe and comfortable, preferably not your bedroom so you don't fall asleep.
- Reduce the amount of distractions around you if possible.
- Take five long and deep breaths to connect with your body. A great breathing exercise is to breathe in for four seconds, hold your breath for two seconds and breathe out for a count of five. Deep breathing calms your vagus nerve, which then aids in stopping the stress response.
- You can listen to guided meditations, repeat a mantra, listen to soft music or sit in silence.
- Stay present in your meditation; if thoughts appear just witness them with no judgement.
- To try and get it "right" - simply practice being aware when your mind moves astray. It's going to take time and patience to build your meditation practice, so don't give up because you think you can't do it. Your brain is malleable, the more you practice the better you will get at it.
- You will think in meditation; your practice is to be aware and move your focus back to your meditation.
- 5 or 10 minutes of meditation is a great starting point until you build positive associations to then deepen your practice.
- You can also meditate throughout your day by staying present and aware with the moment. Try it when drinking a cup of tea, washing the dishes or going for a run.
- There's an app for that! Stephanie recommends meditation apps including Bloom, headspace and calm.

You can also find out more about meditation by joining Stephanie's Facebook group, The Calm Space.

WORKING FROM HOME WITH KIDS

Dympna Kennedy, parent educator, early childhood advisor and co-author of the best-selling book, #Remote Working! says although it's portrayed as a luxury (offering flexibility and better work-life balance) working and studying from home comes with its challenges.

"Flexibility really means working into the night, while pretending it's all fine and easy," she says. "Recent events have seen many dentists and professionals thrust into working from home. For those already working from home it's gone from hard work to the next level."

BEYOND BLUE SUPPORT

There are simple steps you can take to look after your mental health, even in times of physical distancing or if you are self-isolating, including:

- Staying connected with family and friends. If you can't do it face-to-face, maintain contact through email, social media, video conferencing or phone calls.
- Keep regular sleep routines and eat healthy foods.
- Try to maintain physical activity – even just going for a walk can help.
- Stick to the facts. Misinformation can fuel feelings of anxiety so it's important to seek information from credible sources such as government and health department web sites.
- Limit your exposure to social media and news if you find it upsetting.
- If you are working from home, maintain a healthy balance by allocating specific work hours, taking regular breaks and, if possible, establishing a dedicated workspace.

*Source: Beyond Blue

Dympna says there are some common mistakes parents make when trying to juggle work from home with kids in tow, which include:

Holding high expectations of themselves and their child.

"This is an unprecedented time and therefore things are going to be different and your ability to be flexible, adaptable and creative will be called into play," she says.

Not taking care of themselves.

"You cannot give what you do not have," she explains. "Invest in your own wellbeing so that you are better positioned to handle the unexpected."

Wanting everything to be perfect.

"Lead by example," she advises. "Children learn by what they see and hear you do. Tell them you're frustrated too by being kept inside. Mistakes will happen, upsets will occur, but that shows your children you're human."

Worrying excessively and unnecessarily.

"Project forward when stuck now and ask yourself, 'Will this matter five years from now?'"

"The one thing that I would encourage a dentist/professional to take away from this, is to remember that it's easier to change the environment than to change the child," she adds.

Dympna says dentists suddenly trying to get work done at home with kids in tow might like to consider the following to try to strike some balance:

- Having a space where your child can play or study and have easy access to water and healthy snacks.
- Letting children know when you are working. They may believe you are just playing online.
- Having regular times when you check in with them. Maybe even put up a schedule on the fridge.
- Showing your genuine delight to be back in their company when you're free from work tasks.

"At the end of each day ask yourself the following: What memory do I want my child to hold dearest about me? What action did I take today that would strengthen that memory?" she says.

#Remote Working! is available from **Amazon**

WORKING EFFICIENTLY

Heather Gibson and Sara Hall are professional organisers from Finer Details Lifestyle Management. They share some tips for our members around office space and time management.

Position your desk smartly. "Position your desk to view any work-boards you have, this helps keep you on track," Heather and Sara advise. "Don't secure anything until you are sure this floorplan works for you."

Add pleasing elements. They reveal that limited light and bland walls reduce creativity, but plants, photos and pictures can help, but they warn not to clutter as this will create overwhelm. "Research shows that pleasing elements like plants can increase productivity by 15%," they say.

Use a standing desk. Heather and Sara recommend considering a standing desk, and only having on your desk what is necessary. "All other 'sometimes' items can be stored in storage close by," they recommend.

Time management. List your top tasks that you want to complete each day. "Even if you only have three, you will feel a productive by having ticked them off your list," they say. "Try to do the hardest task first. Eat that frog."

List all your tasks and estimate the time to complete. "Review and see what can be outsourced to others," they recommend. "Don't waste time on something that is not your forte, outsource and spend the time doing what you enjoy."

Know your work style. "Are you a morning person or work better later in the day? Schedule the big tasks for peak performance times."

Identify your procrastination triggers. "Some larger tasks need to be broken down into smaller chunks or you may work better to a deadline," they say. "Work to your strengths."

Find a new balance. "There can be non-stop distractions with family, home chores and social media close by," they say. "Have strong boundaries around work, remember to take breaks and schedule dedicated time to respond to messages."

Being smart online

Prepare for online meetings. Heather and Sara say as online meetings are the new norm, we should prepare as much as possible the day before. "Make sure all devices are charged and anything that is reliant on someone or something else's input has a Plan B," they advise.

Be more productive. Heather and Sara reveal the average person checks their phone every 12 minutes. "Rather than wasting valuable time on social media and checking emails, be more productive and keep in touch with your network," they recommend. "Premise the call with "I only have 10 minutes... but wanted to check in with you."

www.finerdetails.com.au

The many faces of volunteering

National Volunteering Week takes place from May 18 to 24, marking a great opportunity to celebrate those people who selflessly volunteer within the dental community.

By Brooke Evans-Butler

ADHF – DR CHRISTIANA LEE

Dr Christiana Lee has been volunteering with the Australian Dental Health Foundation since 2016, when she saw an article in the Western Articulator about a new oral health clinic opening inside St Patrick's Community Support Centre in Fremantle.

"Being a mum of two young kids, I was working part-time and felt I had the available time to be able to give back to the community in some way," she recalls. "I didn't know much about St Pat's initially but have since found out they provide numerous [medical, podiatry, hairdressing, chiropractic and optometry, to name a few] services to the disadvantaged and homeless population in Fremantle and beyond.

"I find it incredible that a not-for-profit organisation, which is completely reliant on donations and Government funding, is able to provide so many different services to the people who really need it the most."

Christiana clearly caught the volunteering bug, giving her time to St Pat's, Homeless Connect and Healing Smiles. "The oral health clinic at St Pat's is like every other dental practice; we see emergency patients who are in pain or have broken a tooth, new patients for full examinations and regular patients for treatment planned appointments," she says. "However, at St Pat's I feel like I connect with people I wouldn't otherwise meet and hear stories I wouldn't otherwise hear. Some patients openly discuss addiction issues and the circumstances, which have caused them to become homeless.

"My experience at St Pat's has really opened my eyes about the difficulties some people face in even having the confidence to apply for jobs due to self-consciousness about their smile. Being able to help by fixing their dental problems has been unbelievably rewarding and the patients are extremely grateful."

Christiana says participating in Homeless Connect – an annual event held in Northbridge, in which the ADHF offers dental care to the homeless of Perth – is a wonderfully rewarding experience. "Some of the patients we saw only receive dental care that one day of the year, so there were numerous extractions and restorations to be done. It was fantastic meeting other volunteers from so many different organisations, who were all very happy to volunteer their time and expertise to help people in need."

Christiana also volunteers for Healing Smiles, an initiative of the Women in Dentistry society. "It is a unique opportunity to provide dental care to a woman affected by domestic violence with the support of a team of other general dentists, specialists and dental technicians to help improve her quality of life.

"I was lucky that my boss, Dr Sam Rogers, shared my view and was happy for us to join the program at Northbridge Dental Clinic," she says. "We have been seeing our Healing Smiles patient since March 2019 and have since completed her active treatment, which included numerous restorations, a couple of scale and cleans, a referral to Dr Pantea Moterafi (an endodontist who is also part of the Healing Smiles program), an extraction and a new lower chrome partial denture."

Christiana says it feels good to be able to give back to the

community and not expect anything in return. "To think I've had a small part in helping to rebuild someone's life is priceless, and I've had so many hugs of gratitude," she says, adding that she would encourage anyone considering volunteering to just jump in and try it.

"There are so many patients that need dental treatment and are unable to afford it, or do not have the social capacity to make it to Centrelink and do the paperwork to attend a government dental clinic," she says. "We, as dental professionals, are in a such a privileged position to be able to make a profound difference in someone else's life."

To volunteer with **ADHF**, contact ***Andrea Paterson, adminwa@adhf.org.au***

For details about volunteering with **St Pat's**, contact ***Debbie McLeod (Health Clinics Coordinator), dmcleod@stpats.com.au***

KIMBERLEY DENTAL TEAM – DR MOSES LEE

Dr Moses Lee says he was lucky enough to be selected to go on a Kimberley Dental Team trip when he was a final year dental student in 2010. He loved it and has been back every year since.

"We get to travel across to different Aboriginal communities around the Kimberley region of WA, providing free oral hygiene and education, screening and emergency dental work," he says. "No two weeks are ever the same, but a typical week may include driving, sleeping in swags, setting up clinics on basketball courts or classroom verandahs (or anywhere there's a power socket!), and having a sundowner with a great team of volunteers."

Over the years Moses has been involved, he has seen the difference that the team is making, which he says has been the most rewarding part of his experience.

"In the early days of Kimberley Dental Team we were doing a lot more extractions on decayed 6s and 7s, but because of the team's great approach and strategy for prevention (including supplying thousands of toothbrushes to schools and tonnes of fissure sealing) it's amazing to be able to see a tangible difference over the years," he says. "It's also amazing that (most of) the kids look forward to our visit every year!"

Moses finds volunteering a very refreshing reminder why he does dentistry. "Underneath the complex layers of work, we all want to contribute to (build) a better community and I think volunteering with a team of like-minded people brings this out the best," he says.

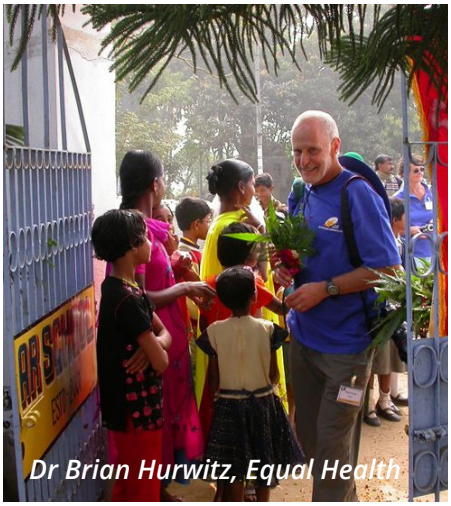
To enquire about volunteering with Kimberley Dental Team, contact Jan and John Owen AM on 0407 998 215.

EQUAL HEALTH – DR BRIAN HURWITZ

Dr Brian Hurwitz wanted to use his dental skills to give something back to the community. "I felt that we are a privileged profession and that our talents should be used, not only for those who can afford them, or have access to them, but that it is part of our professional and moral duty to treat and assist everyone who needs our skills, irrespective of their station in life."

Brian says he was always fascinated by the vibrancy of India and thought it would be a "bucket list place that would stay in the bucket" before seeing an opportunity to volunteer there.

"One day I was reading the Western Articulator and I saw this column advertising the opportunity for dentist volunteers to go to India," he recalls. "I immediately contacted Equal Health, who were marketing the trips. They were subscribed that year and promised to contact me the following year. I told my wife that I wanted to do this, and she said, not only was it a good idea but that she wanted to go as well. I was to train her in basic assisting skills, and she would join the party as a dental assistant. I knew nothing about the organisation and that it was not only a dental group, but medical, optical and allied health volunteering. One of the committee recognised her name (she is a speech therapist) and said that they would not let her professional skills go wasted and that she could go in her professional capacity. And so, the journey began."


Dr Brian Hurwitz, Equal Health

The Hurwitz's first trip was in 2009 and they were based rurally in a centre for the physically and mentally handicapped adults and children, as well as orphans and "discarded" children who were rescued from the streets.

"The dental team serviced the centre, but mainly the rural villages in the area that had basically no access to dental care," Brian says. "The treatment was basically first aid – relief of pain and


Dr Moses Lee, Kimberley Dental Team

treatment of infection, so most of the work was extractions. There was some oral hygiene education and issuing of donated toothbrushes. This was all done in very primitive conditions, usually in an unpowered school room or in a makeshift 'al fresco clinic' in the village, accessed on horrific roads in probably unroadworthy and overloaded vehicles driven by 'cowboy' locals.

"It was so much fun. We brought all the equipment with us from Perth as well as anaesthetics and whatever was needed. Sterilisation was done in a pressure cooker apparatus."

The experience was fantastic, according to Brian. "Working conditions are harsh and primitive, but at the time you do not take it into account. The work is hard, but it is not hard work! The satisfaction that you get and the appreciation of the population cannot be measured. I always say that you may be giving of your skills and time, but what you receive in return is much more. It is a very addictive experience, and that is why one goes back again and again for more and more.

"The other immeasurable factor is the people that you come into contact with. Team members who, otherwise, you would not have had the chance to have contact with. The activity seems to attract a special quality of person. We have met and become acquainted with the most amazing people from all walks of life and skills. There is also, in addition the unique opportunity of experiencing rural life in this exotic location."

Soon after his experience in India, Brian bumped into Dr John Owen, who invited him to an evening that Kimberley Dental Team was hosting. Brian says there was no hesitation putting his name down, and numerous trips to the Kimberley has followed and work in clinics with KDT Southern in Perth.

As a "volunteer junkie" he says to anyone considering volunteering that it is a unique experience being offered. "It may start out as being a little out of your comfort zone, but this is short lived," he says. "You have a skill that may not be popular, but in the circumstance, it is greatly appreciated by the patient, who may have been suffering for a long time with no access to help, and now there is relief.

