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The Maltese Dental Journal

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ISSN 2076-6181

DENTAL ASSOCIATION OF MALTA
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Editorial

By Dr David Muscat

Dear colleagues,

Earlier this year the Dental Association of Malta took the initiative and broke the deadlock regarding the Covid-19 vaccine for dentists in private practice who are considered heath worker front-liners, and rightly so.

The DAM liased with the Deputy Director of Mater Dei Hospital and furnished details of not only the dentists in private practice (who do not work at Mater Dei) but also their chair side dental assistants as well as their dental hygienists (who do not work at Mater Dei). In addition we also covered the dental nurses who work in practices of dentists who work at Mater Dei but work privately in the afternoons. Within 48 hours, appointments for vaccinations started to be sent out with some appointments scheduled even for the following day.

The Dental Association of Malta is currently looking into the issue of some dental insurance companies excluding not only Covid-19 but other pathogens and communicable diseases from the Dental Indemnity Insurance policy and we are meeting stakeholders regarding this issue.

The Dental Committee is currently organising the refurbishment of the DAM office at the Federation of Professional Associations in Gzira. By now hopefully all practice owners would have correctly filled in their applications for the drainage licence with the appropriate authorities. I have personally helped many dentists fill up the appropriate forms.

There was an outcry about the increased cost of nitrile gloves. We hope that prices will come down to a reasonable level once the rate the vaccinations around the world increases and things hopefully settle down to the new normal. It is unfortunate that in addition to all the stress that the pandemic has caused we also have to pay much more for basic essentials.

We hope to embark once more on organising CPD events and conferences as we did in the past as soon as it is possible to do so.

At the time of writing this article, the number of people who were contracting Covid-19 in Malta was unfortunately reaching an all time high.

The sooner the whole population is vaccinated the better. We applaud the University of Malta faculty of Dentistry for taking an initiative in this regard and helping with the vaccinations.

In this issue there are some interesting historical as well as scientific articles which I hope you enjoy. I would like to thank those who took the time and made the effort to support this issue by writing articles.

The cover is Palazzo Castellania, the Ministry of Health – a painting by the artist Jacqui Aguis, mother of Dr Andrea Aguis.

Best regards,

David

Dr David Muscat B.D.S. (LON)
Editor / Secretary, P.R.O. D.A.M.

History of Palazzo Castellania

Castellania Palace is a former courthouse and prison in Valletta. It was built by the Knights of St John between 1757 and 1760 on the site of a former courthouse that had been built in 1572.

Items from Sir Temi Zammit's laboratory are to be found in the 'Brucellosis museum' on the second floor.

In 1895 the building was converted into the Public Health Department Head Office and eventually to the Health ministry. The statue of 'Lady Justice' may be found at the main staircase. The Magna Curia Castellania were the courts of St John. A Castellanian headed the institution. The *Cancelliere* received and preserved judicial acts. The *Gran Visconte* was the Chief of Police. The *Capitani di Botte* implemented the sentences. Advocates were Italian-speaking Maltese.

A report was drafted weekly and sent to the Palace of the Grandmaster. The Grand Master had the absolute power to preside over the institution.

The Castellania was designed by Francesco Zerafa and completed by his engineer Guiseppe Bonici after Zerafa's death. The main portico is decorated with Carrara marble. Some of this marble came from the ruins of the Temple of Proserpina, an ancient Roman Temple in Mtarfa, discovered in 1613.

The Castellania is an example of secular high Baroque architecture during Grand Master Pinto. The main facade has a distinctive portal with a triple concave and clustered pilasters.

The Portico is a cornice and has an iron railed balcony.The balcony was used to read out the major verdicts and the newly introduced *bandi* (laws). The main portal has the coat of arms of Pinto and there is a cartouche with an inscription.

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THE DENTAL ASSOCIATION OF MALTA

President's Report for 2020

By Dr David Vella, President – DAM

It's been a year we could never have imagined would occur as the Covid-19 pandemic hit us all and most of us were not prepared for it, neither physically nor mentally. From "did you see what's happening in China?" to YouTube videos showing people collapsing in the middle of the street, the man on the street reasoned that although it was shocking, we were somehow immune to this phenomenon in Malta as these situations never come to our shores.

How wrong we all were!

What hit us two months after these initial scenes was definitely something which shocked most of us to the core, as things we had always taken for granted suddenly weren't there any more. Our work, whether through Department of Health guidelines or patient fear, was drastically reduced or practically non existent.

Could any of you ever have thought that our partner in crime, the high speed handpiece would be out of bounds, together with our ultrasonic scalers!

In all fairness, no one knew the full extent of damage the Covid19 virus could cause or how it was transmitted so it made sense to be highly cautious. Most of us followed the rules and even the ones that risked a bit more than most, spread from dental clinics was luckily practically zero.

Although this information might not be totally correct as no studies referring to dental surgeries have been, to my knowledge, completed in Malta, DAM would have surely picked up any issues if the numbers were noticeable. These feelings are mirrored by The American Dental Association's report that the provision of dentistry during COVID-19 has been generally very safe. The reasons given were mainly that dentists have been wearing masks and gloves for decades and work in a very hygienic environment which was mainly brought on after AIDS became prevalent in the late 80s.

2020 commenced with our usual AGM. One of the points brought up at this meeting was the fact that non EU nationals with non EU qualifications were being possibly given an opportunity to apply for Medical Council temporary registration and, so it seems, fully supported by the Ministry of Health.

Since then, we have also seen non EU individuals who have failed Medical Council warrant exams, some more than once, attempting to circumnavigate the existing laws to receive this registration.

The DAM has fought tooth and nail to prevent anyone who has failed compulsory Medical Council exams from receiving a warrant to practice. It is our opinion that anyone who fails these exams is not fit to be let loose on the public at large working as a dental surgeon! We have all been through this system in one way or another and previous candidates who have failed exams were simply not allowed to practice.

I have even personally spoken to the President of Malta about this situation, who informed me that his office is also very much following this issue.

As a community we should all put pressure on the Minister Chris Fearne, Chairman of the Department of Dentistry Kevin Mulligan and Director General Clarence Pace to instantly refrain from providing these individuals with opportunities to work as qualified dental surgeons in any way or form. If these said individuals wish to practice, they should follow the procedures all of us have followed and if successful, then they are also entitled to obtain a warrant.

The Dean of Dentistry at the University of Malta Prof Nikolai Attard happens to also be 100% behind us. Recent decisions have made a mockery of his efforts to make sure that these individuals are safe to be allowed to treat patients in the clinical world.

Hopefully the next DAM President can take this issue to the next step and I sincerely hope with the backing of all the dental community, whether they happen to be DAM members or not.

Following the AGM, and after a number of intensive weeks of efforts, a wonderful collaboration between DAM and Mr Joe Cremona from OHSA, we put up an all inclusive CBCT course which enabled the attendees to satisfy local regulations regarding the usage of CBCT machinery and interpretation of subsequent exposures.

The main issues we faced were mainly the usual financial problems as OHSA had never been involved with anything similar and did not grasp how expensive the logistics of such an event would be.

There are very few individuals who are officially authorised to provide the required tuition and as we all know, their remuneration is substantial. However with sponsorship obtained by Mr Joseph Cremona going towards the lecturers' remuneration, the sponsorship from two local agents, Etienne Barthet and Kevin Galea, plus the course fees we received, the event was instantly fully subscribed and turned out to be a huge success.

Then came COVID-19.

It all seemed to happen very quickly. The DAM Committee attempted to grasp hold of the situation as best as we could and half the members of the Committee immediately started to work on the DAM Guidelines for Dental Clinics using all the information we had at our disposal which wasn't very much, while applying a lot of common sense and years of clinical experience to the draft.

Hours of work went into this job and not only just the research, but the proof reading and cross checking too.

The final draft was passed on to Public Health, not just once but again a few weeks later when revision to our Guidelines were made.

Regarding the clinic management side, I personally tried for nearly three whole months to convince the Government to assist dental practice owners with financial aid towards employees' wages. I attended hours of online meetings in the name of the DAM practically on a daily basis.

Meetings were held with most Ministers associated with finance bar the Prime Minister, and even though we were at times handed a sign of hope, unfortunately nothing ever materialised. Vice President Dr Adam Bartolo also knocked heavily on the Malta Enterprise door for weeks on end, but again to no avail.

DAM was invited to join a group of Professional Associations which included the Accountants, Lawyers, Notaries, and Architects to present a stronger front when representing our members' needs to the various government entities.

Between us we not only heavily lobbied the Government to include our employees in one of the Annexes but also came up with detailed plans for the general workforce to hit the ground running once the pandemic started to wane.

These reports were all presented to the various Government ministries. Unfortunately again, no action was taken, which was a pity as hours of work went into this study which included heaps of information gathered from members of different associations, including our own.

Finally DAM was responsible for the drive that managed to get not only our members vaccinated but also non-members and all clinical staff of private clinics which included nurses and hygienists.

Following an initial contact with a senior member of Mater Dei Hospital's staff, in no more than five days we managed to liaise with our members, create an online form for the submission of individual details, gather all the information and pass it to the relevant authorities in a format which made our information very easy to work with. This is also an extremely proud moment for the DAM Committee.

This brings me to the end of my last President's Annual report as my four years are unfortunately up.

It has been a pleasure to occupy this honourable post and genuinely tried to bring the dental community closer together.
I personally have enjoyed these four years immensely not only because of the position but because

I had the opportunity to work with possibly the best combination of Committee members the DAM has ever had. The understanding and camaraderie was second to none and it's definitely the reason why we have managed to take DAM to the next level.

My personal favourite event? It must be the 1st Mediterranean Dental Conference, it was incredibly difficult to put together but we all felt that we really did succeed.

Thank you for your support over the past years.

Your dentures gave them confidence. We'll keep it going.

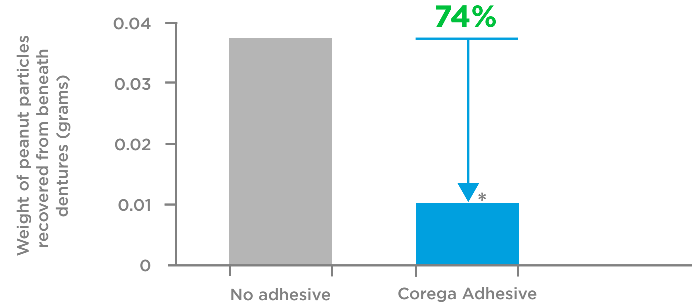
You can be confident in the knowledge that you've given your patients specially made and well-fitting dentures. However, your denture-wearing patients can have concerns around denture retention and trapped food, making it difficult for them to emotionally adjust to living with dentures. They may not tell you, but more than 1 in 3 denture wearers admit to skipping social activities because they are conscious of their dentures.[1]

Up to **29%** skip eating out in public,[1] **86%** experience food trapping under their dentures and **55%** experience denture movement.[2]

These everyday challenges can hold your patients back from living life to the fullest.

Maintain your patients' confidence and satisfaction with their dentures by recommending Corega Ultra Fresh denture adhesive.

Corega adhesive reduces food entrapment vs. no adhesive use (p<0.0001) in well-fitting dentures[4]



Randomised, blinded, 3-way crossover study to evaluate denture adhesive use against no adhesive use. Subjects with well made and well-fitting maxillary and mandibular dentures completed the study. Food entrapment was quantitatively measured by collecting and weighing residue from beneath the dentures after subjects chewed and swallowed 32 grams of peanut test meal.
*P<0.0001.

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Corega Ultra Fresh denture adhesive – Offering your patients reassurance for everyday life

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†vs. no adhesive

References: 1. P&G News. Denture Wearers Embrace New Smile Yet Avoid Popular Foods. http://news.pg.cpm/press-release/pg-corporate-announcements/denture-wearers-embrace-new-smile-yet-avoid-popular-foods. Accessed September 2013; **2.** GSK Data on File; Canadian Quality of life Study. 2005; **3.** Munoz CA *et al. J Prosthodont.* 2011;21(2):123-129; **4.** Fernandez P *et al.* Poster presented at the IADR 2011, Poster 1052.

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THE DENTAL ASSOCIATION OF MALTA

Administrative Report for the year 2020

By Dr David Muscat, Secretary – DAM

The year 2020 will always be remembered with dismay and a sense of pain and of loss due to the effects of the Covid-19 pandemic not only on our profession and our practices but also on our families . We have had to close or curtail our work considerably. We have had to invest in PPEs, air purification systems, Extraction and suction systems, Perspex screens, and in some cases working on a rota basis. We have had to pay our staff regardless. It is abundantly clear that we are probably the most at risk from all professions as we work directly in the mouth.

The DAM was at the forefront of preparing the COVID guidelines for dentists and this was extremely hard work with a great deal of input by Drs Meli Attard, Adam Bartolo and Dr Dougall.

We have survived. However we have done so as we are resilient and not because we got any help from anybody. We were supposed to get a 3,000 euro Covid Grant from MicroInvest but when some went to claim they were told it closed in September. On average we took about two months off work. The DAM was at the forefront of fighting for the rights and needs of dentists but we did not get anything for our efforts. Most notably Dr Vella had meetings with the minister concerned.

A good number of dentists and members of the dental team had offered their services as frontline workers at Covid test centres. These people deserved more than just mere clapping for their efforts.