"The personalities running the shows and fellow volunteers are an amazing, benevolent and generous group and there is a spirit of mentoring and teamwork. It is an adventure with immeasurable benefits to the givers and the receivers. There is a wonderful spirit of camaraderie. It seems that today you can choose to go to all corners of the world, near and far, with groups wanting to help communities in need. Most of the time all you are giving up is some of your time to make a difference to someone who needs you."

Dr Harry Tjoa, CHAT

To enquire about volunteering with Equal Health, email info@equalhealth.org.au

CHAT – DR HARRY TJOA

Dr Harry Tjoa had been wanting to volunteer overseas and had heard positive stories from others who had volunteered with CHAT. So, as a final-year student, he jumped at the opportunity to volunteer in Vietnam, and as an added bonus, it was considered a formal clinical placement as part of his final-year clinical experience. He spent one week in Vietnam last year.

"On our first mission, we headed off to Mỹ Tho," he says. "Here, we spent two days working at a church who kindly hosted many children with speech disabilities. It was a challenging yet rewarding experience. I helped set up our dental equipment; I assisted other dentists treat these children; I delivered oral health education to these children.

"Moving on, we went to Bến Cát where we spent three days at a local school providing dental care to the school children," he adds. "During this time, I was mainly a clinician working with other dentists delivering dental treatment. The amount of restorative work and extractions I did during these three days would have easily surpassed what I had done for six months at dental school. We then concluded our mission and headed back to Ho Chi Minh City (Saigon)."

Harry says he learned how to work in a team in a very dynamic situation where things changed quickly. "I am surprised at how well-equipped CHAT dental team actually is," he says. "The fact that one can assemble and disassemble a mobile dental unit in 10 minutes is impressive. I learned how to adapt my clinical knowledge and skills in such a fast-paced environment and most importantly within the patient base that is very different than that we have in Australia."

He says the highlight of the trip was the welcoming faces, the genuineness, and the deep sense of gratitude that the children and their hosts extended to them. "It certainly opened my eyes to the world of dentistry/healthcare beyond what is practised at home. I greatly appreciate at how our team leaders, Jen and Le, went out of their ways to accommodate us and to ensure our comfort and welfare throughout the entire trip. The people in our team are so lovely; it made the whole trip so much more enjoyable."

To enquire about volunteering with CHAT, email CHATsecretary@gmail.com

Dr Daniel Sundaresan, YWAM

YWAM MEDICAL SHIPS AUSTRALIA AND PAPUA NEW GUINEA – DR DANIEL SUNDARESAN

Daniel Sundaresan first heard about volunteering with YWAM Medical Ships through a friend who had completed an outreach in 2016 and highly recommended it. "I wanted to do something a bit different after completing my SND (Special Needs Dentistry) training and thought this would be a great opportunity to visit Papua New Guinea," he recalls.

Daniel clearly loved it – and completed his fourth outreach as a volunteer earlier this year.

"There is an onboard dental clinic, which is equipped with instruments and materials for extractions, restorative and periodontal procedures," he says. "We also have the opportunity to visit villages and set up a mobile dental clinic, as well as providing oral hygiene advice. This often includes education about oral cancer for which there is a high incidence."

Daniel says the most rewarding part of the experiences is that most of the regions they visit have no access to dental care, and often they are the first and only dentist these communities will see.

"I got to witness children, teenagers, mothers, fathers, and grandparents all come in the clinic – most had been in pain for many years," adds Daniel's dental assistant, Tekoa Fakaua. "Ultimately, this resulted in many extractions. Nearly all patients left the clinic within minutes after the procedure, pain free. It was one of the most rewarding experiences I have ever taken part of – seeing life brought to people whose lives were severely altered due to the pain that inevitably controlled their state of living."

Daniel absolutely recommends others thinking about volunteering to give it a go. "The work is rewarding, and the people you work with are passionate about providing health care," he says.

For information about volunteering, go to www.ywamships.org.au

TIMA PERTH – DR SONNY LEE

Dr Sonny Lee's journey volunteering with TIMA started in 2016, when he says he was shocked by the way refugees were being treated in Australia.

"I attended some lectures from Red Cross regarding the problems refugees face in Australia and how they provide support," he says. "They mentioned TIMA was one of the organisations who helps refugees with dental problems, so I contacted Dr Lydia See to sign up to the yearly dental volunteer day. Now we are helping various groups from homeless to domestic violence victims, or just anyone who can't get access to dental care."

He says the comradery of having a common purpose with like-minded people, and to be able to be able to contribute something good has been rewarding.

"We are in such a blessed position to be able to make such a big impact in people's lives, even just offer a glimmer of hope from showing you care," he says.

For details about volunteering with TIMA, contact Dr Lydia See, timaperth@gmail.com


Dr Sonny Lee, TIMA Perth

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9.30am-10.30am

Join Julie Meek, Dietitian and Performance Specialist, author and 6PR 882AM radio presenter for a conversation all about 'truth, lies and chocolate.' This live online presentation will explore current issues in nutrition where you will learn to dispel myths and gain practical tips on how to perform at your best everyday.

Fairytales and myths abound in the nutrition and wellbeing world and it is too easy to get steered in the wrong direction.

Discover and be enlightened about some common nutrition controversies including the following:

- Carbohydrates – best friend or worst enemy?
- Caffeine – will it give you a buzz to get through a demanding day?
- Can Vitamin C prevent the common cold?
- Red meat or plant based – which is best for our health?
- Nutrition supplements vs. food – even better than the real thing?
- Red wine and chocolate – can they boost your immune system?

We all know that knowledge is power and this session is the ideal way to share positive, expert advice alongside practical solutions on staying healthy and productive.

This webinar will be conducted live and includes all notes plus the recording, which will allow unlimited viewing. It will also be a platform for you to ask questions and share your own thinking.

THE SPECIALTY *JOURNEY*

Are you thinking about specialty training? We asked two specialists about their experience

DR LALIMA TIWARI, ORAL MEDICINE

Q: Why did you choose to specialise in oral medicine?

A: *While working as a general dentist in Brisbane, I was exposed to a variety of oral medicine patients, including patients with oral mucosal lesions, as well as those with a history of head and neck radiation. These patients always generated a deeper curiosity within me, in terms of "why" they had these disorders in their mouth. This curiosity led me down the path of studying oral medicine.*

Q: How long did it take you to finish your specialty study?

A: *Three years.*

Q: What were some of the greatest challenges during your study as a specialist?

A: *Specialising is very much a personal journey and I'm sure other trainees would say something similar. For me, one of the greatest challenges was time management. The course itself was very much based on self-guided learning. While my consultants and discipline leads did a great job at teaching us clinical skills, at the end of the day your knowledge base was primarily driven by how much work you put into learning the specialty. As a result, I found my social life becoming obsolete, and even if I was out with friends or family, the visits would get cut short by me, as I always felt that something course related needed to be done. I was never really able to figure out a "work-life" balance with oral medicine training.*

Q: What has been the most rewarding part of going into your specialty so far?

A: *As an oral medicine specialist you diagnose patients with significant, life-changing conditions. One of the most rewarding parts of the specialty is seeing these patients improve or recover over time from these conditions. I feel very privileged that I get the opportunity to provide care for these patients.*

Q: What would your advice be to someone thinking about getting into specialty training?

A: *You really need to love your specialty to get through the course. Specialising is very demanding and consumes a significant proportion of your time! You need to be truly passionate about learning the specialty to get through those challenging times.*

Q: What are your hopes for your future as a specialist?

A: *My focus currently is on providing the best care I can for my patients. In addition to clinical practice, I would eventually like to further my research career in the field, as I enjoy seeing the fruition of research translating into clinical practice and contribute towards the progression of the specialty.*

DR NANDIKA MANCHANDA, PAEDIATRIC DENTISTRY

Q: Why did you choose to specialise in paediatric dentistry?

A: *I studied paediatric dentistry as working with children has been a passion of mine since I was first exposed to this in my undergraduate training. Having the opportunity to learn my undergraduate paediatric dentistry from such an enthusiastic teacher, Dr Alistair Devlin, was definitely a contributing factor to my interest in paediatric dentistry.*

When I was working in general practice, I always found that treating children was the highlight of my day, but on the other hand it was also confronting to see that so many children in Australia are affected by early childhood caries. This reinforced the value of specialist paediatric dental care and also led me to realise that I wanted to learn from the leaders in this field, so that I could provide the highest standard of care for my young patients.

Q: How long did it take you to finish your specialty study?

A: *The specialty training took three years full-time.*

Q: What were some of the greatest challenges during your study as a specialist?

A: *The three years of specialist training were definitely some of the most challenging times in my life, yet I look back on those times very fondly as they were certainly most rewarding both on a professional and a personal level. The course certainly tested my time management skills and it felt very difficult to be on top of all the to-do lists. Additionally, there were emotional challenges with increased contact hours, change in sleep patterns and difficulty balancing this with my personal life. On the bright side, it definitely aided my personal growth and resilience, and also fostered the environment for some profound friendships with my professional colleagues.*

Q: What has been the most rewarding part of going into your specialty so far?

A: *When a patient is already affected by a dental disease and I can provide treatment, it helps not only the child but their whole family. Hearing that they can now eat and sleep comfortably, that they are doing better at school and hearing that the family have now adopted good preventive oral health behaviours at home for the siblings is extremely satisfying! Seeing the confidence in the dental setting increase for initially nervous or anxious children is also extremely rewarding.*

Q: What would your advice be to someone thinking about getting into specialty training?

A: *I would recommend making sure you feel passionate about the specialty that you are choosing and that you are ready for a lifestyle change for the next three years, as it is certainly a full-time commitment and is challenging at times – but the love of your specialty is what motivates you and gets you through this time. Also, I would make sure that you have a solid support unit with your family and friends – since I know my loved ones played a huge part in helping me through this exciting yet challenging phase.*

Q: What are your hopes for your future as a specialist?

A: *In short, to continue to learn, provide the best clinical care possible and to share knowledge with the wider community. In a field like dentistry, our practices should be evidence-based where possible and so I am excited to continue to learn more in this forever evolving field. I strive to consistently provide high quality care for my patients and their families both clinically and through oral health education and promotion. One of the great things about finding a passion is the ability to share it with others, so I hope I can continue to find ways to spread the oral health messages to patients as well as sharing paediatric dental education with my professional colleagues.*

WA DENTAL CPD
A collaboration between ADAWA & UWA Dental School

The importance of CPD

With COVID-19 restrictions still in place, it is a great time to tick off some CPD hours. We spoke to ADAWA Director of Continuing Professional Development, Dr Jenny Ball, for her advice

Dental practitioners are required to complete a minimum of 60 hours of CPD activities over a three-year CPD cycle. "Your dental degree gives you the building blocks to practice dentistry and then you use the information from CPD to build on that and to increase your skills to make you a better dentist," Jenny explains.

THE ADVANTAGES OF ONLINE CPD

With face-to-face CPD events currently postponed, Jenny says online CPD is perfect at times like this when we cannot get together to interact and network – but it is also a valuable option year-round. "The other situation where online CPD is fantastic is for country members," she adds. "Traditionally, they always had to come to the city to get their CPD, whereas now they can sit at home in the Kimberley and do as much CPD as a city dentist, without the added expense of travelling."

ONLINE CPD OPTIONS

"During this time when we are in COVID-19 restrictions, my suggestion would be to forget about your CPD hours and go dipping in and out of anything and everything you can find," Jenny suggests. "There are so many options you can access if you go to the ADA Federal CPD Portal or simply Google 'Dentistry CPD'."

Dr Jenny Ball's top tips on staying focused on your CPD

- Think about what you want to learn and what you want to improve; do not go randomly looking.
- Start with your basic skills – such as your basic composites and your basic crown prep and do some CPD on those.
- Find some CPD or podcasts on improving communication skills with your patients.

PODCASTS

Remember, CPD does not necessarily mean heavy reading. Jenny points out there are a number of podcasts available – all you have to do is record what you have listened to, when you listened to it, and how long the podcast was.

Some podcasts to check out include:

ADA NSW's The Dental Practitioner

ADA NSW's The Brush Up (for new dental professionals and students)

Dr Jesse Green's The Savvy Dentist

The ADA Dental Files podcast is available through Apple Podcast, iTunes and various android applications

Jenny also reminds members they should tune into health and mindful podcasts (not only dental) as CPD hours are made up of 80% scientific and 20% non-scientific content.

BOOKING FUTURE CPD

Jenny reminds members that they can still enrol in WA Dental CPD face-to-face courses. "Where possible, our events have been postponed, not cancelled," she explains. "The presenters have been busy putting together their presentations, and those plans haven't been abandoned. When COVID restrictions are lifted, new dates will be set for those courses. Members are welcome to enrol because some of the courses are limited attendance and once they fill up, that's it. Enrol in the courses you wish to attend, and we'll confirm a date as soon as we can."

RECORDING YOUR CPD HOURS

Did you know you can manage all your CPD activities in one place? Go to the ADA Federal website and access their CPD Portal in the members' area. You can keep track of all of you CPD activities and hours via an online CPD logbook. The current CPD cycle commenced from 1 December 2019 and runs until 30 November 2022.

For up-to-date information about WA Dental CPD, remember to regularly check:

The ADAWA CPD webpage and the WA Dental CPD Facebook page.

ADAWA PODCAST

An ADAWA Podcast is coming! Named 'Bonding with ADAWA', the podcast will be hosted by Dr Amanda Phoon Nguyen, who will get to know members of the dental community, share the latest updates and keep everyone in the loop with the latest news and snippets of what to expect from upcoming CPDs. The first podcast guest will be our own Director of Continuing Professional Development, Dr Jenny Ball. The podcast will be available on Spotify and iTunes – and we'll also update members about new podcasts via the ADAWA website and Facebook group. Listening to the podcast will not count towards CPD hours at this stage, as it will be more of a chat platform. Amanda welcomes any suggestions of what members would like to listen to. *Contact her at AmandaP@adawa.com.au*

MEET

Drs Paul Gorgolis and Asheen Behari

Brooke Evans-Butler met Drs Paul Gorgolis and Asheen Behari, the charismatic presenters of WA Dental CPD's Ceramics Restorations course

They say two heads are better than one, and attendees of Drs Paul Gorgolis and Asheen Behari definitely get the many advantages that come with being lectured by these two general practitioners. They are clearly good friends (they were at the same university in Johannesburg and were next door neighbours at the campus residence), but perhaps the courses are also so engaging because the dentists have such a wealth of experiences between them.

For Paul, immediately after he qualified from the University of Witwatersrand, he moved to the UK, aiming to be there for a very short stint, although he quickly realised there was a lot of opportunity there professionally and personally.

"When I was working in the UK, I discovered I had an interest in aesthetic dentistry, and soon realised there were limitations of what my scope of understanding and experience allowed me to do," he says. "I wanted to source other people to work with and it developed to the UK's first multi-disciplinary practice."

Asheen started his own practice after graduating in South Africa, and after about four years also headed to a private practice in London and developed a passion for aesthetic dentistry.

Both ended up in Perth, working as general practitioners (with interests in aesthetic dentistry) and both tutored final-year dental students at the University of Western Australia. They have been running their Ceramics Restorations course for a number of years.

"They say the total is greater than the sum of the parts," Paul says. "Our experiences are different and we can have different perspectives on the same topic."

Paul and Asheen's lectures inevitably incorporate an element of fun, too. "We have a bit of banter, which is good," Asheen says, laughing. "I also think it is important to present to people that there are different methodologies, without confusing them. There must be a great clarity, but they can see there are different ways to achieve things."

The duo encourages attendees to participate and ask questions. "We generally find that we do get asked a lot of questions in our courses," Asheen says. "Because we're general practitioners, we're on the same level as everyone else.

"We also create an atmosphere and an environment where I think people feel unafraid to ask questions."

Asheen explains that at the start of a course, everyone introduces themselves. Then the attendees are asked why they're at the course and what they want to get out of it. "We write a list of those goals or questions on the whiteboard, and throughout the course we answer those questions.

"At the end of the program we always go back to those questions and make sure that we have covered every question that has been asked."

"We teach in an informal environment," Paul says. "I think that is part of the reason why people are comfortable to ask all of their questions.

"The bottom line is we try to create an atmosphere – we

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"WE ALSO CREATE AN ATMOSPHERE AND AN ENVIRONMENT WHERE I THINK PEOPLE FEEL UNAFRAID TO ASK QUESTIONS."

don't have any airs and graces about ourselves," Paul adds.

Paul and Asheen will be presenting a lecture on Ceramic Restorations, which will explore guidelines to help practitioners select and understand the materials and systems that achieve the best aesthetic and functional outcomes for their patients.

Asheen says the course is pitched at a range of people who have interest in the topic.

"We get some youngsters who have just graduated, some much older practitioners and a whole bunch in the middle," he explains. "So, the course is aimed at giving people greater skills to work with these ceramic materials. It is not uncommon to find older practitioners who have never done any ceramic work.

"We talk a lot about what the materials are, how you work with them, and expectations related to each material. We do a bit of theory and then we do a hands-on component."

Paul says there is a lot of confusion amongst dentists regarding ceramics, which stems from the huge choice of materials available and the marketing of them, so they are commonly asked what ceramic material to use and when.

Paul and Asheen will also be presenting a follow-up course, "Porcelain Veneers & Ceramic Onlays – A Practical Approach to Multiple Restorations", which focuses on multiple ceramic veneers and onlays. Attendees do not need to have completed the Ceramic Restorations course to attend, but it is worthwhile so the fundamentals are already covered.

5 MINUTES *with*

Drs Paul Gorgolis & Asheen Behari

If you weren't in dentistry, what would you be doing?

Paul: "I can't see myself doing anything else," he says. "Even when I was losing my baby teeth, I used to be most fascinated by them. The interest started early."

What do you do in your spare time?

Asheen: "I have three kids," he laughs. "I try to spend as much time with my family as I can. I try to do some gardening, but I wish I could do more, and I do a bit of cycling along the river. I also go once or twice a month to my rural practice in Kojonup, and I have a little property there."

Where is your favourite part of the world?

Paul: "My favourite part of the world is Australia," he says. "That's why I live here."

What is your favourite book?

Asheen: "A book I read a fair bit is called The Prophet by Kahlil Gibran," he says. "It really helps you to think and reflect on the important stuff that makes us human."

Who inspires you and why?

Paul: "Family inspires me," he says. "My parents, grandparents, my kids – they all inspire me in some way."

Dr Janina Christoforou, *Oral Medicine Specialist*
Dr Nathan Vujcich, *Oral and Maxillofacial Surgeon*
Dr Peter Ricciardo, *Oral and Maxillofacial Surgeon*

A guide to the oral and dental management of patients taking DOACs

This guide has been formulated to accompany the Oral and Dental Therapeutic Guidelines Version 3 (1), which were formulated by the Oral and Dental Expert Group. The use of the same terminology has been adopted to avoid confusion and to provide important supplementary information.

For more than half a century, Warfarin had been the most widely used oral anticoagulant in clinical practice, which made it a familiar drug with protocols available for both prolonged bleeding prevention and bleeding management. The success of Warfarin therapy revolved around strict control of the international normalised ration (INR), which could sometimes be challenging. With the introduction of the Direct Oral Anticoagulants (DOACs), the need for regular laboratory monitoring while using the DOAC has been eliminated. Also, the DOACs have been shown to equal, if not be superior to, Warfarin in the management of conditions such as venous thromboembolism and atrial fibrillation related stroke. (2)

The increased use of DOACs means that the dentist should have a sound understanding of the mechanism of action, pharmacology and the management of bleeding in a patient on DOACs. DOACs are non-vitamin K antagonist oral anticoagulants and are approved for the management of non-valvular atrial fibrillation, thromboembolism, and acute coronary syndrome. It may also be prescribed following hip and knee replacement.

These drugs act as direct thrombin inhibitors (Dabigatran [Pradaxa]), or as direct factor Xa inhibitors (Rivaroxaban [Xarelto]; Apixaban [Eliquis]).

Apart from a patient's use of DOACs, bleeding is also influenced by a number of other patient-related factors. (See table 1).

TABLE 1: PATIENT-RELATED BLEEDING FACTORS

Liver impairment / disease	Chronic renal failure
Pre-existing bleeding disorders: Haemophilia, Von Willebrand's disease	Excess alcohol intake
Hypertension	Supplements: Fish oil
Medications: anticoagulants / antiplatelets, corticosteroids, cytotoxic drugs, NSAIDs	Haematological issues: Leukaemia, lymphoma myelodysplasia
Autoimmune disease: Immune thrombocytopenia	Infection (HIV)

SOCIAL HISTORY

The decision to perform an invasive procedure may also require an understanding of a patients' social situation. A patient may be at greater risk should post-operative bleeding occur if they live alone without the potential assistance from friends or family. Cognitive impairment is more frequent in the older population who are often the group prescribed DOACs and it is important that appropriate support is available for them. Furthermore, special consideration should be given to those rural patients in Western Australia who live in isolated or distant locations, where post-extraction recovery may occur in a location distant from supportive health care.

SEVERITY OF BLEEDING:

There are no clear and standardised definitions in the literature for minor, moderate or severe bleeding following invasive oral surgery procedures. Post-operative bleeding with regards to oral surgery includes: bleeding lasting more than 12 hours, where the patient had to call the practitioner/ the practice/emergency department; where a large haematoma/ecchymosis occurred; or the patient required a transfusion.

Unfortunately, the majority of studies assessing bleeding from dental procedures are of low-quality evidence and have included low numbers of participants. Additionally, they are often conducted in specialist practice where the skillset of the provider and available equipment may differ to that of general dental practice. The outcomes may therefore differ to that expected in the general practice. Dabigatran and Rivaroxaban have been available for longer and hence there are more studies reporting data on these agents. In the majority of studies where procedures were performed under local anaesthesia, post-operative bleeding was considered minor-moderate and manageable with local measures without the need for hospitalisations or blood transfusions. (3) It should be noted that the majority of studies do not record the severity of intra-operative bleeding.

The bleeding risk of oral surgery and dental procedures can be divided as follows:

1. Unlikely to cause prolonged bleeding
2. Likely to cause prolonged bleeding (lower risk and higher risk) (See table 2).

TABLE 2: BLEEDING RISK OF ORAL SURGERY AND DENTAL PROCEDURES

Unlikely to cause prolonged bleeding	• Examination and diagnostic procedures • Restorative treatment • Root-canal treatment • Orthodontic treatment
Likely to cause prolonged bleeding ***Lower risk***	• Extraction of 1 to 3 teeth which are not adjacent to each other and not impacted • Subgingival periodontal debridement • Incision and drainage of swellings • Limited or small (less than 10mm) soft tissue biopsies
Likely to cause prolonged bleeding ***Higher risk***	• Extraction of 4 or more teeth • Extraction of adjacent or impacted teeth • Procedures where a mucoperiosteal flap is used • Soft tissue biopsies: Extensive (Greater than 10mm); - *Certain anatomical sites including the tongue, palate and floor of mouth* • Hard tissue biopsies: - *Dental implant treatment** - *Autogenous grafting ** - *Sinus grafting **

** Dental-implant treatment is another area with limited data. The risk relates to the technique of the practitioner (ie flap design) and the need for grafting. Autogenous grafting not only raises the risk of bleeding at the implant site, but also the risk of bleeding at the potential donor site or higher anatomical risk areas, such as sinus grafting.*

The categorisation of dental procedures likely to cause prolonged bleeding into low risk and high risk can also vary based on the skill of the practitioner performing these procedures. Hence, this should only be taken as a guide. If experience is lacking in the procedure, the risk of bleeding from the procedure may be upstaged. For higher-risk procedures, serious consideration should be given to referring to an oral and maxillofacial surgeon. In the event of haemorrhage, the oral and maxillofacial surgeon is the specialist who will likely be managing the case.

The majority of patients taking a DOAC are likely to be on other antithrombotic agents, and hence in procedures which are likely to cause prolonged bleeding, the following guide should be considered, **if there are no other patient-related bleeding factors** (Table 3):

TABLE 2: BLEEDING RISK OF ORAL SURGERY AND DENTAL PROCEDURES

Dual antiplatelet + DOAC *	This patient will likely require temporary interruption of the DOAC and consider referral to an oral and maxillofacial surgeon.
Antiplatelet + DOAC	This patient may require temporary interruption of the DOAC.
DOAC only	This patient may require temporary interruption of DOAC in procedures with a higher risk of prolonged bleeding.

** This is a very high-risk medical patient, and dual antiplatelet therapy should not be interrupted for 6 months following a cardiac event. They remain a high risk of haemorrhage with DOAC withheld and dual-antiplatelets maintained. Consideration of referral to an oral and maxillofacial surgeon is appropriate in this high risk medically compromised patient.*

In these scenarios where temporary interruption of the DOAC may be required, consultation with the patient's cardiologist/medical practitioner is recommended and referral to an oral and maxillofacial surgeon may be considered. The objective of treatment is to minimise the risk of bleeding and minimise the period of anticoagulation interruption.

STOPPING THE DOAC AND RESTARTING THE DOAC

Consensus is lacking regarding interrupting a DOAC regime due to low quality of current evidence. A judgement needs to be made regarding the potential harm of continuing the drug, which may increase the risk of prolonged bleeding against the risk that stopping the drug can lead to a thromboembolic event. The majority of patients taking DOACs are for non-valvular atrial fibrillation which carries a lower risk of thromboembolism. (Non-valvular atrial fibrillation is atrial fibrillation in those without valvular heart disease, or prosthetic valve replacements).

Patient characteristics (including age, history of bleeding complications, concomitant medication, and kidney function), patient geography, as well as surgical-bleeding risk factors, need to be taken into account to determine when to stop and restart a DOAC. (4)

There are currently no validated prospective data of any coagulation test to guide the timing of surgical procedures. (6)

- The anticoagulant effect of DOACs wanes within 12-24 hours after the last intake
- The maximum effect of the DOAC will occur at its maximal plasma concentration, which is approximately 2-3 hours after intake for each of these drugs

In collaboration with the patient's cardiologist or prescribing medical practitioner, the following regime is often used:

1. Procedures can be performed 12-24 hours after the last DOAC intake if the patient has normal renal function, which is guided by the medical practitioner (5)
2. The patient may only leave the clinic if any peri-operative bleeding has completely stopped. See (table 4) for local bleeding control measures after the oral or dental procedures
3. Full dose of the DOAC can usually be resumed after 24 hours post-lower risk of prolonged bleeding intervention if haemostasis is maintained. This may need to be extended for higher risk of prolonged bleeding interventions (6)

TABLE 4: LOCAL BLEEDING CONTROL MEASURES AFTER THE ORAL OR DENTAL PROCEDURE:

Use of adrenalin containing local anaesthetic agents.
Application of pressure to the site(s) of the invasive procedure by way of surgical gauze.
The use of local antifibrinolytics: a. Topical tranexamic acid has proven efficacy to support haemostasis particularly in trauma-induced bleeding. i. Tranexamic acid mouthwash 4.8% or compressive gauze soaked in tranexamic acid. (This is not to be ingested).
The use of oxidised cellulose (Surgicel) or absorbable gelatin sponge (Gelfoam, Spongostan) in the extraction socket.
Try to primarily close wounds, if possible, with sutures. *(This does not necessarily mean raising a flap, which may exacerbate bleeding.)*

A specific reversal agent is available for Dabigatran: Idarucizumab, a humanised antibody fragment that specifically binds Dabigatran. This is not universally available and is expensive therapy which is administered in an emergency department.

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Figure 1: Flow chart of the decision-making process for DOAC regime alteration for a patient who is taking a DOAC and is undergoing a procedure that is likely to cause prolonged bleeding.