The water and electricity bills as well as the clinic licence demand we still found in our letter boxes as well as the exorbitant bills from suppliers for disposable masks, gloves and disinfectants.

We hope the end is in sight as now our members in private practice as well as their clinical staff are being vaccinated ,again sooner rather than later due to the efforts of Dr David Muscat and the rest of the DAM committee in this regard.

This year we organised an excellent 3D radiography course over two days which was fully subscribed with eminent speakers from abroad. This involved a lot of work and preparation especially by Drs Manche, Dougall and Meli Attard. We also organised an online implants conference by liasing with Goethe University.

The Dental Probe Journal was still published quarterly in spite of the difficulties encountered by the editor Dr David Muscat in obtaining articles and securing adverts.

Dr Audrey Camilleri attended the CED conference online in November on our behalf. Dr Satariano still attended the Federation meetings online. Dr Edward Fenech was always there ready to get on the phone and moderate the tone. Dr Lino Said helped organise the St Apollonia Event which was held at St Dominic's Convent in Valletta followed by lunch at The Office.

We have embarked upon a refurbishment of the DAM premises at the Federation building and this

is long overdue. The membership fee for 2021 will increase to 75 euro per year, also long overdue.

We mourn the loss of our colleague Dr Vincent Muscat who was one of the most sincere dentists I have ever met who always had a nice word to say about everyone. His appreciation is written up in the December Probe issue. He will be missed.

We look forward to 2021 with a sense of hope and humility . We hope the vaccine will lead us out of this desperate situation but we must always remember the hard times and treat others with respect and dignity.

We should learn from 2020 that one may be afflicted at any time and that however well you may be doing this can be taken away at a stroke.

Let us go forward together with friend ship and camaraderie as has been shown in the dental community the past year when we were all adversely affected.

St Apollonia Celebrations III

By George E. Camilleri

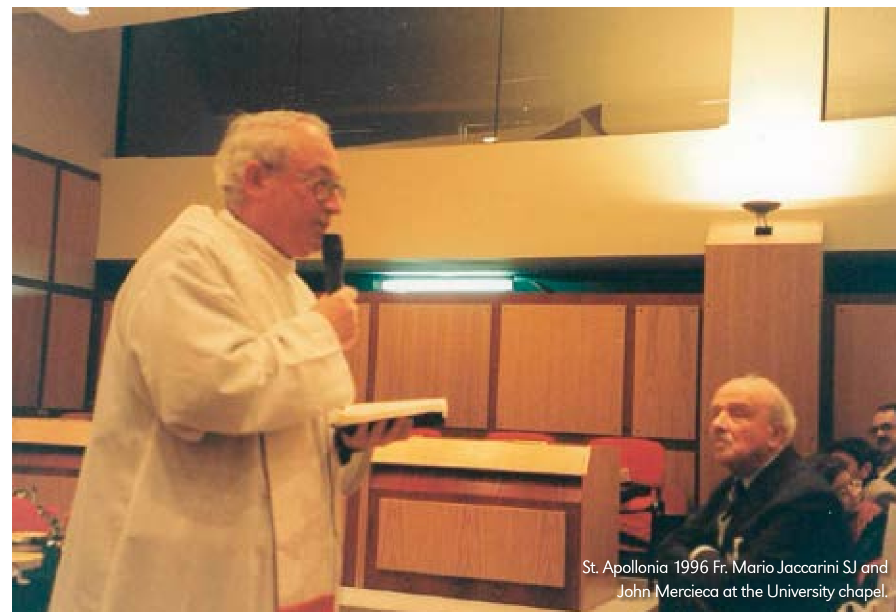
Figure 1. St. Apollonia 1992. Grand Hotel Verdala, Rabat

The Saint Apollonia Get-Together was now a popular and established event in the Association's Calendar, and in 1992 we celebrated the occasion at the Grand Hotel Verdala, Rabat (Fig. 1).

There are no records in the Association's archives of any events for the next two years and it is not clear whether any specific activities took place.

In 1995 the Mass was held at St Agatha's Chapel of the Benedictine Convent, Mdina followed by lunch and later tea at Palazzo Costanzo, Mdina.

In 1996 we went back with Fr Mario Jaccarini for mass at the University Chapel, tal-Qroqq and reception at Dar Manwel Magri (Fig. 2).


St. Apollonia 1996 Fr. Mario Jaccarini SJ and John Mercieca at the University chapel.

The committee with Roger Vella's usual organisational ability selected a variety of chapels and restaurants for the following years.

St Paul's Shipwreck chapel and the Gillieru restaurant for 1997 (Figs. 3 & 4), the Chapel at Ħal-Tmiem (Zejtun) (Fig. 5) and L-Angostini Restaurant in Marsascala in 1998 and the chapel of Our Lady of Ransom, and Grand Hotel Mercure at Selmun with the obligatory post-prandial walks in 1999. All very successful events.

St Apollonia 1997. Student participation: Adriana Stafrace, Jackie Portelli, Antoniella Mifsud, Etienne Cassar and Romina Carabott.

We started the new millenium at the San Martin Chapel, Pwales with a traditional fenkata at Il-Barri, Mġarr. In 2001 the southerners were demanding a return to their area.

The organiser's response was mass at St George's chapel in Birzebbugia (Fig. 6), and lunch at the Al Fresco Restaurant followed by an excursion to the neolithic and bronze age sites at Borg in-Nadur, Birzebbuġa (Fig.7).

The ever enlarging family contingents congregated at the Millenium Chapel, Paceville (Fig. 8) in 2002. Lunch at Bloomers was followed by an excursion to what is left of the Pembroke battery. The occasion was becoming more and more a family gathering with the opportunity to introduce the children (Fig. 9).

Figure 4. St Apollonia 1997. Group in front of St. Paul's Shipwreck chapel, St. Paul's Bay.

Figure 5. St. Apollonia 1998. Tony Charles on home ground at al-Tmiem Chapel, Zejtun.

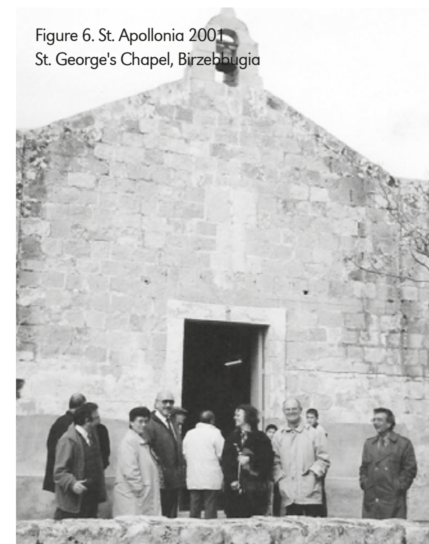


Figure 6. St. Apollonia 2001 St. George's Chapel, Birzebbugia

Figure 7. St. Apollonia 2001 Borg in-Nadur Bronze Age site

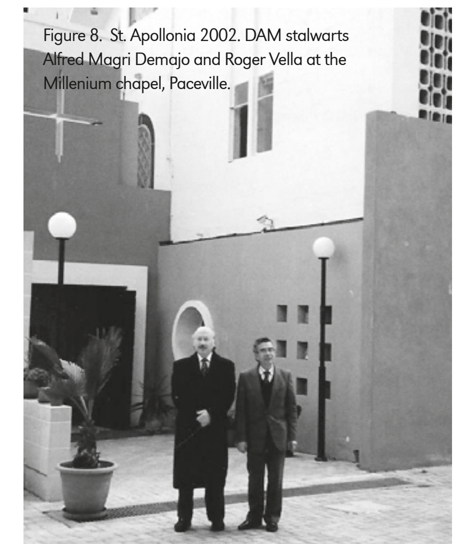


Figure 8. St. Apollonia 2002. DAM stalwarts Alfred Magri Demajo and Roger Vella at the Millenium chapel, Paceville.

Figure 9. St, Apollonia 2002. Pembroke Battery.

Still south bound at the Hagar Qim Restaurant when George Camilleri was presented with yet another retirement present by Kenneth Spiteri (Fig. 10).

The archaeological walk in driving rain (Fig.11), took us up to Il Misqa and down to Torri Ħamrija (Fig.12).

A hectic finish to another memorable meet. ◾

Figure 10. St. Apollonia 2003. Presentation at Hagar Qim Restaurant

Figure 11. St. Apollonia 2003.Edwin Galea leading the uphill walk.

Figure 12. St. Apollonia 2003. Tori Hamrija.

THE DENTAL ASSOCIATION OF MALTA

International Relations Officer Report for 2020

By Dr Audrey Camilleri, IRO – DAM

An online full day meeting was held in November to replace the one day in person meeting In Brussels that I usually attend. All ran smoothly and online voting was also very efficient. Below are the topics of interest at the moment

1. UPDATE ON COVID-19 NATIONAL SITUATIONS AND CED ACTIVITIES WORKING DOCUMENT

New CED activities related to COVID-19, including 15 rounds of the survey on national measures relating to dentistry, sharing all available information through a new page on the CED website is constantly being updated and circulated.

The information included details of regulations and recommendations given to dentists in All EU countries and also data on number of dentists who had covid (attempting to establish patient to dentist risk and vice versa).

The CED issued several press releases which are also being used at national level and engaged with relevant European and international bodies, including the European Centre for Disease Prevention and Control and Cochrane Oral Health.

2. CED MEMBERSHIP

The President informed that an application has been received from the BDA to become a CED Affiliate Member. He confirmed that, based on the provisions of the Withdrawal Agreement, the BDA fulfills the criteria for CED affiliate membership and application was approved following online voting

3. E HEALTH

The Working group of E health has participated in public consultations on the Digital Services Act, on Health Data in the light of the GDPR, and on the White Paper on Artificial Intelligence (AI) and has been discussing the eHealth Competency model and the resulting decision to agree on a set of necessary digital skills specific to dentists.

To increase focus at the EU level on AI, the WG decided to draft a position paper on positive and negative impact of AI on dentistry and healthcare in general and this paper was approved

4. EUROPEAN COMMISSION STUDY

The European Commission is conducting a study "Mapping and assessment of developments for one of the sectoral professions under Directive 2005/36/EC – dental practitioner", and is contacting European stakeholders, in order to assess the training requirements for the profession of dental practitioner. DAM or UOM may be contacted and CED is replying on their behalf

The purpose of the study is to assist the European Commission in its assessment of whether certain training requirements (the minimum knowledge, skills and training subjects) for the profession of dental practitioner, harmonised at EU level under Directive 2005/36/EC, as amended, should be updated to reflect scientific and technical progress.

5. CED POSITION REGARDING IMPLANT CARDS FOR DENTAL IMPLANT CARDS

With the document at hand, the CED wishes to clarify its position regarding the implant card obligation in dental implants for safeguarding patient safety.

This CED position specifically applies to dental implants and not to implant materials or any other device or material intended to be placed in the teeth.

II – EUROPEAN REGULATORY FRAMEWORK

Pursuant to Article 18(3) of the Medical Devices Regulation (MDR) (EU) 2017/745 i, published on 5 May 2017 in the Official Journal of the European Union (EU), and, as per Regulation (EU) 2020/561ii, applicable as of 26 May 2021:

"3. The following implants shall be exempted from the obligations laid down in this Article: sutures, staples, dental fillings, dental braces, tooth crowns, screws, wedges, plates, wires, pins, clips and connectors.

The Commission is empowered to adopt delegated acts in accordance with Article 115 to amend this list by adding other types of implants to it or by removing implants therefrom."

It has been the CED's understanding that under the MDR, all devices/ materials that are affixed to the bone (such as dental implants) are not exempted from the obligation of an implant card.

This would mirror the established shared interpretation of national Competent Authorities on classification of dental implants under Council Directive 93/42/EEC on Medical Devices (MDD)iii.

The CED has no objections to this obligation. However, the CED has been recently informed of some inconsistencies iv in Member States' interpretations of Article 18 of the MDR.

III - IMPLANT CARD- INTENDED USE AND ENVISAGED BENEFITS

Article 18(1) of the MDR lays out the information to be provided by the manufacturer on the implant card.

The implant card must clearly identify the device and provide additional relevant informationv. Article 18(2) lays down the obligation of Member States to require health institutions or healthcare providers to deliver the implant card to the patient in question.

The paragraph reads:

"2. Member States shall require health institutions to make the information referred to in paragraph 1 available, by any means that allow rapid access to that information, to any patients who have been implanted with the device, together with the implant card, which shall bear their identity".

Additionally, in order to further clarify Article 18 of the MDR, a guidance document on implant cardsvi has been adopted by the European Medical Device Coordination Group (MDCG).

It states that the implant card is meant to help the patient identify the implanted device and to get access to information related to it.

Implant cards can also be used by emergency department personnel or first responders to receive information about medical treatment or patient needs in emergency situations, this is also valid for dental emergencies.

IV - CED POSITION

CED-DOC-2020-021-FIN-E

The CED's mission is to promote the highest standards of oral care to ensure patient safety at all stages of dental treatment. All measures aimed at improving traceability and patient's access to relevant information about his/her health are strongly supported by the CED.

At present, high standards of traceability and safety of dental implants may already be in place at the national level. Dentists should use appropriate and certified dental materials and medical devices for each patient's individualised treatment plan.