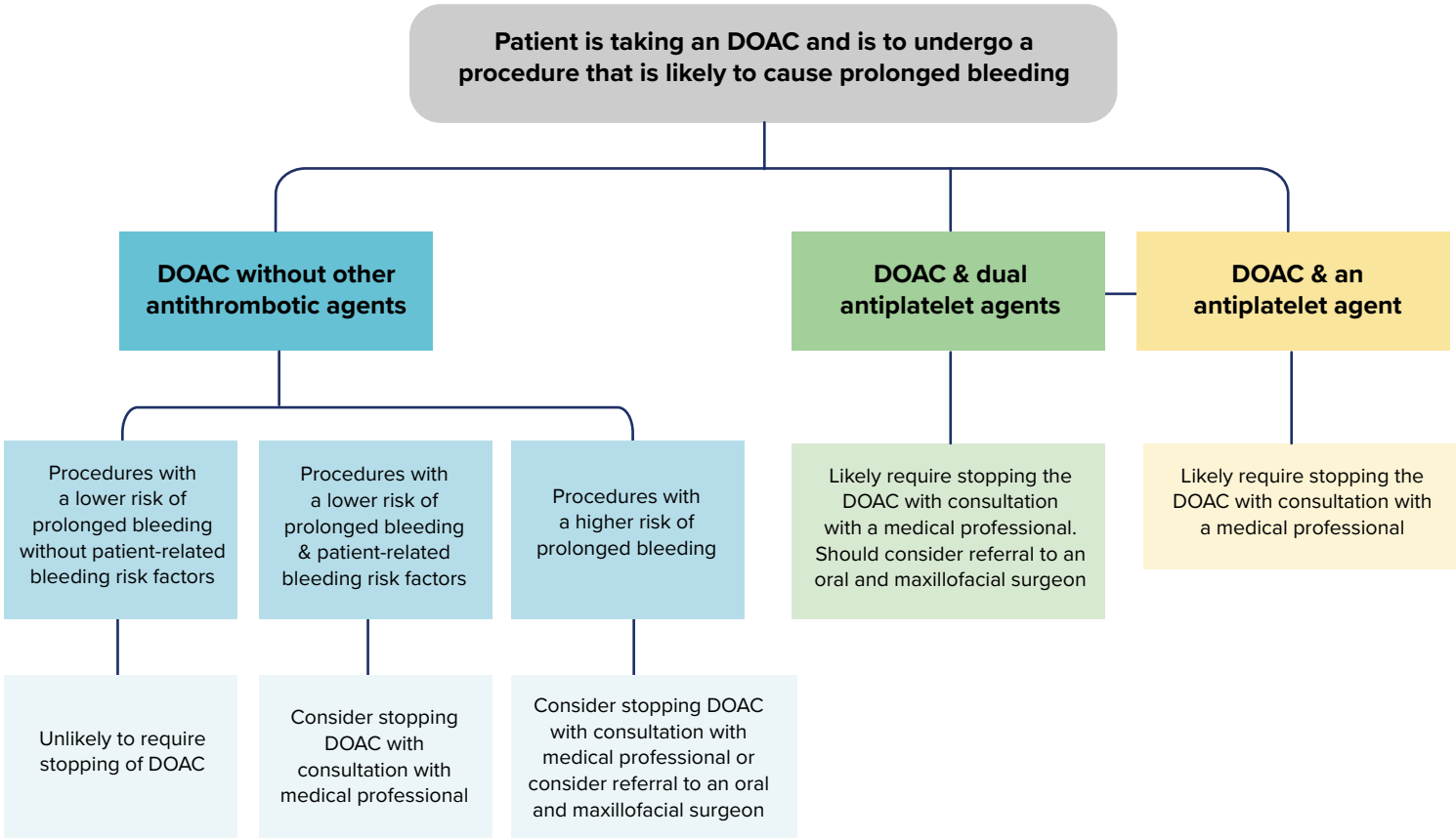
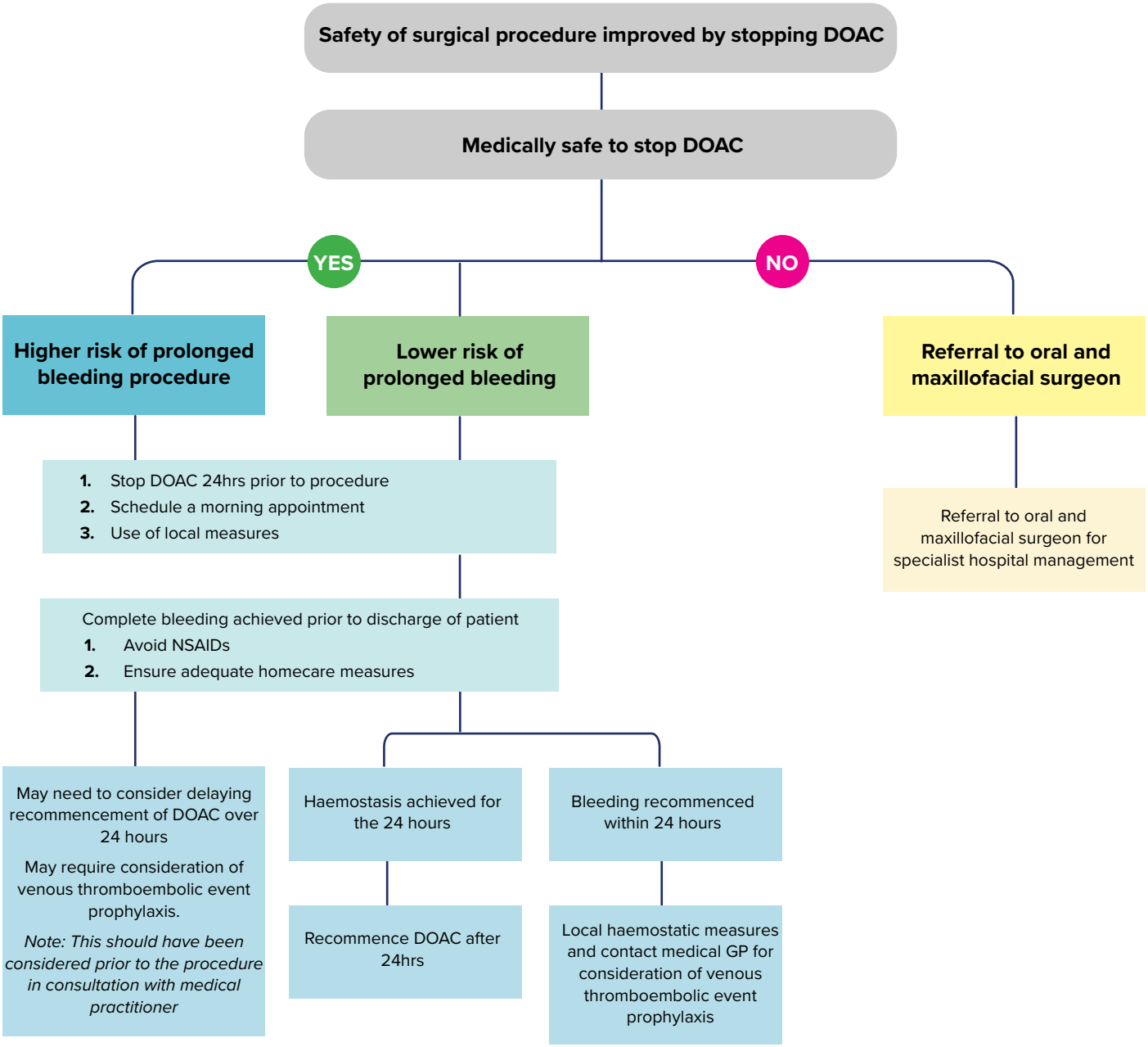


Figure 2: Flow chart of the management of a patient who is likely to require altering the DOAC regime to reduce the risk of prolonged bleeding.



Note: This is only a guide and will require self-judgement.

Medication-related osteonecrosis of the jaw (MRONJ)

Dr Amanda Phoon Nguyen, Oral Medicine Specialist
Dr Leon Smith, Oral and Maxillofacial Surgeon

Medication-related osteonecrosis of the jaw (MRONJ) is a condition where exposed bone or bone can be detected through an intraoral or extraoral fistula/e in the maxillofacial region, does not heal within eight weeks, and occurs in a patient who has received a bone-modifying agent (BMA) or an angiogenic inhibitor agent, with no history of head and neck radiation.

It was first reported in dental literature in 2003 and was initially used to describe the spectrum of dental problems seen in cancer patients treated with IV bisphosphonates for prevention of skeletal-related events. While varying terminology such as antiresorptive-related osteonecrosis of the jaw, bisphosphonate-related osteonecrosis of the jaw, avascular necrosis of jaw, osteonecrosis of the jaw, and phossy jaw have been used, MRONJ is currently the most accepted term.

In the last two decades, there has been a steady increase in its incidence. MRONJ occurs in approximately 1% to 9% of patients with advanced cancer who are receiving a BMA, in contrast to a much smaller percentage of patients who receive BMA pharmacotherapy for osteoporosis. As of 2010, 2408 cases were reported in literature: 88% associated with intravenous therapy (such as zoledronate and pamidronate), 11% received oral bisphosphonates, 89% had an underlying condition (multiple myeloma (43%), breast cancer (32%), prostate cancer (9%), other (5%) and 11% had osteoporosis (Filleul et al. 2010). Of interest, 67% of these cases were preceded by tooth extraction, 7% from other factors such as ill-fitting dentures, and in 26% of cases, there was no identified predisposing factor (Filleul et al. 2010). Other conditions in which higher rates of spontaneous necrosis may rarely occur include patients with hypercoagulable states and patients taking bisphosphonates who develop hypocalcaemia and secondary hyperparathyroidism.

The overall reported prevalence of MRONJ is 0.1% (10 cases per 10,000) in patients receiving oral bisphosphonate therapy for osteoporosis, marginally higher than the incidence in the general population. Duration of oral bisphosphonate therapy for osteoporosis appears a dose-dependent risk, with increased risk after four years of oral therapy (0.21%, 21 cases per 10,000), and is compounded if the patient is also being treated with long-term glucocorticoids or anti-angiogenic drugs. A prevalence of 1.7 cases per 10,000 has been reported for patients undergoing annual intravenous zoledronic therapy for three years, with no change after six years therapy. For denosumab, the risk of MRONJ is reported to be four cases per 10,000. Compared with patients receiving higher doses of anti-resorptives for cancer treatment, the risk of MRONJ for patients with osteoporosis exposed to anti-resorptive medications is approximately 100 times smaller. The risk of ONJ among cancer patients exposed to zolendronate ranges between 50-100 times higher than cancer patients treated with placebo, and the cumulative incidence of MRONJ ranges from 0.7% - 6.7%).When limited to studies with Level 1 evidence, the risk of MRONJ in subjects exposed to zolendronate approximates 1% (100 cases per 10,000 patients). The risk for ONJ among cancer patients exposed to denosumab is comparable to the risk of ONJ in patients exposed to zolendronate.

The pathophysiology of MRONJ is unknown. Current theories centre on 5 main ideas: inhibition of bone remodelling, infection and inflammation, a lack of immune resilience, soft tissue toxicity and altered angiogenesis. The strongest evidence supports the former two.

The diagnosis of MRONJ is primarily clinical. It is worth remembering that the requirement to have exposed bone for a diagnosis has been debated. Other disease processes such as neoplastic infiltration of bone and osteomyelitis should be excluded. Further imaging may be required, and specialist interpretation is recommended. Radiographic features on plain film may not demonstrate early disease, however some non-specific features include increased prominence of the lamina dura around dentition, diffuse sclerosis, patchy lucencies and cortical erosions. More advanced features include sequestrum formation and periosteal reactions. A position paper of the American Association of Oral and Maxillofacial Surgeons describes a clinical staging process (Table 1).

While it is well-recognised that bisphosphonates and denosumab are implicated, several drugs carry the risk of this debilitating adverse effect. These include anti-angiogenic agents, monoclonal antibodies, tyrosine kinase inhibitors and variant fusion proteins, with case reports for mammalian target of rapamycin inhibitors, radiopharmaceutical Radium 233, methotrexate, prednisolone and selective estrogen receptor modulator Raloxifene. The risk appears to be higher when utilized in conjunction with bone-modulating therapies (Table 2). As a guide to identifying some novel drugs, their distinct and identifying nomenclature is shown in Figure 1.

MRONJ can be challenging to treat and can cause significant pain and reduced quality of life. Prevention is far preferable. Risk management when considering treating a patient who may potentially develop MRONJ necessitates informed consent with specific discussion of the patient's individual risk profile. Treatment of this condition aims to eliminate pain, control infection of soft and hard tissues and minimize progression of bony necrosis. It is largely dependent on the stage of disease and the patient's underlying medical history. With bisphosphonates, a drug holiday is often not useful due

to the incorporation of the drug into bone tissue. In contrast, many newer medications have a shorter half-life, and therefore a drug holiday may be considered by the treating physician.

Management is often multidisciplinary and the patient should be referred to appropriate specialists. Treatment, according to the stage of the disease, may include conservative measures such as antimicrobial mouth rinses, antibiotics if clinically indicated, effective oral hygiene, and conservative surgical interventions, such as small sequestrum removal. More aggressive surgical intervention may be indicated for more severe cases. Possible adjunctive therapies include hyperbaric oxygen therapy, platelet rich plasma, bone morphogenic protein, and parathyroid hormone.

Preventive oral care methods combined with effective oral health practices are associated with a lower rate of MRONJ. It is strongly recommended that patients see a dentist prior to therapy to ensure that any teeth of questionable prognosis are assessed and extracted if necessary, with adequate healing time. Any dental prosthesis should be well fitting in order to reduce trauma. Dental screening, prophylaxis, oral hygiene instruction, tobacco and alcohol cessation counselling, and timely treatment is recommended to reduce risk. Consensus recommendations from the American Association of Oral and Maxillofacial Surgeons (AAOMS) and the International Task Force on Osteonecrosis of the Jaw agree that elective dentoalveolar oral surgery does not appear to be contraindicated in patients undergoing anti-resorptive therapy for osteoporosis, however, identification and treatment of dental disease prior to the initiation of anti-resorptive therapy, if possible, is recommended. Patients should be adequately informed of the small risk of MRONJ.

Figure 1: Nomenclature for various novel drugs

Novel drug names have four segments (and usually five syllables).

The **first segment** is the decision of the drug developer. The next segment is the target or disease class, to which a vowel may be added to allow pronunciation, Before 2009, tumour specific segments were used, but this practice has been discontinued because most monoclonal antibodies with oncology indications are investigated for more than one type of tumour. The third segment of the name indicates the source (eg, human, mouse) and is useful for predicting immunogenicity. The last syllable indicates the drug category.

2nd segment: Target or disease class

- ba (bacterial)
- li (inflammatory/immunomodulating)
- ci (cardiovascular)
- tu/-ta (tumours/neoplastic disease)
- vi (viral)
- ne (neural)
- fung (fungal)
- so/ -os (bone)

3rd segment: Origin

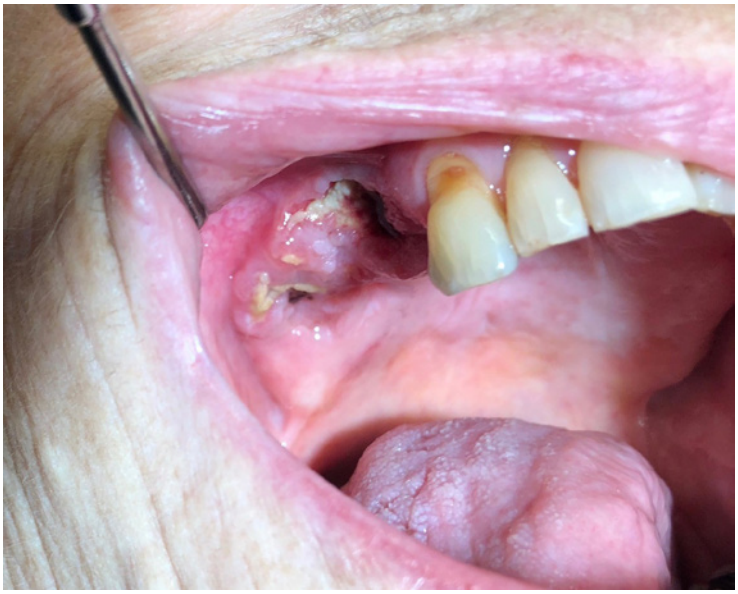
- u (human)
- zu (humanized)
- o (mouse)
- xi (chimeric)
- xizu (chimeric humanized)
- l (primate)

4th segment: Drug category

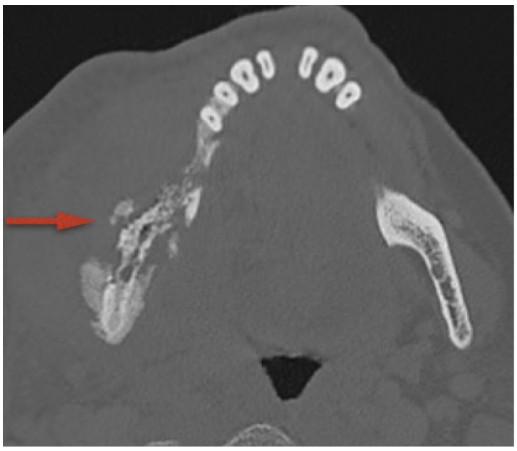
- Tyrosine kinase inhibitors (-nib)
- Mammalian target of rapamycin inhibitors (-limus)
- Variant fusion proteins (-cept)
- Monoclonal antibodies (-mab)

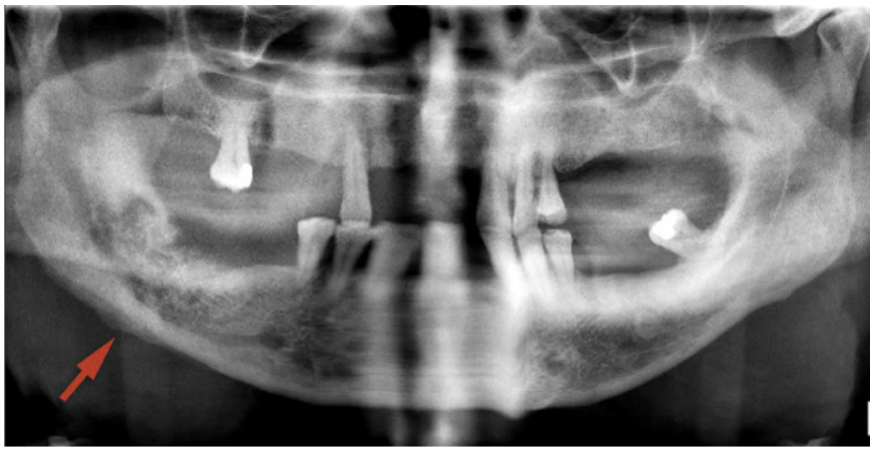
Table 1: Clinical Staging of MRONJ (adapted from Ruggeiro et al. 2014)

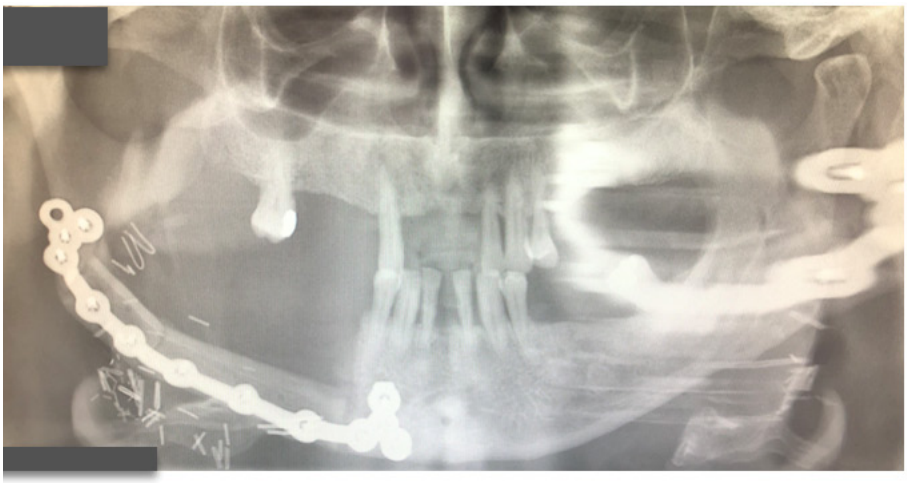
At risk	No apparent necrotic bone in patients who have been treated with oral or intravenous bisphosphonates
Stage 0	No clinical evidence of necrotic bone but nonspecific clinical findings, radiographic changes, and symptoms
Stage 1	Exposed and necrotic bone or fistulas that probes to bone in patients who are asymptomatic and have no evidence of infection
Stage 2	Exposed and necrotic bone or fistulas that probes to bone associated with infection as evidenced by pain and erythema in the region of exposed bone with or without purulent drainage
Stage 3	Exposed and necrotic bone or a fistula that probes to bone in patients with pain, infection, and 1 of the following: exposed and necrotic bone extending beyond the region of alveolar bone (i.e, inferior border and ramus in mandible, maxillary sinus, and zygoma in maxilla) resulting in pathologic fracture, extraoral fistula, oral antral or oral nasal communication, or osteolysis extending to inferior border of the mandible or sinus floor

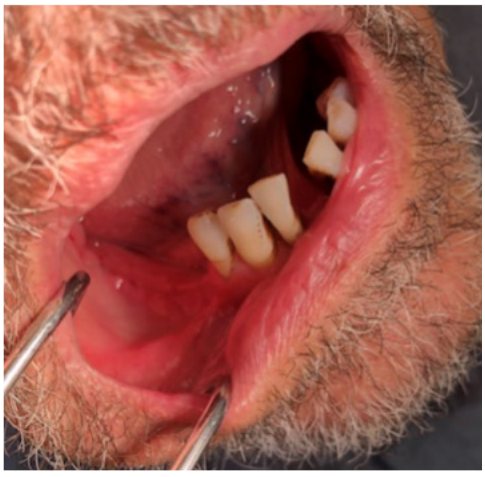


MRONJ in the right Maxilla in a 78-year-old female undergoing treatment for disseminated ovarian cancer with dexamethasone and doxorubicin.









CT scan and OPG demonstrating stage 3 MRONJ of the right mandible in a 79 year old. The patient was being treated with Denosumab for multiple myeloma and had a routine dental extraction three months prior to presentation. Image 3 OPG and clinical photograph of the same patient after resection of the mandible and reconstruction with a fibula free flap.

Table 2: Medications implicated in MRONJ (Adapted from King et al. 2019)

Drug class	Examples	Drug indications
Bisphosphonates	**Oral** Alendronate (Adronat, Fosamax) Risedronate (Actonel) **IV** Zoledronic acid (Aclasta)	Osteoporosis, osteopenia, Pagets Disease
Monoclonal antibodies	**Suffix "-mab"** Denosumab (Prolia) Bevacizumab (Avastin) Adalimumab (Humira) Infliximab (Remicade) Rituximab (Rituxan)	Osteoporosis, rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, Crohn's disease, ulcerative colitis glucocorticoid-induced osteoporosis
Tyrosine kinase inhibitors	30 TKIs have been approved for use, 8 are implicated in ONJ. **Suffix "-nib"** Suntinib (Sutent) Imatinib (Gleevec) Sorafenib (Nexavar) Pazopanib (Votrient) Axitinib (Inlyta) Regorafenib (Stirvarga) Cabozantanib (Cometriq)	Hematologic malignancies such as leukaemias, renal cell carcinomas, gastrointestinal stromal tumours, soft tissue sarcomas and neuroendocrine tumours.
Mammalian target of rapamycin inhibitors	**Suffix "-limus"** Everolimus (Afinitor) Temsirolimus (Torisel)	Renal cell cancer, neuroendocrine cancer, breast cancer, lymphoma, organ transplantation
Variant fusion proteins	Afibercept (Zaltrap, Eylea) **Suffix "-cept"**	Renal cell carcinoma, macular degeneration and macular edema.
Radiopharmaceuticals ** Most reports have patients with previous bisphosphonate exposure.*	Radium 223 (Xofrigo)	Used to localize and manage bone metastases, sometimes in combination with chemotherapy.
Disease modifying anti rheumatic drug	Methotrexate	Rheumatoid arthritis, psoriatic arthritis, Crohn's disease
Corticosteroids *2 case reports in mandible	Predisolone	Numerous
Selective estrogen receptor modulators ** Link not fully established however concerns raised.*	Raloxifene (Evista)	Breast cancer, to maintain bone density in post menopausal women.

ANATOMY OF THE ROOT CANAL SYSTEM AND ITS CLINICAL IMPLICATIONS

Part 1: Maxillary permanent central incisor, lateral incisor and canine

Dr Gaurav Vasudeva, *Specialist Endodontist*

Dentists are the medical professionals who practise a healing art that aims to prevent or relieve human suffering, so said Henry Morgan in 1919, addressing the objectives of dental education and importance of learning anatomy as the foundation to art of healing.

Pulpal pain, as we all know, is the most severe and common form of oro-facial pain and is usually caused by inflammation of the pulp with varying etiology.

To understand, investigate, diagnose, treatment plan and treat diseases of endodontic origin, one must be able to fully comprehend and possess the knowledge of the complexity of the root canal system.

Root canal anatomy has been studied for hundreds of years but only recently, about two decades ago, have researchers been able to further investigate the complexity of the root canal anatomy with some groundbreaking and modern techniques. The most advanced and accurate of such technologies has been mico-CT analysis of teeth and improvement in diaphanization techniques to study the internal anatomy of the tooth. With thousands of teeth reviewed and analysed with these methods and data published in the last 10 to 20 years, a new picture of the pulp space has emerged.

Root canals are just one part of the "root canal system" that is often not understood in its totality and doesn't always depict a complete picture of the internal anatomy of the pulpal space within the tooth.

This system includes the coronal pulp chamber and its extensions into the coronal dentine and extends apically including all the major and minor canal systems running though the radicular tooth structure including various lateral canals, accessory canals, canals with extending fins and different shapes and forms of the isthmus. This system is highly variable where major canals divide and sometimes rejoin or divide into accessory canals or apical deltas/ramifications towards the apex.

To add more complexity, these pulp space could have various types of calcifications in the pulp chamber or canals and possible resorption of the tooth structure along the way depending on the etiology, pathophysiology of the disease and age of the patient. It is important to visualise the pulp space three-dimensionally, as the transverse extent of these spaces are as important as the vertical extensions, even though we don't see it on our periapical radiographs.

The knowledge and accurate concept of root canal anatomy is essential for any clinical success and can help a clinician in number of ways such as:

1. Being able to accurately interpret periapical radiographs and knowing what to look for.
2. Understanding the pathophysiology of the progress of the disease and interpreting further investigations such as sensibility testing.
3. Performing endodontic procedures and knowing what to expect when access is gained into the pulp chamber.
4. Knowledge of variation in root canal anatomies can help clinicians discover and find additional canals that will favour an effective reduction of bacterial population within the root canal system.
5. Enhancing the understanding and use of chemo-mechanical preparations, disinfection and placement of intracanal medicaments protocols of a 3D space.
6. Avoiding iatrogenic injuries during access of the pulp spaces and canal preparation such as perforations, ledging and zipping of the root canals during preparation.
7. The concepts and understanding will help the clinician reach both the vertical and horizontal extensions of the root canal anatomy rather than focus on just the vertical lengths alone.

The first part of this four-part series will cover some basic anatomy and variations of root canals for maxillary permanent anterior teeth.

(All clinical cases performed by Dr. Gaurav Vasudeva and published only for the purpose of dental education)

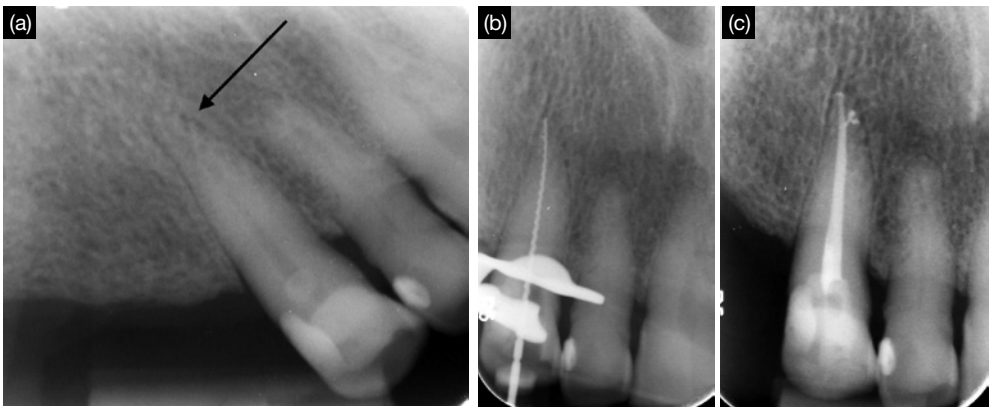


Fig 1. Tooth #13 diagnosed with symptomatic apical periodontitis.