CED notices the different interpretations of the MDR and would like to stress the importance of a shared single interpretation concerning the position of implant cards.

For previousIV mentioned reasons CED believes that implant cards for dental implants can contribute to high standards of traceability and patients access to information.

CED considers a high standard of traceability and access to information as paramount for a best practice that promotes high standards of oral healthcare and effective patient-safety centred professional practice.

Therefore, in this context, the CED supports the view that it is best practice that a dentist who places a dental implant should supply the patient with an implant card.

This recommendation supports a best practice that promotes high standards of oral healthcare, dentistry and effective patient-safety centred professional practice.

THE PIONEERS OF DENTISTRY IN MALTA

Based on an oration delivered on 10/10/1987 under the auspices of the Dental Association of Malta by Professor John Portelli on the occasion of the Golden Jubilee of the first course in Dental Surgery at the University of Malta. Summarised by Dr. David Muscat

The first licentiate in Dental surgery was established by Royal Charter granted to the Royal College of Surgeons of England in 1859. The Dental Act of 1878 brought the practice of Dentistry under state control.In 1921 the Dental Act confirmed the practice of Dentistry to qualified practitioners.

In Malta the practice of Dentistry ,by virtue of the Police Laws of 1883,required practitioners to hold a licence granted by the Head of Goverment. In 1901 licences had to have a diploma from a recognised Maltese institution.

In 1918 John Eskdale Fishburn was granted a diploma. In 1922 Egidio Lapira was awarded a Diploma in Dental Surgery after being apprenticed to Mr. Bannes Martin LDS.

Mr. Martin and Mr. Jenkins were the only qualified practitioners in Malta who could treat the civilian population.In 1915 Egidio Lapira took up the post of Dental Surgeon at the Central Civil Hospital.

In 1930 Professor Debono and Professor A.V.Bernard proposed the establishment of a course in Dental Surgery.Professor Lapira then was at the helm of Dentistry for the next 20 years as Chair of Dental Surgery.

He also received many honours such as Officer of The British Empire in 1959. He was given an Honorary Fellowship in Dental Surgery as well as an honorary degree of Doctor of Science.

Continues on page 14.

DR JOHN MERCIECA after he unveiled his portrait, with Dr Anthony Charles, president of the Dental Association of Malta

Dental Association honours Dr John Mercieca

by Roger Vella

WEDNESDAY, November 7, was the 89th birthday of an eminent Maltese personality – Dr John H. Mercieca, MOM, D.Sc. *(Hon. Causa)*, DDS – the only surviving member of the first group of dental surgeons who graduated from the Royal University of Malta in 1937.

Dr Mercieca is a founder member of the Dental Association of Malta, of which he was president from 1961 to 1981, after which he was made honorary life president.

Dr Mercieca was honoured by the State when he was awarded the Membership of the Order of Merit, and by the University of Malta wth an honorary doctorate.

Now it was the turn of the Dental Association of Malta to show its gratitude towards Dr Mercieca's lifelong dedication to the dental profession in general and to the association in particular.

This consisted of an oil portrait of Dr Mercieca by the well-known portraitist Raymond Pitrè, which will be hung permanently and prominently in the association's office at the Professional Centre.

The portrait was unveiled by Dr Mercieca himself at a special reception, appropriately held on his birthday, at which a good number of dental surgeons were present.

Dr Vella is secretary of the Dental Association of Malta

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THE PIONEERS OF DENTISTRY IN MALTA

Continues from page 12.

The first course in Dental Surgery at the University of Malta commenced in 1933 for a period of four years. The eight students who joined the course were four qualified pharmacists -V.J.Salomone, Leone Portelli, Joseph Farrugia and Francis Nassetta. The other four were J.H.Mercieca, J.J.A. Portelli (father of Professor John Portelli),victor Vella Grech and Paul Mifsud.

The recognition by the General Medical Council of the Diploma in Dental surgery granted by the UOM was published in the Malta Goverment Gazzette on 13/7/1936. In 1949 the degree of Bachelor of Dental surgery was established . in 1940 four emergency dental clinics were opened and manned by volunteer Dental surgeons-J.H. Mercieca, J.J.A. Portelli, VJSalomone and J.Fiorini.

The Dental Association of Malta was founded for political reasons.A meeting was called by V.J Salomone on 3/2/1944. The purpose was to form the Association and elect two members to represent it at the National Congress chaired by Professor Luigi Preziosi which had been convened to draw up a new constitution for Malta .

The Dental Association of Malta had to be a constituted body to be represented at Congress. Professor Lapira was the first President of the Association and V.J.Salomone was the first Secretary. They were elected as the DAM's representatives to the National Congress.

Dr. Mercieca succeeded Dr. Salomone as secretary in 1947 and Professor Lapira as President in 1961. The DAM became affiliated to the BDA. In 1948 the Naval Scheme put Maltese dental Surgeons on a par with their British counterparts. Naval wives and families were offered free dental treatment by qualified dental practitioners at their private clinics,within the context of the newly established British NHS.

Dr Tony Demajo qualified in the 1943 course. He was the first Maltese graduate then to obtain a foreign basic dental degree. In 1953 he went to the USA and graduated as Doctor of Dental Surgery in North Western University Chicago.

Continues on page 16.

Looking for Cyber Liability Cover?

Speak to MIB!

In today's world, cybercrime and data breaches are becoming more and more common. Did you ever stop and think of how your practice could be affected if you suffered a cyber-attack?

Like other medical professions, dentists have a vast amount of data including names, addresses, birth dates and **sensitive information** such as health history and possibly banking information. The threat of this information being stolen is tremendous. A cyber breach could lead to significant expenses, reputational damage and possible fines, all of which can wreak havoc on your dental practice.

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THE PIONEERS OF DENTISTRY IN MALTA

Continues from page 14.

His younger brother Dr. Tommy Demajo graduated from the fourth course in 1946 and also went to the USA and graduated as doctor of Dental surgery in 1951.

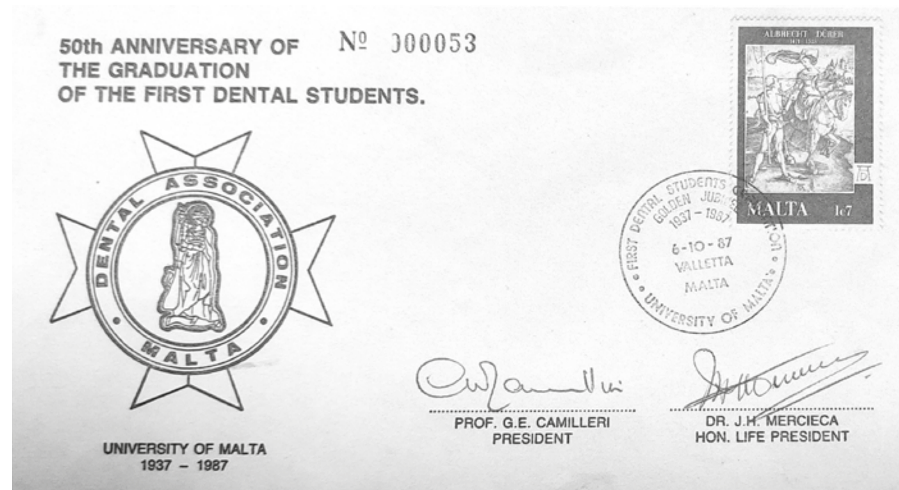
Dr Edwin Galea graduated from the fourth course.He was the only Maltese to be commissioned into the Royal Navy.

He received his commission as Surgeon Lt.in 1948 and did his basic Naval training at HMS Victory in Portsmouth.

Dr. Edwin Galea saw service on HMS London during the battle on the Yangtsee river in China.The HMS London destroyed all the shore battery but suffered 70 casualties.

Tony Cremona and Bertie Galea qualified in 1949 from the fifth and last DDS course.They were the first Maltese dental graduates to set up in general Dental Practice in the UK.

Surgeon Lt. Col Cremona returned to Malta in 1953 and joined the Royal Malta Artillery in 1955 becoming the first and only LT. Col. Dental in a Maltese Regiment in 1970. Dr. Bertie Galea returned to Malta and joined Dr.Tony Cremona in his private



clinic before devoting the rest of his career to the School Dental Service.

Professor George Camilleri succeeded Professor Mangion as Professor of Dental surgery in 1970 and is the first Maltese dental graduate to have devoted his energies to scientific research.

Professor Camilleri graduated BChD in 1957 and followed further training at Glasgow Dental hospital.

He obtained the Higher Diploma of the RCS of Glasgow in 1959 and the Fellowship in Dental Surgery of the Royal College of Surgeons of Edinburgh in 1960.

Between 1962-1964 he was awarded the Quintis Hogg Research Fellowship at the department of Dental Science at the RCS(England).

He researched into the Bacteriology of dental caries and primarily in the field of oral exfoliative cytology in experimental carcenogenesis which he introduced to Malta on his return in 1964.

As at 1987 it is said that he was the only Maltese graduate to teach histology to medical students.

Professor George Zarb is a pioneer of dentistry having been involved in the Osseointegration technique. He was awarded an honorary doctorate by the University of Gottenburg Sweden for his scientific research. He occupied the Chair of Dentistry at the University of Toronto Canada. ■

PAYMENT FORM

Please cut out this section and send with a cheque for 75 euro payable to **Dental Association of Malta** for your 2021 DAM membership – the best 75 euro investment ever!

TO:

The Treasurer, Dr Noel Manche,
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Federation Of Professional Associations,
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They are limited to the following infections: • Brucellosis • Pasteurellosis • Pulmonary, genitourinary and ophthalmic chlamydia infections • Pulmonary and genitourinary mycoplasma infections • Ricketts infections • Coxiella burnetii (Q fever) • Gonorrhoea • ENT infections and bronchopulmonary infections due to Haemophilus influenzae, in particular acute exacerbations of chronic bronchitis • Treponemal infection (in cases of syphilis, tetracyclines are not indicated if the patient is allergic to be lactam antibiotics) • Spirochaetes (Lyme disease, leptospirosis) • Cholera • Moderate and severe inflammatory acne, and the inflammatory component of mixed acne • Cutaneous or ocular manifestations of rosacea Special cases Post-exposure prophylaxis and curative treatment of anthrax. T official recommendations concerning the appropriate use of antibacterials should be taken into consideration. 4.2. Posology and method of administration Posology Paediatric population Children over 8 years of age: • 4 mg/kg/day. Special cases Anthrax: post-exposure prophylaxis and curati treatment in symptomatic individuals capable of receiving oral treatment, either directly or when switching from parenteral treatment: 4 mg/kg/day in 2 doses, without exceeding the adult dose (200 mg per day). The duration of treatment is 8 weeks when exposure to anthrax has been proven. Adu • Patients weighing more than 60 kg: 200 mg per day, in a single dose • Patients weighing less than 60 kg: 200 mg on the first day 100 mg on the following days, in a single dose Special cases: • Acute gonorrhoea: o Adult males: • 300 mg on day 1 (in 2 doses), followed by 200 mg per day for 2 4 days • Or a single dose of 500 mg, or 2 doses of 300 mg taken 1 hour apart o Adult females: • 200 mg per day • Primary and secondary syphilis: 300 mg per day, taken in 3 doses for at least 10 days • Non-complicated urethritis, cervicitis, proctitis due to Chlamydiae trachomatis: 200 mg per da for at least 10 days • Acne: 100 mg per day, for at least 3 months. In certain cases, a half-dose treatment may be used • Cutaneous or ocular manifestations of rosacea: 100 mg per day, for 3 months. No clinical data is available beyond 3 months of treatment Special cases Anthrax: post-exposu prophylaxis and curative treatment in symptomatic individuals capable of receiving oral treatment, either directly or when switching from parenteral treatment: 200 mg per day, in 2 doses. The duration of treatment is 8 weeks when exposure to anthrax has been proven. Method of administrati To be taken in the middle of a meal with a glass of water (100 ml), at least 1 hour before bedtime. The tablet may also be dissolved in a glass of water (100 ml) before absorption, at least 1 hour before bedtime. In this case, stir the suspension well to ensure that the entire dose of the medicine swallowed. 4.3. Contraindications • Hypersensitivity to the active substance or to any of the excipients listed in section 6.1 • Allergy to tetracycline antibiotics • Combination with systemic retinoids (see section 4.5) • The use of this medicinal product should be avoided in children under 8 years of a due to the risk of permanent staining of the teeth and hypoplasia of the tooth enamel • Pregnancy and breast-feeding: this medicinal product is contraindicated from the beginning of the second trimester of pregnancy. Breast-feeding is not recommended during treatment with this medicinal produ 4.4. Special warnings and precautions for use Given the risks of photosensitisation, it is advisable to avoid direct exposure to the sun or to UV light during treatment, and treatment must be discontinued if cutaneous manifestations such as erythema appear. Because of the risk of oesophage involvement, it is important to ensure that the instructions for administration are observed (see sections 4.2 and 4.8). This medicinal product should be used with caution in patients with hepatic impairment or those receiving medicinal products that may impair liver function. Rare cases of hepa dysfunction have been reported with oral or parenteral tetracyclines, including doxycycline. Some patients with spirochaete infections may experience the Jarisch-Herxheimer reaction shortly after initiation of treatment with doxycycline. Patients should be reassured that this is a consequence antibiotic treatment for spirochaete infections, and usually resolves spontaneously. 4.5. Interaction with other medicinal products and other forms of interaction Contraindicated combinations Retinoids (systemic) Risk of intracranial hypertension. Combinations subject to precautions for use Enzym inducing anticonvulsants Decreased plasma concentrations of doxycycline due to increased hepatic metabolism of doxycycline. Clinical monitoring, and possible adjustment of the doxycycline dose. Didanosine Decreased intestinal absorption of tetracyclines due to an increase in gastric pH (antac in the DDI tablet). Avoid taking didanosine and tetracyclines at the same time (at least two hours apart, if possible). Iron (salts), oral administration Decreased intestinal absorption of tetracyclines (formation of compounds). Avoid taking iron salts and tetracyclines at the same time (at least two hou apart, if possible). Topical gastrointestinal treatments (salts, oxides, hydroxides of magnesium, aluminium and calcium) Decreased intestinal absorption of tetracyclines. Avoid taking topical gastrointestinal treatments and tetracyclines at the same time (at least two hours apart, if possible). O anticoagulants Increased effect of the oral anticoagulant and increased risk of bleeding. More frequent monitoring of prothrombin time and INR. Possible dose adjustment of the oral anticoagulant during treatment with tetracyclines, and following discontinuation of treatment. Combinations to taken into account Zinc salts: Decreased intestinal absorption of tetracyclines. Avoid taking zinc salts and tetracyclines at the same time (at least two hours apart, if possible). Specific problems with INR imbalance Numerous cases of increases in the activity of oral anticoagulants have been report in patients receiving antibiotics. Any marked inflammatory condition or underlying infection, and the age and general condition of the patient appear to be risk factors. Under these circumstances, it appears difficult to distinguish between the infectious pathology and its treatment when an IN imbalance occurs. However, this problem occurs more frequently with certain classes of antibiotics: these include fluoroquinolones, macrolides, tetracyclines, co-trimoxazole and certain cephalosporins. 4.6. Fertility, pregnancy and lactation Pregnancy Studies in animals have revealed no eviden of teratogenic effects. Given the absence of teratogenic effects in animals, malformations in humans are not expected. To date, substances responsible for teratogenic effects in humans have always shown teratogenic effects in animals in rigorous studies in two species. In clinical practice, the u of tetracyclines in a limited number of pregnancies has, to date, not been found to cause any clear congenital malformations. However, further studies are required to assess the consequences of exposure during pregnancy. The administration of tetracyclines during the second and third trimeste of pregnancy exposes the foetus to the risk of staining of the deciduous teeth. Consequently, as a precautionary measure, it is best not to use tetracyclines during the first trimester of pregnancy. The administration of tetracyclines is contraindicated from the start of the second trimester of pregnan Breast-feeding Breast-feeding is advised against during treatment with this medicinal product. 4.8. Undesirable effects Skin and subcutaneous tissue disorders Photosensitisation reactions, rash, very rare cases of erythroderma, photo-onycholysis, cases of hyperpigmentation. Renal and urina disorders Elevated extra-renal blood nitrogen, due to an anti-anabolic effect, and which may be increased by combination with diuretics, has been reported with tetracyclines. Elevated blood nitrogen has not yet been observed with doxycycline. Immune system disorders Allergic reactions (urtica rash, pruritus, angio-oedema, anaphylaxis, purpura, pericarditis, exacerbation of pre-existing lupus erythematosus). Unknown frequency: Jarisch-Herxheimer reaction (see section 4.4). Nervous system disorders Benign intracranial hypertension has been reported in adults during treatment w tetracyclines. Treatment should therefore be discontinued if an increase in intracranial tension is suspected or observed during treatment with doxycycline. Gastrointestinal disorders Dental dyschromia or enamel hypoplasia when administered to children under eight years of age. Digestive disorde (nausea, epigastralgia, diarrhoea, anorexia, glossitis, enterocolitis, anal or genital candidiasis). Rare cases of pancreatitis. Possible occurrence of dysphagia, oesophagitis and oesophageal ulcerations, aggravated by lying down and/or drinking only a small quantity of water when taking the produ Blood and lymphatic system disorders Cases of blood disorders have been reported during treatment with tetracyclines (haemolytic anaemia, thrombocytopenia, neutropenia, eosinophilia). Hepatobiliary disorders Rare cases of liver damage have been reported: hepatitis, jaundice and hepa impairment. Investigations Elevated liver function test values (temporary). Pharmacotherapeutic group: ANTIBACTERIALS FOR SYSTEMIC USE, ATC code: J01AA02.

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PATHWAYS TO PREDICTABILITY: DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

By Dr. Nicola McArdle BChD MFDS RCS Eng
MSc Aesthetic and Restorative dentistry (Manch)

Things are not always as they seem. What we sometimes perceive to be a relatively straightforward treatment, may end up a lot more complicated than what we had initially envisaged.

Sometimes we find out the hard way with the final outcome failing to meet our own as well as the patient's expectations. A thorough and stepwise process for comprehensive examination and treatment planning prior to embarking on the definitive restorations, can lead to more predictable success.

As dentists we are taught first to focus on pathological issues especially the ones that relate to decay and periodontal disease. We go around the arches tooth by tooth identifying problems and making the final treatment decisions with regards to the definitive restorations.

For many of our patients this approach works well, but for others who may also have underlying functional problems, this approach may not be the best option. With a steadily increasing range of treatment options and procedures, there are more alternatives than ever before.

Patients place ever higher expectations on their treatments and their level of information keeps rising. Two key elements to predictable results are mastering a functional occlusal examination and effective communication with our patient and technicians. A complete understanding of all aspects of dentistry leads to more holistic treatment plans and in turn, better treatment.

Complete dentistry doesn't mean that every patient needs a full mouth rehabilitation. It implies that we diagnose the cause of all these problems then create a treatment plan which solves these problems with the least amount of dentistry.

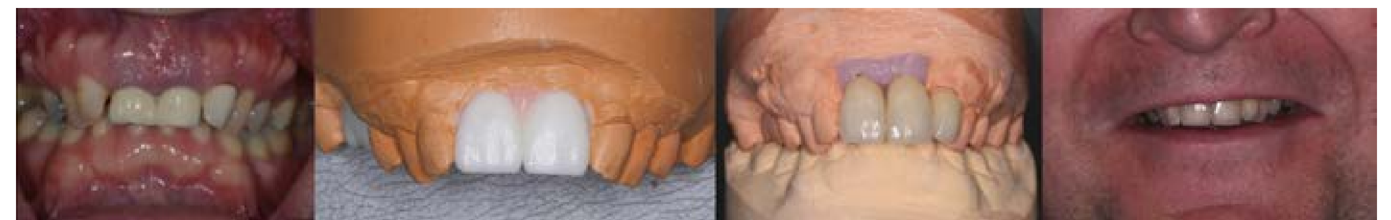
COMPREHENSIVE EXAMINATION

In a comprehensive examination we look for signs of functional problems by examining the temporomandibular joints (TMJ), masticatory muscles and teeth. We can do this with a TMJ occlusal examination that looks for potential signs of instability in each of these areas. Occlusal stability starts with the TMJ.

Are they healthy? Can they comfortably accept maximal loading? Are the muscles comfortable without soreness and headaches?

Besides biological issues, does the dentition exhibit signs of instability most commonly seen in wear, mobility and migration (Davies, 2001). If the exam process does not identify any functional issue, tooth by tooth planning is fine. On the other hand, if the exam does reveal functional issues, a different approach may be required. This would include additional records starting with mounted diagnostic models and a series of photographs.

Articulatory System Exam helps establish pre-existing occlusion, if there is a T.M.D, any signs of parafunction, if a conformative approach is possible and whether any pre-restorative equilibration is indicated (Gray, 1994).



In this case, incorporation of gingival porcelain in the final restorations was considered at the planning stage, given his forgiving low smile line, and a diagnostic wax-up for prospective gingival and tooth restorations helped us communicate this with the patient.

CLEAR COMMUNICATION

It is critical for us clinicians interacting with the patient to understand that we must communicate clearly what we, and more importantly, our patient would like to see in the final outcome.

The patient's expectations from the lab are almost always driven by aesthetics but our own as clinicians, must go beyond aesthetics by setting the expectations right based on function. Understanding our patient's chief complaint and what will satisfy their desires followed by effective communication of their and our own expectations to the dental laboratory is imperative to achieve a predictable result.

In a facially generated treatment plan we start our planning with aesthetics such as jaw position, arch form, teeth and gingival levels (Spear, 2021).

It is equally important to set the patient's expectations right by outlining any compromises in outcome prior to them consenting to their treatment plan. It is key to then convey these possible shortcomings of which the patient has been made aware of, to the lab. One such instance is that in which a patient is reluctant to opt for orthodontics and is adamant to achieve their goal without prior alignment of their dentition, for instance.

In order to do this effectively, verbal communication does not suffice and must be supported by visual tools. Analog and/or digital wax-ups are fundamental as a means of communication between the clinician and the technician however often enough, the information required to achieve the restorative goal is still insufficient and a great deal of the design is left for the technician to come up with.

Risk Factors	Low	Medium	High
Medical Status	ASA TYPE 1 Non Smoker	ASA TYPE 2 Light Smoker	ASA TYPE 3 Heavy Smoker
Patient's Esthetic Expectations	Low	Medium	High
Smile Line	Low	Medium	High
Periodontal Status	Healthy	Gingivitis	Periodontitis
Gingival Levels and Biotype	Even Levels, Low-Scallop, Thick Biotype	Slightly Uneven, Medium-scalloped, Medium Biotype	Uneven Levels (>1.0 m Highly-Scalloped, Thin Biotype
Biomechanics	Healthy Intact Teeth 2 to 3 Small Restoration Caries Resistant	More then 3 Small-Medium Restorations	Endodontic Treatme Large Restorations Caries Susceptible
Tooth Alignment	Normal Arch Form	Minor Crowding	Significant Crowdin
TMJ/Muscles	Normal Load Test Negative Normal ROM	Muscle Pain Can Accept Load with Tension	TMJ Pain Load Tests Positive Abnormal ROM
Bite Force	Normal Muscle Size and Bite Force	Moderate Muscle Size and Bite Force	Large Muscle Size and Hig Force
Tooth Wear	Low to No Wear	Moderate Wear, Attrition, Erosion	Heavy Wear, Attrition, Erosion
Chewing Pattern	Vertical	Side to Side	Front to Back, All Around
Guidance Pattern	Average Guidance on Cuspids	Steep Guidance	Flat Guidance, Group Function
Occlusal Design	Class I	Class III, End to End	Class II, Deep Overbite, L Overjet, Openbite
Occlusal Planes	Level	Uneven, Posterior Step	Canted Facially Flat Sagittally

Risk Assessment Form

PRESCRIPTION FOR THE DIAGNOSTIC WAX-UP

A detailed diagnostic wax-up prescription indicating the intended restorations would avoid a great deal of guess work.

When the treatment plan is still at an incipient stage, it can be modified based on the wax-up which can act as a great tool to help us achieve informed consent from the patient. Basic elements of designing a diagnostic wax-up are best captured on a prescription form. I shall now share each section of the one I adopt in practice in greater detail.

Continues on page 20.

Spear Prescription Form for Diagnostic Wax-up

PATHWAYS TO PREDICTABILITY: DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

Continues from page 19.

TREATMENT PLAN

One of the critical elements to communicate with the lab is the treatment plan itself.

Key elements that should be included are:

I. The teeth which are involved and we anticipate to restore should be clearly outlined.
II. The type of restorations and materials intended (veneers/crowns/onlays) should be indicated.
III. When planning veneers, the clinician must highlight any interproximal restorations and whether the interdental contacts have to be opened for their wax-ups.
IV. Does the former morphology on the lingual aspect need altering to allow for any rotations or changing of function?
V. Posteriorly can you get away with just veneering the buccal or occlusal aspect only in order to adopt a more conservative approach? Intended restoration can always be modified based on the wax up that can be achieved but always start by proposing the least invasive option.
VI. Is the treatment going to be done in stages or is it going to be a full mouth rehabilitation case held over a single phase? If phased, an altered wax-up may be required in due course.

TYPE OF WAX-UP TECHNIQUE

The technician should then be directed as to which type of wax-up technique to use in order to address the case expectations in the least invasive manner. One approach is the additive wax-up in which only addition of wax is used to achieve our goals with no stone reduction to finalise tooth form. This conservative option is preferred for additive direct/indirect restorations and phased treatment plans but is not indicated when we require corrections of rotations or crowns/veneers where significant morphology and functional changes are planned.

TYPE OF WAX-UP TECHNIQUE (choose one)

☐ Additive only (teeth will not be reduced to complete the wax-up) – for additive (direct or indirect) restorative techniques and phased treatment
☐ Reductive stone with additive wax – indicated for crowns or veneered teeth with significant morphology changes

The latter require a more aggressive reductive stone plus additive wax approach in which the technician must grind stone teeth down in order to create sufficient space for the wax.

PURPOSE OF WAX-UP

The technician also needs to be aware of the purpose of the diagnostic wax-up. Is it merely going to be used as a visual aid to help perceive the final outcome and think through the case comprehensively? Do we still need to work out the functional outcome such as which teeth and how many need to be involved?