(a) periapical radiograph shows unusual widening of periodontal space on the mesial aspect of the apex rather than apical.

(b) Working length radiograph with no signs of any additional canals.

(c) post obturation reveals a large accessory canal originating few millimetres short of the radiographic apex towards the mesial explaining the radiolucency mesial to the apex.

	Maxillary Central Incisor	Maxillary Lateral Incisor	Maxillary Canine
Complete root formation	9.3 – 10.6	9.7 – 11.1	11.9 – 13.7
Number of roots	1 - 99.94% 2 - 0.06%	1 - 99.94% 2 - 0.06%	1 - 100%
Number of root canals	1 - 99.2% 2 - 0.8%	1- 98.5% 2- 1.5%	1 - 97% 2 - 3%
Apical foramen position	Central – 12% Lateral – 88%	Central – 22% Lateral – 78%	Central – 14% Lateral – 86%
Accessory canals	18.9–42.6% (coronal,1%; middle, 6%; apical, 93%)	5.5–26% (coronal, 1%; middle, 8%; apical, 91%)	3.4–30% (coronal, 0%; middle, 10%; apical, 90%)
Apical ramifications (delta)	8.1% - 27.9%	3.9% - 23.6%	15% - 33.8%
Anomalies	Extremely rare reported 2 canals, 2 roots or gemination-fusion with the lateral incisor.	Cases reported with dens invaginatus, dens evaginatus, deep radicular groove, talons cusp, abrupt apical curvature, rarely 2 canals or more and fusion/gemination.	Rare with 2 canals or cases reported for dens invaginatus.
Clinical relevance	• Apical delta/ramifications are more common than other lateral incisor. • Ideal access should be closer to the incisal edge to avoid cutting into the internal labial wall and get better straight-line access.	• Higher incidence of anomalies as compared to other teeth. • Higher canal curvature (disto-palatal). • Lingual shoulder must be removed to decreases chances of ledging.	• Large mid-root canal diameter (bucco-palatal) that must be kept in mind while performing cleaning and shaping. • Circumferential debridement with irrigation is the preferred way to clean the bucco-lingual canal width. • Removal of internal lingual shoulder is advisable for better access.

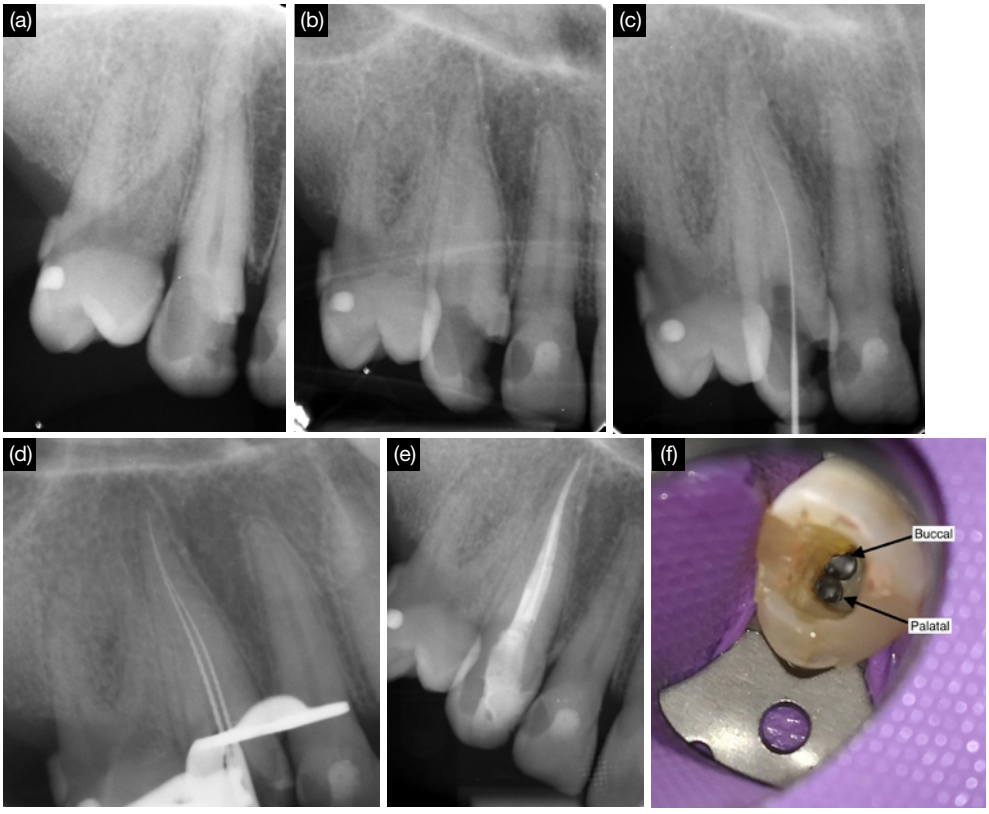


Fig 2. Tooth #13 diagnosed with symptomatic irreversible pulpitis.

(a) Periapical radiograph with no angulation shows a single large canal.

(b) Tube shift with mesial angulation reveals a possibility of two separate canals that is extremely rare of these teeth.

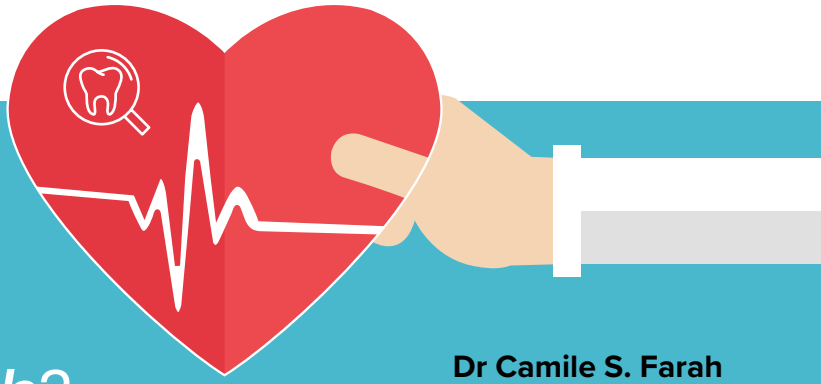
(c) Accessing the palatal canal (rubber dam clamp placed on molar to debride caries and restore the tooth appropriately for endodontic procedure).

(d) Negotiating both canals together. Both canals merge at the apical third.

(e) Final obturation and post restoration radiograph

(f) Clinical photograph of the access preparation showing two separate orifices.

What's the evidence for a link between **oral health** and *cardiovascular health*?



Dr Camile S. Farah
Oral Medicine Specialist

There has long been conflicting data on the association between oral health (namely periodontal disease/periodontitis) and cardiovascular disease (CVD). Traditional risk factors for CVD (inclusive of atherosclerotic diseases, coronary heart disease, cerebrovascular disease and peripheral vascular disease) remain lifestyle factors, principally tobacco smoking, dyslipidaemia, hypertension and altered glucose metabolism, however there is a significant body of evidence to support an independent association between periodontitis and CVD, in addition to diabetes, chronic obstructive pulmonary disease and chronic kidney disease.

Recently, a consensus paper (Sanz et al. J Clin Periodontol 2020;47:268-288) prepared by a joint working group made up of members of the European Federation of Periodontology and the World Heart Federation, presented the evidence on this topic and summarised advice for medical practitioners, dental practitioners and patients alike in relation to these matters. The report focused on published evidence since the 2012 workshop, and summarised reviews on 1) epidemiological associations, 2) mechanistic links, 3) results from intervention studies, and 4) the potential risk and complications of periodontal therapy in patients undertaking antithrombotic therapy.

Patients with periodontitis have a higher prevalence of cardiovascular disease, a higher prevalence of coronary artery disease and risk of myocardial infarction, higher prevalence of cerebrovascular disease and risk of stroke, higher prevalence and incidence of peripheral artery disease, and higher risk of heart failure and atrial fibrillation. There is limited evidence, however, that CVD is a risk factor for the onset or progression of periodontitis.

There have been no randomised controlled clinical trials on the effect of periodontal intervention on primary prevention of cardiovascular diseases, but there is some evidence from observational studies of oral health interventions such as tooth brushing, dental prophylaxis, increased dental visits and periodontal treatment which have produced a reduction in the incidence of CVD events. There is, however, insufficient evidence to support or refute the potential benefit of the treatment of periodontitis in preventing or delaying a CVD event. There is some limited evidence that systemic statin intake may have a positive impact on periodontal health, but insufficient evidence that statin intake may enhance the outcomes of periodontal therapy.

Non-surgical treatment of periodontitis involving supra- and sub-gingival debridement of affected teeth triggers an acute systemic inflammatory response associated with transient impairment of endothelial function. There is no evidence for specific effects of periodontal treatment procedures on increasing ischemic cardiovascular risk, so delivering periodontal treatment is safe in regards to cardiovascular risk. Likewise, periodontal treatment is safe with regard to cardiovascular risk in patients with established CVD.

Patients with CVD should be advised that periodontitis may have a negative impact on CVD and may also increase the risk of a CVD event, and that effective periodontal therapy may have a positive impact on cardiovascular health. All patients with newly diagnosed CVD should be referred to their dentist for a periodontal examination and clean.

Patients should be advised of the need to clean the teeth and gums carefully at home and to have personalised advice and care from a dental professional to minimise the potential negative effects of periodontitis on CVD. Oral hygiene procedures should include twice daily tooth brushing with either a manual or electric toothbrush, cleaning between the teeth and around the gums with floss or an interdental brush, use of specific antibacterial toothpastes to control plaque accumulation, and having regular dental check-ups with an oral health professional. Long-term mouth rinsing with most commercial products has not been shown to be effective in managing periodontal disease and is not encouraged as part of a regular oral hygiene regime.

More detailed information about this topic can be obtained from "Contemporary Oral Medicine"

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RADIOLOGIC INTERPRETATION

DR TOM HUANG
Oral and Maxillofacial Radiologist

Radiologic interpretation is a process involving the application of an algorithm in the interrogation of radiologic images. For optimal interpretation, the analytical method is recommended and prerequisites include knowledge of:

- Radiologic anatomy and normal variants
- Pathology which may manifest in the region of interest
- Strengths and limitations of the imaging modality employed.

The interpretation can be divided into several stages:

1. **Identification of the presence of disease.**

   The process of evaluating radiologic images for the presence of disease, which varies with different techniques.

2. **When an abnormality is noted, an algorithm is employed to identify the specific radiologic features.**

This article focuses on some of the key radiologic features to consider when analysing a lesion.

LOCATION

Generalised – If much of the osseous structures of the maxillofacial region is involved, consider systemic disorders.

Localised – If it appears focal, consider the possibility of other lesions within the jaws or adjacent structures.

Single or Multiple – The presence of multiple focal lesions can help narrow the differential diagnosis. While not an exhaustive list, multifocal lesions to consider include cemento-osseous dysplasia, Gorlin-Goltz syndrome (multiple odontogenic keratocysts), multiple myeloma, metastatic disease and leukaemia.

Position in Jaw – Determining the origin of a focal lesion can help determine the cell type of the lesion which narrows down the differential diagnosis. For example, if the lesion is centred pericoronally, then the lesion is likely to be odontogenic in origin. If a lesion is centred in the mandibular canal, then the lesion is likely neural or vascular in nature.

SHAPE

The shape of the lesion can provide useful information about the disease mechanism. For example, a true cyst, such as a radicular cyst, enlarges via a hydraulic process and is therefore usually expansile and circular or spherical in shape, while a simple bone cyst (not a true cyst) in the mandible is non-explansile and therefore not spherical in shape and may appear scalloped (Fig 1).

BORDERS

WELL-DEFINED BORDERS:

Punched Out – This reflects a sharp border between normal and abnormal. Multiple myeloma is a classic example.

Corticated – Thin opaque line at the periphery of the lesion (Fig 2). This is a benign feature often associated with true cysts, including the radicular and dentigerous cyst.

Sclerotic – This border is slightly thicker and more irregular than a corticated border. This is also a benign feature. Examples include chronic inflammatory lesions or cemento-osseous dysplasia.

Lucent – Usually associated with opaque or mixed density lesions indicating the presence of a soft tissue capsule. An example is the odontoma.

ILL-DEFINED BORDERS:

Blending – Gradual change from normal to abnormal. An example of this would be an acute inflammatory lesion. It should be noted that most dentoalveolar inflammatory lesions are chronic in nature and therefore, demonstrates reactive sclerotic borders.

Invasive – This is a feature of aggressive and infiltrative lesions, usually with adjacent bone destruction. Additionally, there may be extension of the lesion with enlargement of the adjacent marrow spaces. This border is seen with most malignant lesions.

INTERNAL STRUCTURE

The internal appearance of the lesion can be classified as totally opaque, totally lucent or mixed density.

When a lesion is totally opaque, the density and pattern of the lesion is usually helpful in identification of the lesion. For example, a bone island is usually internally homogenous and iso-dense with cortical bone. A classical fibrous dysplasia can also be internally homogeneous but presents with a ground glass or orange peel pattern.

When a lesion is completely lucent on 2D radiography, this could reflect gas, fat, fluid or soft tissue. Multislice CT much better diffentiates gas, fat, fluid and soft tissue densities than cone beam CT. MRI has a far superior soft tissue contrast. For mixed density lesions, the nature of the internal opacities and the trabecular pattern/internal septation can be key to identifying the lesion. For example, an ameloblastoma classically presents as a multilocular lesion with coarse curvilinear internal septa while giant cell lesions present with fine, wispy septa.

EFFECT ON SURROUNDING STRUCTURES

Interplay between the lesion and the surrounding structures can provide insight into the disease mechanism. In the maxillofacial region, the lesion can interact with a number of structures including teeth, lamina dura, periodontal ligament (PDL) space, cortical and medullary bone, maxillary sinus floor, nasal floor, mandibular canal and mental foramen. A lesion which displaces roots, teeth and surrounding structures is likely benign in nature. Nearly all root resorption is usually seen with benign lesions, including cystic lesions and benign tumours. However, if the resorption has a 'pencil sharpened' appearance and the lesion demonstrates an ill defined margin, then a malignancy should be considered. While widening of the PDL space can be related to apical periodontitis or parafunction, a malignant lesion can invade the PDL space causing irregular widening and loss of the lamina dura. Expansion of the cortical plate is usually associated with a slow growing, benign lesion as it allows the periosteum to create new bone while a rapidly growing lesion can cause effacement of the adjacent cortex as lesional growth outstrips the pace of the periosteum to respond. Periosteal new bone formation is often seen in osteomyelitis due to the exudate lifting the periosteum off the surface of the cortical bone and stimulating the osteoblasts to lay down new bone. If this occurs multiple times, then an 'onion peel' pattern is observed. Conversely, if the periosteal reaction has a 'hair on end' or 'sunray' appearance, then metastatic disease, vascular lesion or osteosarcoma should be considered (Fig 3).