By communicating these aspects, we can guide a clinically driven treatment plan and the case would then evolve with the wax-up.

Is the wax-up going to act as a guide to the definitive restorations and as a template for mock-ups or provisional restorations?

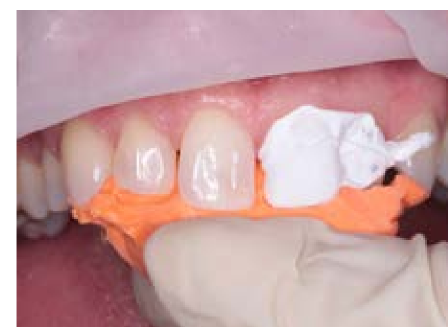
If opting for a minimally invasive preparation, driven by the mock-up (Gurel, 2006), do we need to ask for silicone indices made on this wax-up to be used as references during the preparation phase? Will we be working with the lab to mill out egg shell provisionals based on a digital design or a scan of an analog wax-up that can be relined chair-side after preparing the teeth (Veneziani, 2017)? Will we be using these aesthetic pre-evaluative temporaries in order to test the aesthetics as well as the functional outcome?

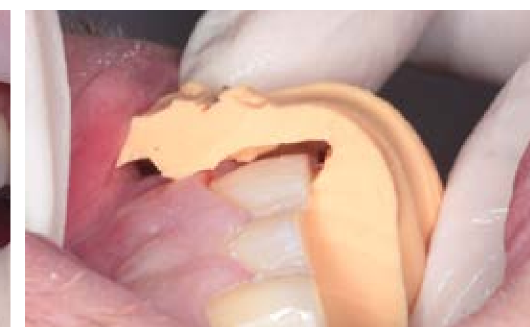
If we're going down the digital route, are we aiming to use it for digital pre-visualisation by means of DSD with static photographic documentation and dynamic video filming (Coachman, 2012)? Do we need surgical or implant stents or preparation guides to facilitate the overall treatment plan (Davies, 2010)?

Injectable Composite Resin Technique

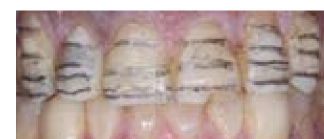
Transferring of the wax-up to the dentition can be done with a clear polyvinyl siloxane (PVS) like Memosil 2 or Exaclear, GC America using a non-perforated tray which is used to get an impression of the diagnostic wax-up. The clear matrix is then placed intraorally over the prepared or unprepared teeth and used as a transfer vehicle for the flowable composite to be injected and cured (Cortés-Bretón Brinkmann et al., 2020).

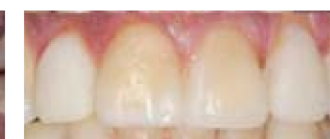
Injectable composite resin technique


Polyvinylsiloxane palatal index obtained from wax-up

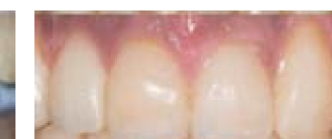

Silicone Preparation Reduction Guide made on a conventional lab-made wax-up

Preparation Reduction Guide using DSD


Conservative tooth preparation through mock-up


Provisionals with minimal tooth reduction

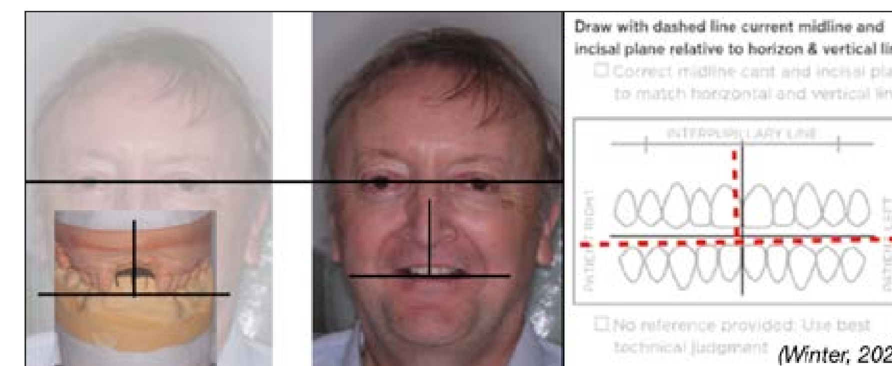
Once occlusion settles, the index is made as a guide to the final restorations


Final restorations based on approved provisionals

OCCLUSAL AND FUNCTIONAL CONSIDERATIONS

Jaw Relationships

Another important thing to aim for when developing an acceptable aesthetic outcome is to establish harmony between the horizon, the inter-pupillary line and the smile, particularly a line between the commissures and the maxillary and mandibular occlusal planes.



Traditionally we look at the horizontal reference making sure that the inter-pupillary line parallels the horizon but we should also make sure that the patient's head was not tilted in the clinical photographs and that the pupils are not off. If this is not level or inadequate for use, another reference should be used and this should be communicated with our technician (Cranham, 2012).

Arbitrarily mounting may introduce error so the use of a facebow or other maxillary transfer device is recommended in order to mount the upper cast in an aesthetically correct plane that represents that of the patient's head (Steele et al, 2002) and (Winter, 2021). A facebow photograph level at the frontal and sagittal plane would pick up a cant in the incisal plane. This should be reflected in the photographs and casts. A fox plane and Kois transfer or stick bite can also be used although the latter can be difficult to align as the impression material is setting and is not reliable for anteroposterior representation.

Relaying all this information and its verification is equally critical in the digital world. When a patient presents with a canted occlusal plane, it is a must to determine the level of cant and whether this cant is aesthetically acceptable. Kokich et al found that lay persons were unable to detect an asymmetric cant until it has reached a 4-degree inclination (Kokich et al, 1999).

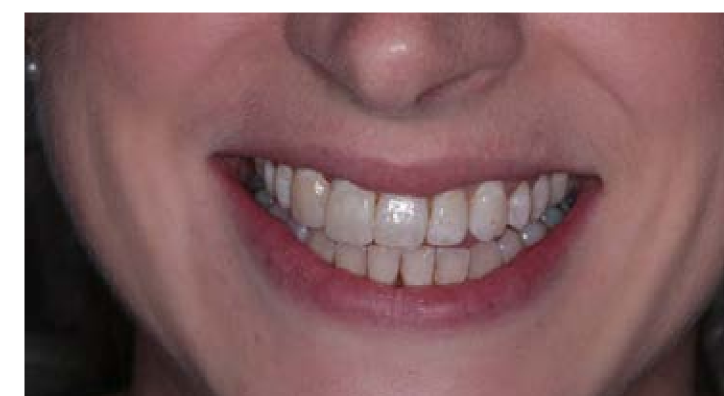
HORIZONTAL REFERENCE

☐ Y ☐ N Use interpupillary line that parallels horizon – if NO, other reference:
☐ Y ☐ N Use facebow or other maxillary transfer device to determine horizontal plane
☐ Y ☐ N Maxillary incisal plane parallels horizon – if NO
☐ Patient's right side is high
☐ Patient's right side is low
☐ Y ☐ N Mandibular incisal plane parallels horizon – if NO
☐ Patient's right side is high
☐ Patient's right side is low
☐ Y ☐ N Maxillary midline is perpendicular to incisal plane. If NO (canted):

Communicate the deviation w/ horizontal with:
☐ Diagram above ☐ Photograph
☐ Facebow mounting

(Winter, 2021)

Continues on page 22.


Canted occlusal plane

PATHWAYS TO PREDICTABILITY: DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

Continues from page 21.

ARTICULATION

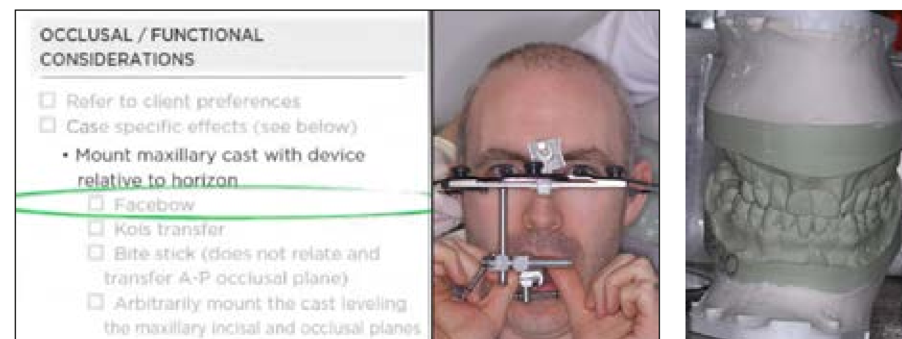
For most complex cases we would potentially require 3 mountings. It is therefore important to take the impressions with polyvinyl impression material and not alginate in order to get 3 casts made. The first set is the archival pre-operative set of casts. The second set mounting is the one used for the trial equilibration if needed, while the third set of casts is used for the diagnostic wax-up (Winter, 2021).

When restoring a comprehensive care case, it is advisable to work from a fully seated condylar position also known as centric relation (CR). For most patients we treat, the maximum intercuspation position (MIP) of their teeth does not coincide with their fully seated condylar position (Davies, 2004).

When transferring a centric relation position to an articulator, one can duplicate all the movements the patient can make and observe the effects on their dentition (Steele, 2002). This allows for modification or building of a result that has a very good level of predictability.

However most cases we treat are smaller cases for which we can take a conformative approach. A four anterior units case for example can be mounted in MIP with the new wax forms and no need for equilibration. If a trial equilibration were required, this should be done before the diagnostic wax-up and new impressions should then be taken prior to mounting the case in order to minimise chances of error.

A trial equilibration should be done by the clinician chairside so that the teeth can be selectively adjusted and

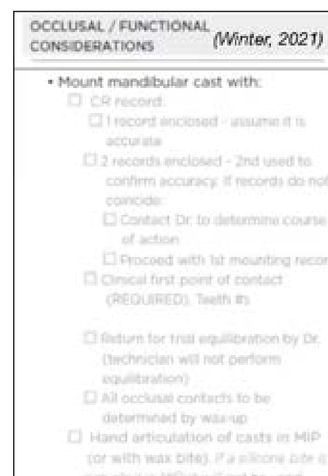


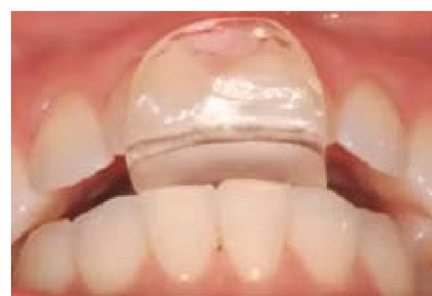
reduced to the proper planned bite accordingly. By performing this chair side, the clinician can determine if they were going to perforate through any restorations present (Davies, 2001).

Not every complex case needs to be equilibrated. Many patients will function and adapt in a non-equilibrated world but when a need for equilibration is identified, then it should be done in a seated condylar position (Davies, 2004).

If the plan is to restore all the dentition and mounting is in a seated condylar position, there would be no need for trial equilibration because all the occlusion will be established with the new wax forms. A CR record to mount the lower casts would be required when the occlusion needs analysing or the plan is to restore the case in a seated condylar position or CR. If so, two separate records should be taken and verified with an occlusal sketch (Davies, 2010) or clinical photographs.

Relying on the one record would be a leap of faith. It is also important that the technician is made aware of the clinical first point of contact in case there is a discrepancy between the two records when the casts are mounted (Winter, 2021). A Lucia Jig may be required for bruxers with rigid muscles to get an accurate CR record. It can be relined in the mouth, and once deprogramming is complete, the CR bite



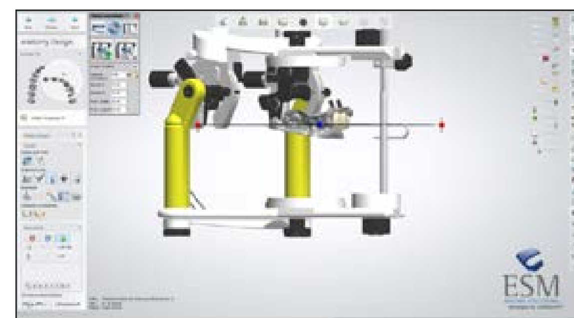


Lucia jig centric relation

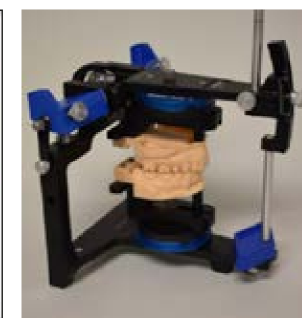
record is taken with it in situ (Davies and Grey, 2001).

Analogue Versus Digital

The digital world is evolving rapidly and is certainly our future with various software simulating virtual face bows and articulators however, virtual articulaton still hasn't replaced analogue as yet (Winter, 2021).



Digital Articulation using 3-Shape Software



The Kois Digital Transfer Adaptor brings a STL scan directly from a printer to an articulator with no stone required (Kois, 2021)

Cross-Mounting

Cross-mounting is another important step towards predictable final restorations. This process is used in the laboratory to verify the clinical information sent and helps us replicate and if necessary correct the horizontal plane. It increases the predictability that the aesthetics and function of the case will meet the clinician's expectations and more importantly, those of the patient.

If the mounted models are not aligned the same as the clinical photographs, the laboratory may photograph the case and send it to the dentist to discuss the discrepancy. These are the steps involved in the cross-mounting of casts;

1. A facebow transfer of the patient-approved provisional restorations is taken.
2. The casts of these patient-approved provisionals are then mounted.
3. The opposing mandibular cast is subsequently mounted.
4. Once the mandibular cast is mounted, then the cast of the maxillary preparations is mounted with a bite registration to the mandibular teeth or provisionals.
5. When taking the bite registration, the maxillary and mandibular anterior provisionals are left in situ to maintain the vertical dimension of occlusion and establish the anterior stop. This bite is used to mount the cast of the maxillary prepared teeth. The cast of the mandibular prepared teeth is now mounted to the cast of the maxillary preparations (Winter, 2012).

Photographs taken of the facebow transfer relative to the horizon can be used to confirm the mounting. If there is a slight cant to the incisal plane of the maxillary provisional cast or a midline cant, this should be confirmed by the photographs taken of the patient's smile relative to the horizon. Unless a facebow of the tooth preparations is taken and the cast is cross-mounted, it is impossible to confirm the facebow is correct relative to the horizon.

OCCLUSAL DESIGN

When an unstable occlusion is identified and a significant change to the patient's existing occlusion is required, one must determine the 'ideal occlusion' that reduces stress on the TMJ's, muscles of mastication, teeth, periodontium, and restorations thus providing long term stability and comfort for the patient. The components of a well-designed stable occlusion are:

1. Stable contacts on all teeth of equal intensity in centric relation (CR) with the condyle-disc assemblies appropriately positioned in the most anterior-superior position in the Glenoid fossa
2. Front teeth have lighter contact
3. Anterior guidance, designed by the mandibular anterior teeth and the lingual contours of the maxillary anterior teeth, in harmony with the envelope of function.
4. All the posterior teeth contact simultaneously in centric relation with equal intensity and not on inclines but as soon as the mandible moves in any direction, the posterior teeth immediately disclude.
5. All posterior teeth disclude during mandibular protrusive movement, on the non-working side during mandibular lateral movement and on the working side during mandibular lateral movement. There may be a situation where the posterior teeth on the working side during mandibular lateral movement all hit in precise harmony with the anterior teeth. This is not ideal and all of the studies have shown that this will increase elevator muscle activity (Dawson 2007).

Which Scheme?

The ICP is normally the occlusal registration of choice in most given solutions. Most patients can be restored with a conformative approach in which we accept pre-existing occlusal contacts.

If this is not feasible and we opt for a re-organised approach in centric relation (CR), we must ensure that the retruded contact position (RCP) is not present on teeth to be prepared as in these cases distalisation of the mandible may eliminate the restorative space. When adopting a conformative approach (pre-existing occlusal contacts) centric occlusion (CO) also known as intercuspation position (ICP) position should be used.

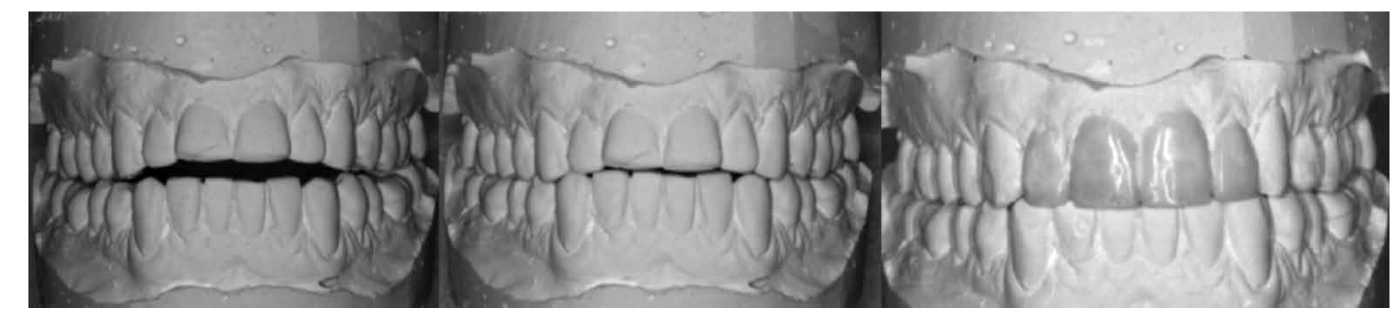
If it is not possible to adopt a conformative approach (pre-existing occlusal relationship), it is advisable to follow the re-organised approach providing a specific occlusal prescription based on the criteria just mentioned which is much less likely to be detrimental to the joints and muscles (Davies, 2001). A re-organised approach usually involves more extensive reconstructions with the alteration of multiple occlusal surfaces.

Continues on page 25.

Break the pain fast

MENARINI INTERNATIONAL

PATHWAYS TO PREDICTABILITY: DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION



Models mounted on a semi-adjustable articulator with a face bow and CR record. Left photo shows first posterior point of contact and resulting open bite. Middle photo shows equilibrated model to allow all posterior teeth and canine contact. Right photo shows the waxed up four incisors to create aesthetics and guidance.

Continues from page 23.

The starting point for the provision of an ideal occlusion is determining the reproducible centric relation (CR) retruded contact position (RCP). This is indicated in the following scenarios;

- Full arch reconstructions
- Alterations of multiple occlusal surfaces
- Reorganising ICP-RCP position to gain space
- Increasing the occlusal vertical dimension
- Denture construction
- After occlusal adjustment in equilibrated occlusions

An accurate registration of CR/RCP records correctly mounted on a semi-adjustable articulator is always required when opting for a re-organised approach. A wax-up prescription should therefore include detail of good occlusal records stating any potential need for occlusal adjustments and whether splint therapy or a Lucia jig is required pre-treatment (Wilson 2004).

Vertical Dimension

As discussed in my previous article, one important decision that we must take and subsequently communicate when restoring comprehensive cases, is whether we can maintain the existing occlusal vertical dimension (OVD) or if we must alter it, by how much? Are we going to give the technician a specific indication of how much to

- Vertical dimension
  - ☐Y ☐N Maintain current VDO - If NO:
    - ☐ Open at incisal edges _____ mm
    - ☐ Open as needed for restorative purposes & to idealize occlusal planes *(technician can change as needed to meet esthetic and functional goals)*
- Anterior vertical overlap (overbite)
  - ☐Y ☐N Maintain current vertical overlap – If NO:
    - ☐ Decrease: _____ mm
    - ☐ Increase: _____ mm
- Anterior horizontal overlap (overjet)
  - ☐Y ☐N Maintain current horizontal overlap – If NO:
    - ☐ Decrease: _____ mm
    - ☐ Increase: _____ mm
- Anterior guidance
  - ☐Y ☐N Maintain original angle - If NO:
    - ☐ Decrease: _____ mm
    - ☐ Increase: _____ mm

(Winter, 2021)

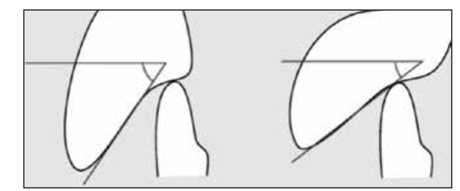
open it by based on the requirement of the restorative material or planned change in the occlusion? Do we need more freedom of movement? Does the angle of disclusion require changing to create more freedom of the functional envelope (Kois et al., 1997).

Anterior Guidance

The anterior guidance is critical to the long term stability of the entire dentition. The ideal occlusion design will have the shallowest angle of anterior guidance capable of disclosing the posterior teeth in all mandibular excursions (Broderson, 1978). Some questions that should spring to mind when designing anterior guidance are the following;

- Do I need to change the facial position if the anterior teeth are retroclined?
- Have we identified any vertical and horizontal wear facets?
- Is there a restricted envelope of function?
- Do we need to change the lingual morphology to create more freedom for movement?
- Are we going to alter the anterior vertical overlap (overbite) and anterior horizontal overlap (overjet) and if so by how much?
- Is it going to be driven by the restorative materials of choice?
- Do I need a custom incisal guide table to replicate the current guidance?
- Are we aiming to decrease the angle of disclusion to help increase the freedom of the functional envelope? If so do we need to plasty the lingual aspect of the centrals to modify the angle of disclusion?

The starting point for anterior guidance is CR. If there is no contact of the anterior teeth in CR, one cannot achieve immediate disclusion of posterior teeth during excursions, thus the anterior teeth should ideally contact simultaneously with the posterior teeth when the jaw closes to maximum interocclusal contact in centric relation.



Steep anterior guidance increases the likelihood of posterior disclusion. Shallow anterior guidance poses a greater risk of posterior contacts.

Continues on page 26.

PATHWAYS TO PREDICTABILITY:
DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

Continues from page 25.

'Anterior guidance has an inhibitory effect on the elevator muscles. If a posterior tooth incline interferes with complete seating of the condyle into CR, the protective sensory mechanism of the interfering tooth activates the lateral pterygoid muscle to move the jaw around the interference (a slide).

The hit and slide is a trade-off that the anterior teeth at the end of the slide pay for. They adapt to the forced contact by moving out of the way, getting lose, or by being worn away. None of the options are as good as correcting the occlusion to equal intensity CR contact for both posterior and anterior teeth' (Dawson, 2014).

Our desire for ideal aesthetics can sometimes result in premature failures if we fail to consider function. For predictable success when determining incisal edge position, one must bear in mind that:

1. Incisal edges too far lingually restrict the envelope of function. This mistake can lead to occlusal instability via excessive wear, hypermobility or migration of anterior teeth.
2. Incisal edges too far labially on the other hand, can interfere with the neutral zone, the lip closure path, phonetics, and aesthetics (Dawson, 2007).

Restricting The Envelope Of Function

If we desire a youthful smile we aim to have around 2 to 3mm of tooth display at rest (Machado, 2014). However, lengthening the teeth can steepen the anterior guidance and restrict the functional envelope. The most predictable way to lengthen anterior teeth is by working it out with the patient's wax-up on mounted models and then assessing these alterations

with the provisional restorations (Winter,2021). If the patient has a significant slide from CR to their maximum intercuspal position (MIP), the molars can often be equilibrated and the premolars and anterior teeth can be lengthened to obtain good centric stops and anterior guidance. It is often possible to lengthen the anterior teeth moderately even without additive equilibration or opening the bite when posterior interferences are removed to prevent driving the mandible forward and the length is added in harmony with the patient's angle of guidance .

Violation Of The Neutral Zone

The neutral zone dictates the position and inclination of the anterior teeth. Many patients deem a wide smile to be more attractive. This along with the clinician's desire to preserve enamel has led to the so called "no prep veneers."

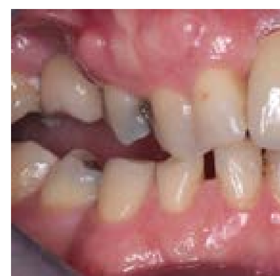
There are undoubtedly candidates for this procedure however, it can be cause for concern in patients with a small orifice accompanied by palatally inclined maxillary incisors. The patient's muscles may push the veneered incisors palatally, causing a heavy contact on their front teeth, an inability to close their back teeth, or mobility in their front teeth. Incisor position for these patients is best worked out in the provisional restorations with careful evaluation of phonetics and lip competence.

Phonetics

With major changes to appearance often comes changes to the incisal length and palatal contour affecting tongue strike during speech. The upper incisal edges should contact the inner vermillion border of the lower lip during "f " sounds for best function and for the most natural smile (Mohindra and Bulman, 2002).

- e: evaluates maximum smile and tooth display
- m: elaluates the amount of incisal display
- f/v: determines the incisal edge position
- s: determines the vertical dimension of speech. In this position the incisal edge of the maxillary and mandibular anterior teeth come close to contact.

Lateral Guidance



Canine guidance on right lateral excursion.

When designing lateral guidance, one should consider the following:

Continues on page 29.

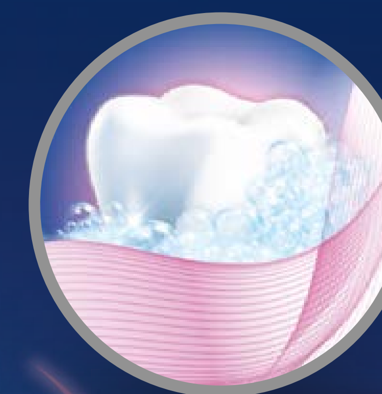
NEW

Oral-B

INSTANTLY
CALMS SENSITIVITY
AND SOOTHES GUMS

IMMEDIATELY RELIEVES SENSITIVITY PAIN BY CREATING A LAYER OF PROTECTION

COOLS GUMS DURING AND AFTER BRUSHING



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PATHWAYS TO PREDICTABILITY: DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

Continues from page 26.

- Do I want canine guidance or group function?
- A canine protected occlusion is always desirable when possible as it is mutually protective of damaging posterior lateral forces, but if not indicated and must elect group function, am I opting for canine and premolar simultaneously or canine first, then premolar?
- Is the pre-existing guidance adequate?
- Are we planning to alter the guidance teeth?
- It must be ensured that the RCP position is not on teeth to be prepared as this may eliminate the restorative space in some individuals.