3. Weighting of the features

The key radiologic features identified are weighted and balanced, ultimately contributing to diagnosis.

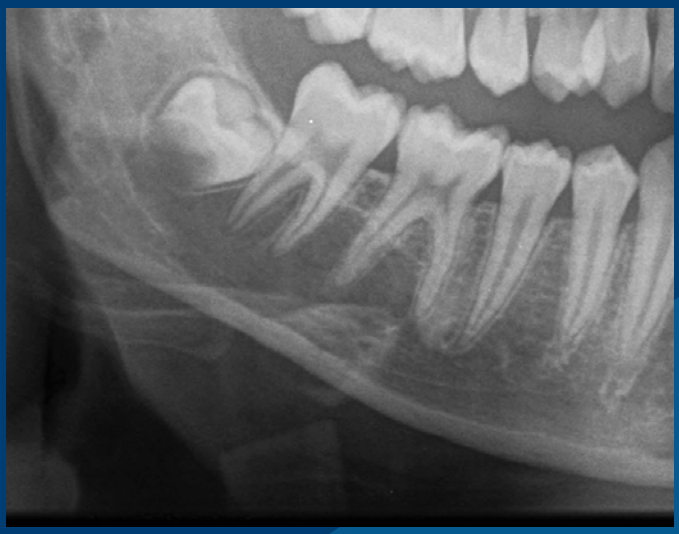


Fig 1. Cropped panoramic radiograph demonstrating a scalloped shape of a simple bone cyst in the right mandibular body.

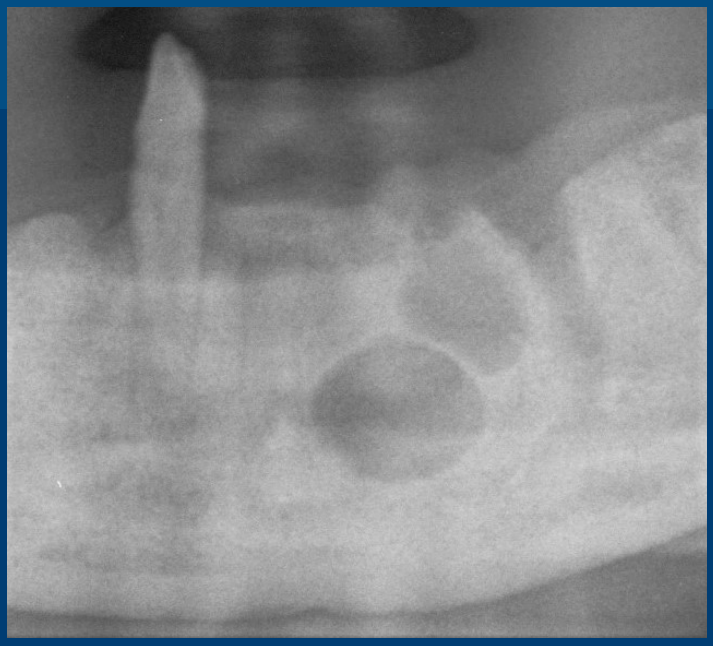


Fig 2. Cropped panoramic radiograph demonstrating a residual radicular cyst with corticated border in the anterior left mandible.

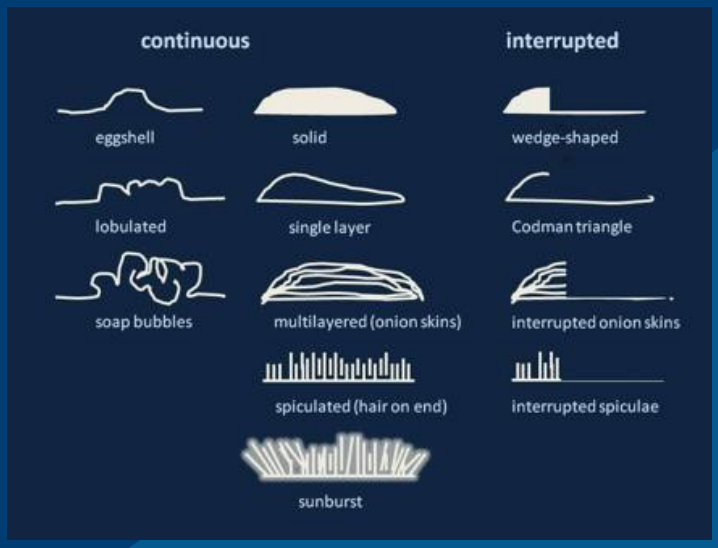


Fig 3. Illustration of different types of ***periosteal reactions.*** *https://radiopaedia.org/articles/periosteal-reaction*

A GUIDE TO DISCUSSING SMOKING CESSATION

By Dr Amanda Phoon Nguyen, Oral Medicine Specialist

WORLD NO TOBACCO DAY

Tobacco smoking is a worldwide threat to human life. There is a tobacco-related death about every 28 minutes in Australia, adding up to more than 50 deaths each day. Smoking is the largest preventable cause of death and disease in Australia. The three disease groups tobacco use has the largest impact on are: respiratory diseases, cancer (especially lung and oesophageal), and cardiovascular disease. Smoking is strongly related to many chronic diseases including diabetes, stroke, renal disease, blindness (macular degeneration and cataracts), rheumatoid arthritis and osteoporosis. Smoking also has adverse effects in pregnancy, both for the mother and the developing fetus, and exposure to secondhand tobacco smoke has been shown to damage the health of children and adults. In case you needed an additional reason to urge smoking cessation, a recent piece in The West has cited suggestions that if someone is a smoker and contracts COVID-19, the person is up to 2% more likely to be admitted to intensive care or require life support, due to the fact that COVID-19 affects the lungs.

The good news is that, as a result of changes in public policy and changing community attitudes to tobacco, the prevalence of smoking in Australia is among the lowest of any nation. Australia is a signatory to the WHO Framework Convention on Tobacco Control, a worldwide effort to control the effects of tobacco smoking on human health, the world's first public health treaty to enactt a minimum set of policies curb tobacco use. These include bans on tobacco advertising, promotion and sponsorship; clear warning labels; smoke free policies; higher prices and taxes on tobacco products; and access to, and availability of, smoking cessation services. Australia's level of smoking continues to fall and is the third lowest for OECD (Organisation for Economic Cooperation and Development) countries. In 2014-15, 60% of younger adults (18-44 years) had never smoked and 23% were ex-smokers.

Even though rates of tobacco smoking in Australia have been steadily declining, the burden caused by smoking is still high. In particular, rates still remain higher in specific populations, including in males, the Aboriginal and Torres Strait Islander population, people living in regional and remote areas of Australia and amongst people living in areas of Australia with the most socio-economic disadvantage.

WHY IS SMOKING HARMFUL? DOES IT MATTER HOW THE TOBACCO IS USED?

Tobacco was cultivated and used since 6000 BC. Since the 1920s, most tobacco has been consumed in the form of cigarettes, although there is a wide variety including cigars, cigarillos, roll-your-owns and smokeless tobacco.

Nicotine makes up 5% of the tobacco plant. Nicotine, while not in itself carcinogenic, is toxic and addictive. Its resultant addiction, however, promotes continued use of tobacco products which contain many carcinogens, in particular strong carcinogens such as polycyclic aromatic hydrocarbons (PAHs), nitrosamines and aromatic amines and weak carcinogens such as acetaldehyde.

The general concept of exposure to carcinogens, metabolism to reactive intermediates and DNA damage leading to mutations in critical genes has been established as one major mechanism by which tobacco smoke causes cancer.

Smokeless tobacco forms include:

- Plug: chew tobacco pressed into a brick
- Chew: powdered, moist form of tobacco "dipping"
- Dry snuff: fermented, fire-cured tobacco that is pulverised into powder
- Snus: leafy form of tobacco sold in pouches

Looking at nicotine content, 8-10 chews/dips per day is equivalent to 30-40 cigarettes per day. It's use is more addictive than cigarettes due to high nicotine levels.

Another form includes using a waterpipe or shisha.

There is a common misconception that use of a waterpipe is less harmful as the smoke passes through water. However, this is highly dependent on the length of session and the amount of smoke inhaled may be more as users tend to take deep puffs. A waterpipe may produce over 74 litres of smoke versus 0.6 litres from a cigarette (Maziack et al. 2015).

SHOULD DENTISTS GIVE SMOKING CESSATION ADVICE?

Most dentists do not feel comfortable giving smoking cessation advice. A study from Queensland surveyed 726 dentists and reported that the common reasons for this were concern it may cause offence to patients, and a lack of confidence in their ability to provide quit support (Ford

et al 2016). A survey from Sydney demonstrated that out of 203 participants, 82% of dental students knew they were expected to give smoking cessation advice, however the confidence to counsel patients was low (Rikard-Bell et al. 2002).

However, advice from a health professional is one of the most effective ways to encourage patients to stop. One in every 33 conversations will lead to a patient successfully stopping smoking.

It is normal to have several attempts. The average 40-year-old smoker will have made around 20 unsuccessful quit attempts, most without any external help. It is important to take every opportunity to identify all patients who smoke, document their smoking status, explore barriers to cessation and offer treatment, which may involve counselling by a health professional, referral to more intensive support and pharmacotherapy. Many smokers need encouragement, assistance and guidance to quit successfully.

- Very brief advice lasting fewer than 3 minutes will help an additional 2% of smokers quit successfully (Watt et al. 2000).
- 47% of patients (n=151) would be motivated to make a quit attempt if encouraged to do so by dental practitioner (Ford et al. 2016).
- Patients who received tobacco cessation counseling at the dental office were 1.4 times more likely to quit and remain abstinent at 12 months or longer [OR 1.44; 95% CI: 1.16 – 1.78]. (Carr and Ebbert 2006)

HOW CAN I APPROACH THIS?

The 5As approach (five components of effective tobacco cessation counselling), originally proposed by the US Clinical Practice Guideline, provides health professionals with an evidence-based framework for structuring smoking cessation by identifying all smokers and offering support to help them quit.

Ask

Health professionals should ask all their patients/clients whether they smoke, and their smoking status should be recorded. Implementing recording systems that document tobacco use almost doubles the rate at which clinicians intervene with smokers and results in higher rates of smoking cessation.

Assess

This includes assessing the willingness to quit, and nicotine dependence. Willingness to make a quit attempt can change rapidly with changing life circumstances and there is evidence that quit attempts made with minimal planning can be successful. Thus, there is benefit in encouraging all smokers to consider quitting whenever the opportunity arises.

Advice

Brief, repeated, consistent, positive reminders to quit and reinforcing recent quit efforts by a number of health professionals can increase success rates. When the practice is routinely applied to a large proportion of clients who smoke, a larger impact on population smoking rates can be achieved.

- Smokers are more likely to recall receiving advice about the oral health effects than purely advice to quit (Rickard-bell et al. 2003)
- It is an opportunity to build rapport

Assist

The decision on whether and what assistance to provide to smokers and recent quitters depends on their needs, preferences and suitability of available support, and the capacity of the health professional and their service.

- A package of assistance can be put together which may involve the health professional and their service, referral, or a combination of these options (pamphlets, posters and stickers available freely from Quit Now).

https://www.health.gov.au/health-topics/smoking-and-tobacco/smoking-and-tobacco-resources

- When necessary, patients should be referred to a health professional such as their GP or to a tobacco treatment specialist, where medication can be prescribed where indicated.

Arrange follow up

Follow-up visits to discuss progress and to provide support have been shown to increase the likelihood of successful long-term abstinence. This may be part of the patient's next dental recall.

WHAT PHARMACOLOGICAL OPTIONS ARE THERE FOR PATIENTS LOOKING TO QUIT?

Some people prefer to try to quit without assistance and this choice should be respected, however, best results are achieved when medicines are used in combination with counselling and support, although there is some evidence that nicotine replacement therapy (NRT) can increase quit rates with or without counselling. All forms of NRT are similarly effective.

First-line options are medicines that have been shown to be effective and are licensed for smoking cessation. In Australia these are NRT (brands include Chemist's Own Nicotine, Nicabate CQ®, Nicorette®, Nicotinell®, QuitX® and others), varenicline (brand name Champix®) and sustained release preparations of bupropion hydrochloride (brand names Buproprion-RLTM, Clorprax®, Prexaton and Zyban SR®).

From current available evidence, varenicline is the most effective form of single pharmacotherapy for smoking cessation. Varenicline in conjunction with nicotine replacement therapy can increase the rate of quitting by 50–70%.

Patients should be referred to their medical practitioner for discussion of these options.

IS TELEPHONE COUNSELLING FOR SMOKING CESSATION EFFECTIVE?

Yes. There is stronger evidence that the proactive form of support is more effective in part because most smokers do not make the call to Quitline often enough to get the full benefit, yet they readily accept and appreciate proactive calls (Stead et al 2006). Telephone counselling, also known as Quitline, is provided in each state and territory. Adding Quitline counselling to pharmacotherapy increases abstinence rates. Over half of quitters relapse in the first week, (between 49% and 76%) and between 72% and 85% have relapsed at one month, therefore, more callbacks are offered by Quitline in the early stages of quitting.

Should your patient consent, Quitline referral is encouraged. There is a form on the website that practitioners can complete with the patient and send directly to Quitline, who will then contact the patient.

ARE THERE OTHER RESOURCES THAT I CAN RECOMMEND TO HELP MY PATIENT?

Here are some that may come in handy.

App: MyQuitBuddy

App: Quit for You, Quit for Two

ICanQuit: Useful for showing how much money you could save by quitting smoking

CAN I LEARN MORE ABOUT THIS?

Absolutely! The Quit learning hub has free online training courses that I highly recommend. The course called "Quit Training for Oral Health Professionals" is highly relevant, and successful completion allows you to download a certificate of completion.