If canine is involved in bridge design then group function in excursive movements is indicated. We want to avoid pontics being the sole guiding tooth but its acceptable for them to have a role in group function. Other cases for which we avoid canine guidance are:

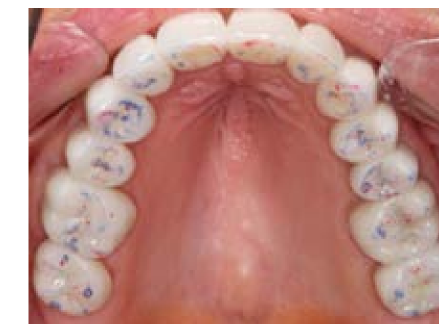
- High risk profile; large muscles, high bite force, deep overbite, bruxism
- Structurally compromised canines
- Mobile or periodontally compromised canines
- Cuspid implants

However, **group function occlusion design is not intentionally used in a reconstruction if you are trying to achieve force management. It has been shown to increase the muscle activity and bite force, especially if you have non-working or balancing side contacts.**

The Formula For A Perfected Occlusion

'A perfected occlusion has equal intensity, simultaneous contact of all teeth in centric relation and an anterior guidance that immediately discludes all posterior teeth when the jaw moves from CR. The moment the jaw moves forward, left, or right from CR, all the posterior teeth are immediately separated by the anterior guidance. This posterior disclusion, in combination with a perfected anterior guidance; reduces muscle loading of the TMJs and reduces the potential horizontal forces on the anterior teeth as well as reducing occlusal wear because the teeth can only touch in CR. Any and all jaw movement from CR separates all posterior contact.

The simple formula for a perfect occlusion is therefore: lines in front, dots at the back' (Dawson, 2007).



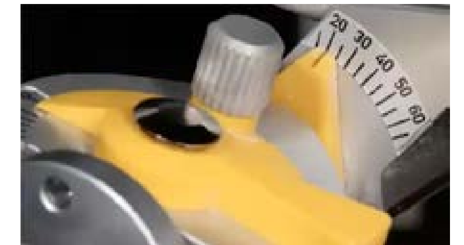
Post-op upper occlusal photo with contacts marked.

Condylar Inclination

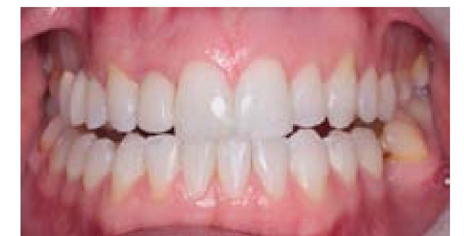
On average the condylar inclination is set to 20 degrees because it relays to less separation posteriorly, but if you take a protrusive record it may be variable on each side. For more complex cases, especially those which show vertical and horizontal wear, you may want to take a protrusive record and set the condylar angle.

- Condylar inclinations
  - ☐ Use average
  - ☐ Right: ______ degrees
  - ☐ Left: ______ degrees
- Maxillary and mandibular incisal edge design (choose one)
  - ☐ Natural
  - ☐ Flat and broad
- Tooth re-contouring
  - ☐Y ☐N Do not alter opposing tooth
  - ☐Y ☐N Adjust opposing tooth idealize form and function of wax-up

(Winter, 2021)



Average condylar angle set to 20 degrees

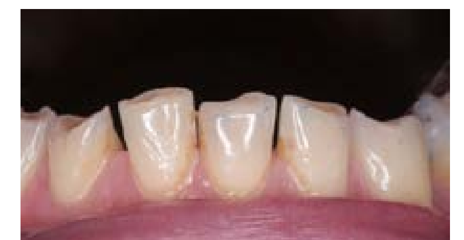


Taking a protrusive record would vary condylar inclinations

Incisal Table

The wax-up prescription should state if you give authority to the technician to alter opposing teeth or if you prefer to plasty the surfaces yourself and touch-up your wax-ups accordingly. If you're starting with a non uniform lower incisal plane, are you planning to accept this or align with pre-treatment orthodontics or plasty the teeth? The more edge wear, the more you require a flatter, broader surface and the less natural the teeth appear (Cousins, 1969).

Custom Anterior Guidance Table



Opposing teeth re-contouring planned to idealise form and function of wax-up and improve aesthetics

This is indicated when you want to duplicate a patient's existing anterior guidance or when a diagnostic wax-up is made with a new anterior guidance.

Continues on page 30.

PATHWAYS TO PREDICTABILITY:
DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

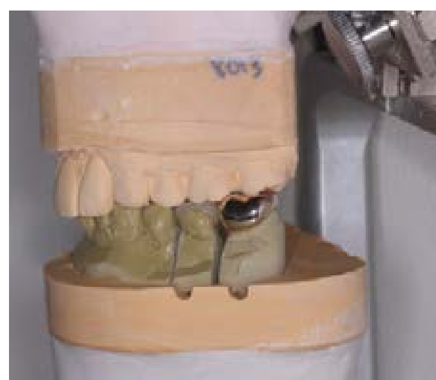
Continues from page 29.

When prescribing a custom incisal guide table, the occlusal scheme chosen, seated condylar position (CR) or in maximum intercuspal position (MIP), must be stated. If the two positions do not coincide, decide, an equilibration may be indicated (Spear, 2021).

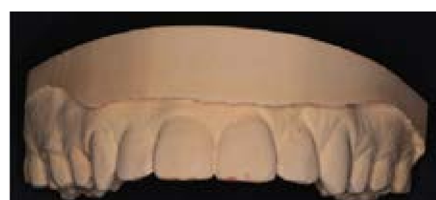
Replicating anterior guidance

Occlusal Plane

When designing the occlusal plane we must make sure that posterior teeth do not interfere with the anterior guidance. If the occlusal plane is too high in the back it may interfere with the anterior guidance (Dawson, 2014).



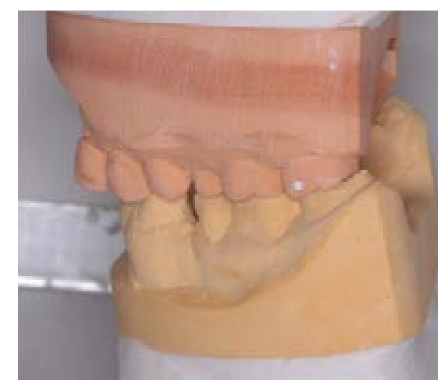
If you design the occlusal plane too flat relative to the guidance, you have the potential develop posterior interferences



AESTHETIC PLAN

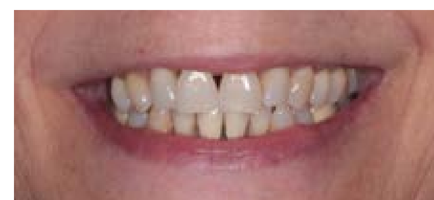
The topic of smile design would lead to another article in itself, nonetheless the key to success is involving the patient as much as possible when selecting the desired cosmetic changes and communicating their wishes with the technician. One way of doing so is by showing patients their wax-up relative to their initial diagnostic cast. A wax-up can be left to the technician's aesthetic eye with no instructions whatsoever but if you're aiming for a more predictable outcome, it is important to communicate the following to help with the aesthetic set-up;

- Alvelo-skeletal relationship
- Gingival level/exposure
- Maxillary incisal/occlusal plane
- Mandibular incisal/occlusal plane
- Anterior tooth arrangement/ tooth dominance type, Maxillary lateral incisors shorter than cenral by how many mm?
- Anterior tooth morphology-shape/ form, laterals dissimilar/similar
- Maxillary incisal edges flat/natural
- Maxillary incisal embrasures natural/ closed (square) +/- increasing in size and volume from centrals moving distally?
- Anterior tooth arrangement i.e. orthodontically straight teeth or introduce some crowding?
- Buccal corridors to be widened?
- Should the gingival embrasures be closed to eliminate any 'black triangles'?
- If a diastema is present, are we maintaining or closing it?
- Shade, brightness, surface texture and lustre/ translucency
- Desired mandibular incisor edge position to be adjusted to establish desired function or is it a specific length determined based on desired dimensions?

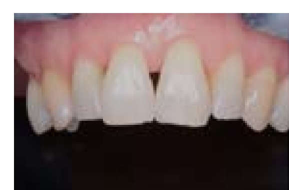


The occlusal plane from a sagittal perspective should rise posteriorly but not be as steep as the condylar plane. This perspective has important functional implications

From the frontal perspective it should be parallelto the inter pupilllary line or the horizon. This perspective has important aesthetic implications

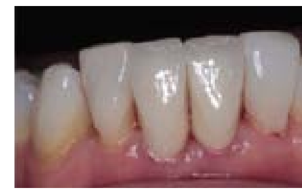


The 54 year old lady wanted to improve the appearance of her smile especially the gap between her front teeth and the colour. The aim of our treatment was to change her existing metal-ceramic crowns on her lower central incisors to all-ceramic as well as to eliminate the open gingival embrasures (black triangles).

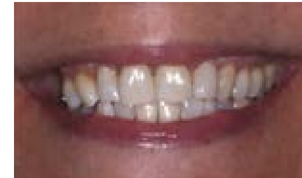


Pre-operative upper incisors

Wax-up upper incisors



Post fit of lithium disilicate crowns LL1 and LR1



Post-operative smile before fit of implant crown UR6

A diagnostic wax-up of the upper labial segment was carried out on the mounted casts. A clear vacuum-formed surgical template was fabricated from this wax-up. This was used intra-orally with quick-setting resin over the existing teeth to help visualise the position and contour of the planned restorations and assess the occlusion and phonetics.

It also helped with communication during our informed consent process (Reshad et al., 2008). Patient was still not happy with the shape and form of her upper central incisors when seeing her intra-oral mock up and we agreed to perform some enameloplasty to her upper centrals prior to the cosmetic bonding in order to reduce their triangular shape appearance.

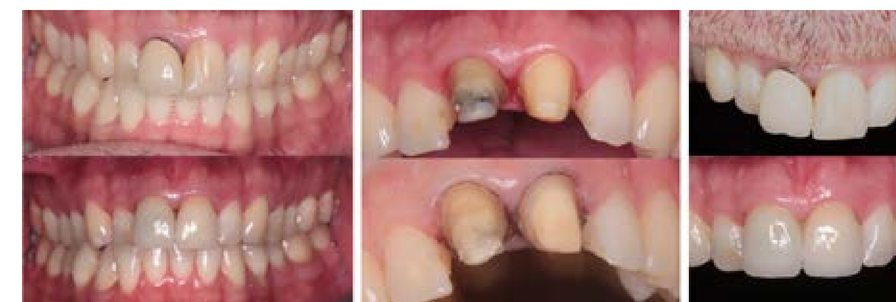
If the patient had opted for a ceramic veneers, we would have also used the mock-up as a minimal invasive preparation guide and in preparing the temporary restorations (Magne and Belser, 2004)

Shade and Finish

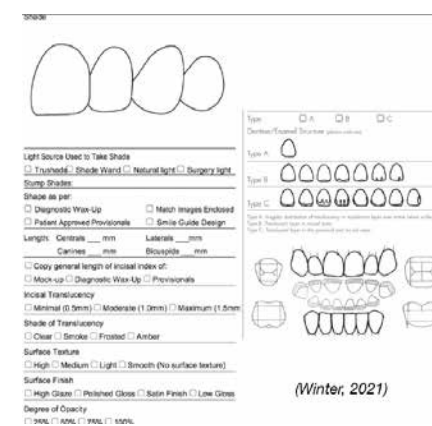
The best way to communicate shade as well as texture and tooth surface morphology is through photography. It is important to avoid overexposing the shade images and it is always an asset to place more than one shade tab in the photograph. To perceive the texture the light has to hit perpendicular to the tooth but to assess the colour, it should come at an angle.

The downside of printed models in the digital world is their lack of surface detail and loss of surface morphology. A good quality dye stone would capture more surface texture detail and is still recommended in conjunction with photography for the more challenging single anterior restoration (Winter, 2021).

Stump shade photograph with shade tab



The patient was happy with the final outcome. However, I was less pleased myself with the persistent dark shine-through of the UR1. I did communicate this concern to the laboratory using clinical photographs as well as taking stump shades. As a result, the technician had selected a veneered (as opposed to a monolithic) IPS e.max lithium disilicate (Suputtamongkol et al., 2008) in the required opacity in order to design the true-to-nature aesthetic appearance. Clinically, I could have masked the dark shade of the UR1 preparation better by using a light-curing, single-component opaquer, over the core before taking the final impression.



(Winter, 2021)

Digital Smile Design

The advent of the Digital Smile Design (DSD) concept introduced by Christian Coachman (Coachman, 2012) has revolutionised our conceptual tools for tooth morphology and arrangement.

Traditionally, we had to gauge patient's desires with the help of smile images from magazines or photographs. By observing common traits of the smiles preferred, we could determine what dominance type, shape and other features would satisfy our patients' expectations.

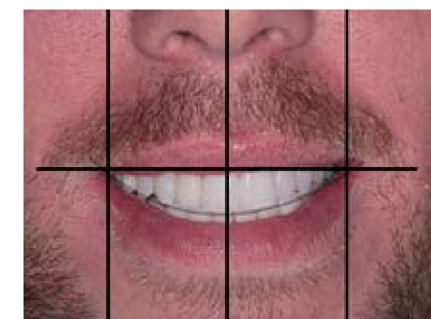
DSD is a digital pre-visualisation technique that uses artificial intelligence and tooth forms to create proposals and help patients visualise end results prior to the treatment commencing.

It is a great visual aid that gets patients motivated in getting the dentistry required. DSD is based on a clear photographic protocol, leading to a thorough facial and dental aesthetic analysis using particular software (Keynote for Apple users; PowerPoint for PC users) or dedicated software (eg Digital Smile System, DSS; Cara Smile, Heraeus Kulzer, IvoSmile, Ivoclar) that will help create a digital smile preview.

This approach allows for testing and approval by the patient before starting the actual treatment. Video clip integration provides the opportunity for a dynamic analysis. In addition, three-dimensional (3D) digital models of the mouth can be produced (Veneziani, 2017).

The proposal is then sent to the lab for functional analysis and digital wax up to assess its feasibility from a functional point of view. A mock up can then be milled and tried in the patient's mouth to visualise the end result.

This gives us an opportunity to take photos or video clips of patients and use the library tooth forms and integrate them into their smile. It



Digital smile analysis using Keynote

allows the clinician to efficiently plan the treatment of aesthetic cases but it fails to consider function and does not guarantee that the clinician can deliver on the proposed restorations (Zimmermann et al, 2015).

Continues on page 32.

PATHWAYS TO PREDICTABILITY: DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

Continues from page 31.

CONCLUSION

As clinicians, we can only treat what we see, and we can only see what we have been taught to see. Understanding function, makes our dentistry more predictable and helps us not to shy away from the more complex cases and enjoy these rewarding experiences which can have a massive impact on our patients' quality of life.

The occlusal scheme should always be confirmed with a working copy and adjustments required for comfort and function must be addressed prior to production of the final restorations which should only be made once the patient is happy and comfortable.

As much as we may be tempted to go straight to the 'preps and fit', in order to achieve long-term stability, a thorough treatment plan addressing both the aesthetic and functional demands is imperative.

Dr. Peter Dawson stated that "90% of cases that fail, fail not during the restorative phase but in the treatment planning phase. Failing to plan is planning to fail." Establishing and planning the end result both in function and aesthetics through the diagnostics and provisionals is paramount for a successful outcome of a major reconstructive procedure.

A multidisciplinary approach also plays a vital role in achieving the planned result (Kois, 2002). Smile design concepts are becoming increasingly popular at facilitating the collaboration between the dental team members as well as motivating patients not only to start the treatment, but also to keep them involved throughout the process. Together with photography, these visual tools help us communicate important aspects of our complete examination.

Special acknowledgment to Spear Education and The Dawson Academy.

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Continues on page 34.

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PATHWAYS TO PREDICTABILITY: DESIGNING A SMILE WITH A FUNCTIONAL OCCLUSION

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SENSITIVITY & GUM PROBLEMS CAN CO-EXIST[1,2]

Gum recession is a leading cause of dentine exposure[3], which can cause dentine hypersensitivity. Research shows that 44% of patients with dentine hypersensitivity changed their tooth brushing technique to avoid the affected areas,[4] which may result in poor plaque control, a reason for continued dentine tubule exposure.[3] In fact 50% of people prone to sensitivity also report concerns about their gum health.[5]

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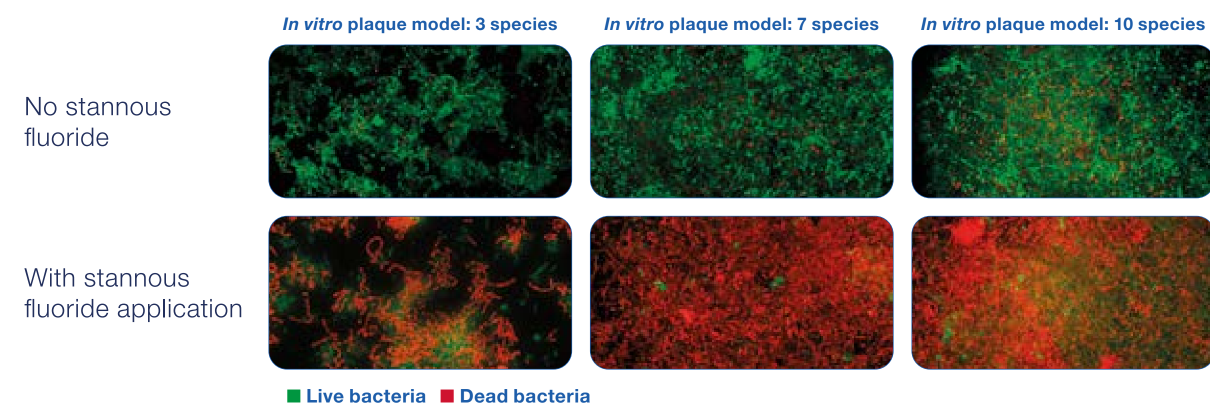

Significant loss of viability of in vitro plaque when treated with 0.454% stannous fluoride toothpaste. Confocal Laser Scanning Microscopy (CLSM) images of in vitro plaque models with 3 (left), 7 (centre) or 10 (right) dental plaque bacterial species. The protocol and bacteria species used followed a model previously described in Malcolm et al. (2016) and Stephen et al. (2016). Samples treated with slurry of 16% w/v toothpaste for 3 minutes. Control represents untreated in vitro plaque models of 3, 7 or 10 bacterial species, respectively.

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TIPS FOR BETTER DENTAL PHOTOGRAPHY

By Dr Josef Awad

This article will discuss some key concepts for achieving consistent images throughout a series of dental photographs. If images are taken without specific landmarks it will be very difficult to accurately compare before and after images.

1) CAMERA ANGULATION

Angulation refers to the angle of the camera to the subject being photographed. If this is not kept consistent images in a series will be very difficult to compare.

For direct dental photography the camera should be directly perpendicular to the teeth. If a mirror is being used, the mirror should be at a 45 degree angle to the teeth and the camera should be at a 45 degree angle to the mirror.

Careful attention should be paid to the patients head height and position, as this will affect the position from which the image needs to be taken.

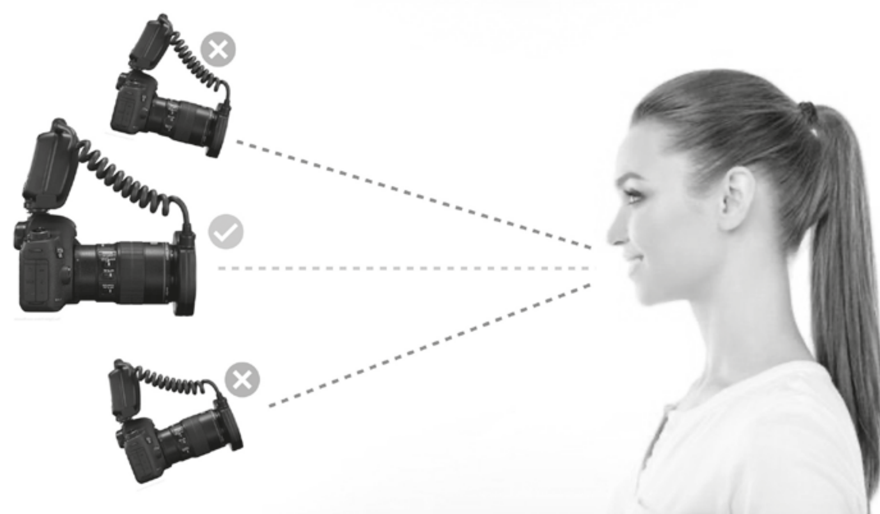

Figure 1: The camera should be placed perpendicular to the teeth being photographed.

2) MAGNIFICATION

Magnification refers to how far or close a subject is to the camera. It is ideal to keep each set of photographs at a standardised magnification, this makes it easier to make comparisons between different images.

Set standard focus for each type of shot you want to take by setting the focus manually on your lens. A macro lens will have set markers to indicate the magnification and focus distance on the barrel of the lens (marked in “m” and “ft”).

The setting you chose will depend on your camera and lens combination, together with the specific shot you are trying to achieve.

Moving further away from your subject will show a less magnified view while moving closer will increase magnification.

Continues on page 38.

Figure 2: The focus ring on the macro lens will have set parameters for focus distance and magnification.

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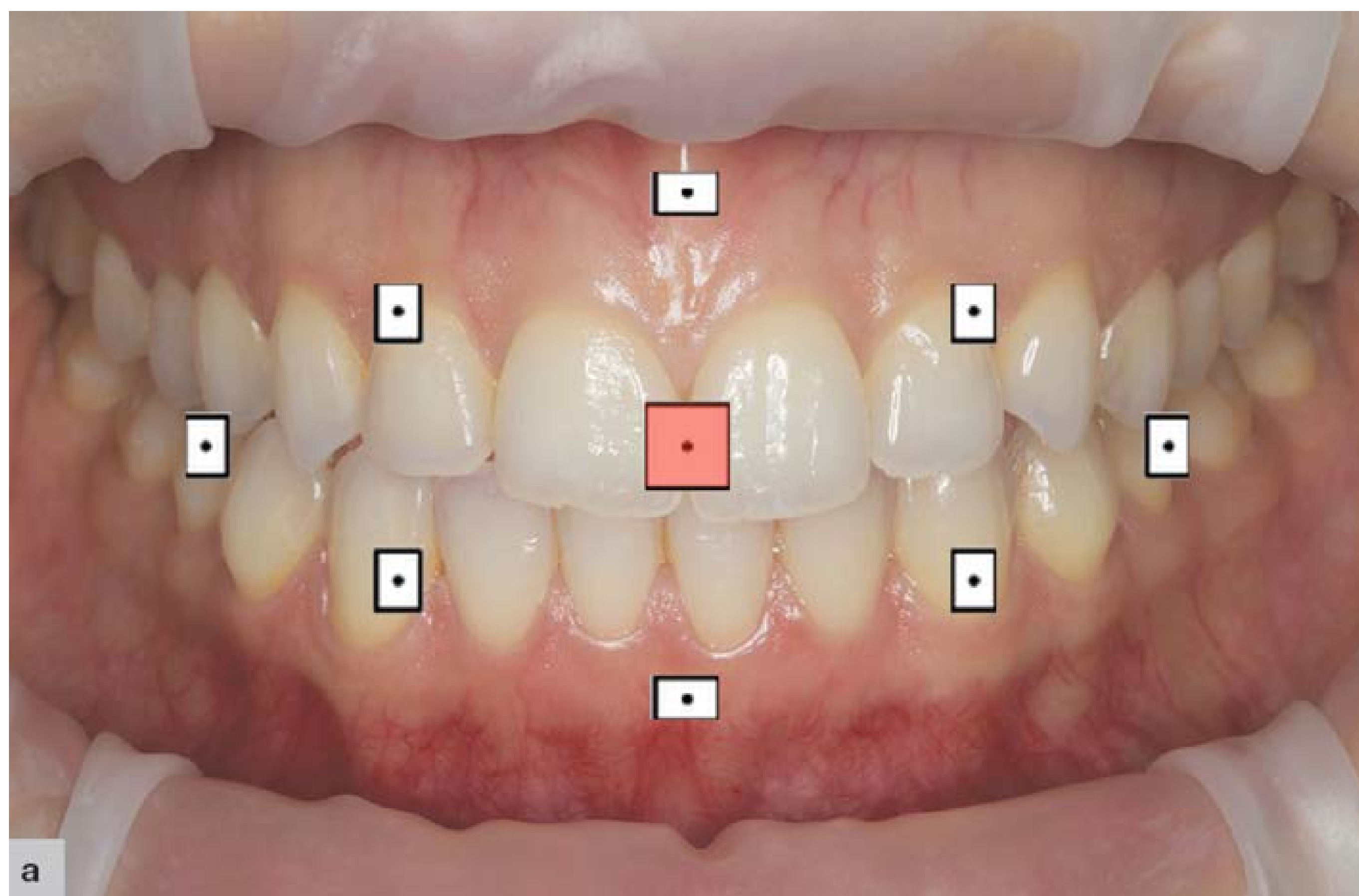

Figure 3: The focus points visible through the viewfinder should be used to locate consistent landmarks in your images.

Continues from page 36.

Once the correct focus distance has been set, focus can be achieved by moving closer or further away from the subject, while confirming through the viewfinder.

When an ideal focus distance is found it should be recorded and used throughout all images in a series.

3) FOCUS REFERENCE POINT

Once consistent magnification is achieved, it is important to use standardised reference points to frame the images consistently.

If images are not framed in a structured manner, the variables between shots will make comparison difficult.

Framing refers to what position a subject holds in a photograph, for example for a frontal smile shot the central incisors should be centred in the shot, I often see images where the teeth are not properly centred, making it more difficult to compare before and after images.

In order to keep the framing consistent during different shoots, fixed positions must be set for our focus points. Most modern cameras have built in focus points in their viewfinders.

Use the middle focus point for:

- Frontal smile – focus between the maxillary central incisors
- 45 degree smile – focus on the maxillary canines
- Lateral views – focus on the maxillary premolars

For occlusal shots we cannot use the centre focus point as this will either focus on the palate or the tongue, leaving the teeth out of focus.

In this case we need to use one of the lateral focus points and focus in the premolar region.

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