E-CIGARETTE SMOKING AND PERIODONTAL HEALTH

Dr Rachel Chye, *Periodontist*

The electronic cigarette (e-cigarette) is a battery-operated, handheld device that vaporises the e-liquid – the liquid solution with added flavouring agent and often containing nicotine – with the heating element. In contrast to the conventional cigarette smoking, electronic cigarette delivers nicotine via aerosol vapour without burning the tobacco, which claims to be less harmful to the user as compared to cigarette smoking. Vaping or inhaling the vapours from the electronic cigarette is a relatively new practice but has been gaining popularity in society.

Within Australia, the lifetime use of electronic cigarettes increased from 2013 to 2016 and it was most commonly tried by young smokers aged between 18-24 years of age (Australian Institute of Health and Welfare. Australian National Drug Strategy Household Survey 2016). A cross-sectional survey conducted by the Cancer Council NSW found that the common reasons of current smokers using electronic cigarette were to assist in quitting (45.3%) or reduce the number of tobacco smoking per day (43.4%). Interestingly, most of the non-smokers use an electronic cigarette due to novelty reason (40%) (Twyman et al., 2019). Another study from the Curtin University, WA suggests that among young Australian between 18-25 years-old, e-cigarette users were more likely than non-e-cigarette users to subsequently become tobacco smokers (Jongenelis et al.,2019).

The harmful effect of tobacco smoking on periodontal health is well established, while the research into the effect of electronic cigarette smoking in this respect is in the relatively early stage. However, the currently available evidence consistently showing the detrimental effect of vaping e-cigarettes on periodontal health as compared to non-smokers and former smokers, through mechanisms similar to conventional tobacco smoking (ArRejaie et al., 2019, Jeong et al., 2020, Karaaslan et al., 2020).

- Vasoconstrictive effects on the gingival blood vessels which can lead to reduced gingival bleeding and masking the extent of the gingival inflammation.
- Reduced gingival crevicular fluid (GCF) volume.
- Suppressed IL-8 levels.
- Increased inflammatory mediators such as tumour necrosis factor (TNF)-α, matrix metalloproteinase (MMP)-9, interleukin (IL)-1βwhich associated with connective tissues and alveolar bone destruction.

The accumulating evidence supports the notion that changing tobacco smoking to vaping has not been related to the beneficial effect on periodontal health. Furthermore, the data on long-term effects on general health is sparse and remain to be explored. Hence, electronic cigarette should not be regarded as a safe alternative to conventional cigarette smoking.

Statements from Australian Government Department regarding E-cigarettes

Western Australia Department of Health: "There is no reliable evidence that e-cigarettes are any more likely to help people quit smoking than using nicotine replacement therapy products".

Source: https://healthywa.wa.gov.au/Articles/A_E/Electronic-cigarettes-e-cigarettes

Therapeutic Goods Administration (TGA): "Unlike Nicotine Replacement Therapy (NRT) products, which have been approved by the TGA for use as aids in withdrawal from smoking, no assessment of electronic cigarettes has been undertaken. This means the quality, safety and efficacy of electronic cigarettes is not known".

Source: https://www.tga.gov.au/community-qa/electronic-cigarettes

CEO, National Health and Medical Research Council (NHMRC): "There is currently insufficient evidence to support claims that e-cigarettes are safe, and further research is required to enable the long-term safety, quality and efficacy of ecigarettes to be assessed".

Source: https://www.nhmrc.gov.au/about-us/news-centre/insufficient-evidence-safety-e-cigarettes

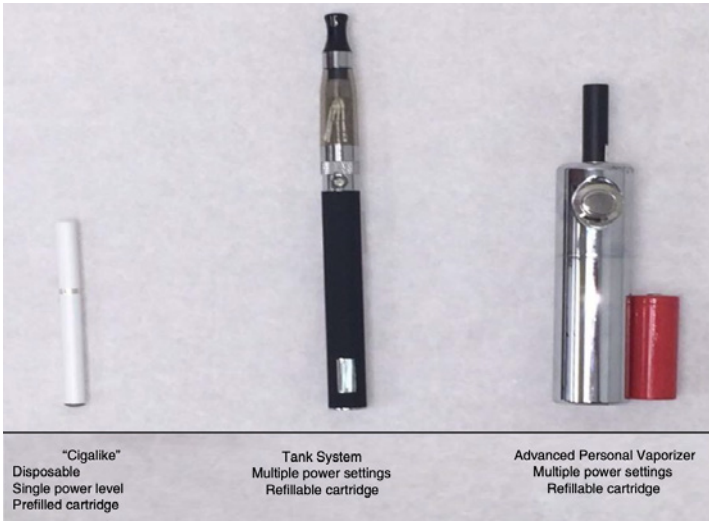
The Chief Medical Officer and state and territory Chief Health Officers: "International evidence is emerging of a possible link between the use of e-cigarettes and lung disease. This includes severe lung disease requiring intensive care support and, as at 11 September 2019, at least six fatalities being linked with vaping in the United States".

Source: https://www.health.gov.au/news/e-cigarettes-linked-to-severe-lung-illness

Cancer Council: "Products delivering chemicals directly to the lung are only approved after extensive evaluation on safety and efficacy. E-cigarettes currently on the market in Australia have not passed through this process and have not been proven safe to use."

Source: https://www.cancer.org.au/preventing-cancer/smoking-and-tobacco/e-cigarettes.html

References available upon request by emailing perio.gm@bigpond.net.au



The amount of nicotine emission from the e-cigarette can be increased by extending the puff duration or increasing the voltage of the device.

Image source: Ramôa et al., 2017

Space Maintainers

Dr Rebecca Williams, *Paediatric Dentist*

Premature loss of a primary tooth is common and can have a significant impact on the development of a child's occlusion. Loss of arch length can result from adjacent teeth drifting into the edentulous space and can create or exacerbate problems such as crowding, rotations, ectopic eruption, crossbite, excessive overbite or overjet, and unfavourable molar relationships. Space maintainers may be used to prevent space loss; however, they need to be considered in the context of the individual patient and their occlusion.

CAUSES OF TOOTH LOSS

In many situations, early primary tooth loss may be unavoidable. Dental caries and its sequelae are the most common cause of early tooth loss in children and although it is a preventable disease, patients may present for dental treatment too late, once the tooth already has already become painful, infected or unrestorable. In these situations, extraction of the tooth is indicated irrespective of anticipated space loss. Dental trauma, ectopic eruption of permanent teeth and premature resorption due to tooth-size arch-length discrepancy are other causes of premature loss of the primary teeth.

FACTORS INFLUENCING SPACE LOSS

1. Type of tooth lost

- *Primary Incisors:* Very rarely cause space loss if they are lost following canine eruption. Although adjacent incisors may migrate into the edentulous area, the intercanine width generally remains stable.
- *Primary Canines:* Space maintenance is rarely indicated; however unilateral loss of a canine may result in a midline shift. In the maxillary arch if permanent incisors have erupted, balancing extraction of the contralateral canine should be considered. Early loss of mandibular canines can result in lingual tipping of the permanent incisors.
- *Primary First Molars:* Space loss occurs due to both the distal drift of canines and mesial drift of second molars. Once the first permanent molars are fully erupted, the space lost from first primary molar tooth loss is generally insignificant.
- *Primary Second Molar:* Mesial drifting, tipping, and rotation of the first permanent molar can result in significant space loss, particularly in the maxilla. This is more pronounced if the tooth is lost prior to the eruption of the first permanent molar.

2. Degree of crowding

- Children with crowded arches are likely to lose more space, more rapidly than those with spaced arches.
- Children with spaced arches may not have any significant space loss.

3. Age of child

- The younger the child, the greater the space loss, especially if the tooth is lost prior to the eruption of the first permanent molar.

4. Facial growth pattern

- Patients with a dolichofacial growth pattern are more likely to suffer space loss than those with a mesofacial or brachyfacial growth pattern.

CONSIDERATIONS FOR SPACE MAINTENANCE

Time elapsed since tooth lost:

- Most space loss occurs in the first few months following tooth loss and therefore the more time that has elapsed following tooth loss, the less benefit of space maintenance.
- Where there has been an appreciable time since tooth loss, space regaining rather than maintenance may be indicated.

Existing occlusion:

- Spaced dentitions often do not require space maintenance.
- In children with early signs of dental crowding, a space maintainer is unlikely to prevent the malocclusion, however it can reduce the severity.
- Intercuspation of the distal tooth with its opponent reduces mesial drift.
- Supraeruption of the opposing tooth into the edentulous space reduces mesial migration of distal teeth.

Anticipated eruption time for the permanent successor:

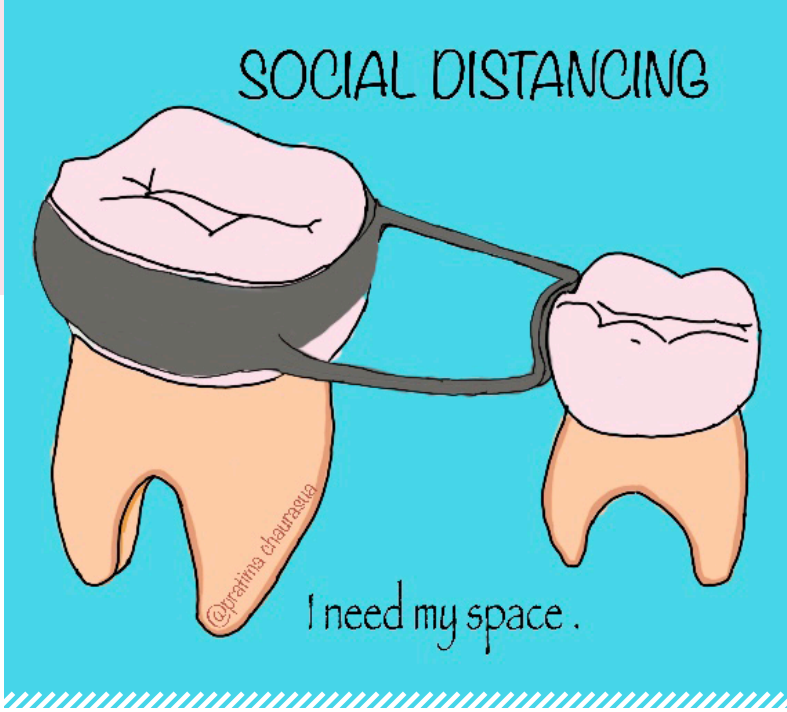
- Space maintenance is not indicated where the permanent successor is expected to erupt within six months. Radiographs showing the presence, stage of root development and amount of alveolar bone overlying the tooth are essential.

Patient cooperation/compliance levels:

- The child must be able to tolerate the procedure and the appliance, as well as any maintenance.
- The family must be committed to attending regular follow up/review appointments.

Patient oral hygiene and caries risk:

- Space maintainers increase the surfaces for plaque accumulation and complicate oral hygiene techniques. For patients with poor oral hygiene and high caries risk, space maintainers can further exacerbate their caries risk and are generally contraindicated.



TYPES OF SPACE MAINTAINERS

Space maintainers may be fixed or removable, with fixed appliances being either unilateral or bilateral. The choice of appliance largely relates to the number and position of teeth lost. Fixed appliances have the benefit of removing the need for patient compliance, however they may be more difficult to clean, and breakages may occur more frequently.

- **Band and loop:** Indicated when there is loss of one primary molar in a quadrant. The band sits on the distal tooth and a soldered loop extends to rest on the distal surface of the mesial tooth. Higher median survival time than bilateral fixed appliances.
- **Distal shoe:** Indicated when the second primary molar is lost prior to the eruption of the first permanent molar. A band is placed on the first primary molar, with a loop and blade, which extends subgingivally to provide a guide for the eruption of the first permanent molar into position. A radiograph is taken to confirm correct positioning of the blade. Once the tooth erupts, the appliance is replaced with a band and loop appliance. This appliance is contraindicated in children at risk of bacterial endocarditis or who are immunocompromised.
- **Lingual arch:** Indicated in the mandibular arch for bilateral loss of molars or where there are two molars missing on one side, after the eruption of the permanent incisors. Bands are placed on the first permanent molars with a heavy wire running lingually to rest on the cingulum of the permanent mandibular incisors. This appliance prevents molar mesial drift and lingual tipping of the incisors.
- **Nance appliance:** Indicated in the maxillary arch for bilateral loss of molars or where there are multiple teeth missing in one quadrant. Bands are placed on the first permanent molars with a heavy wire extending to an acrylic button which sits in a superior anterior position of the palatal vault (a wire extending to the cingulum of the maxillary incisors would likely interfere with occlusion).
- **Transpalatal arch:** Indications as per Nance appliance. Bands on the first permanent molars attach to a heavy gauge wire traversing the palate with a central omega-shaped loop to allow activation and creation of a tipping force. Easier to clean than a Nance appliance, however, may not be as stable, particularly where second primary molars are missing.
- **Hawley appliance:** An acrylic removable appliance with Adam's cribs or ball clasps on molars and a labial bow. Wire stops can be placed mesial and distal to edentulous spaces to maintain their patency. Alterations to the appliance can be made to correct other minor orthodontic issues that may be present.
- **Removable partial denture:** Indicated to restore aesthetics and function. Requires high levels of cooperation and compliance. As opposed to the alternative space maintainer designs, this appliance prevents supraeruption of opposing teeth where posterior teeth have been lost.

In general, space loss is greater:

1. **In the maxilla compared to the mandible**
2. **In crowded compared to spaced dentitions**
3. **The younger the child is when the tooth is lost**
4. **The more posterior the tooth is in the dental arch**

FOLLOW UP

Space maintainers require supervision and should be reviewed at least six-monthly following placement. Potential problems that may occur in approximately one third to one half of cases are:

- Breakage
- Failure of cementation
- Solder failure
- Loss of the appliance
- Distortion of the arch or loop
- Soft tissue problems
- Interference of eruption of permanent teeth
- Unwanted tooth movement
- Plaque accumulation
- Caries

The appliance should be removed once the permanent tooth/teeth begin to erupt.

Space maintainers prevent space loss following early primary tooth loss; however, they are not always indicated as they come with their own potential complications. The clinician should carefully consider the suitability for the patient and when placed, ensure that adequate supervision and maintenance occurs.

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