

Journal of Specialist Dentistry

Developing Dental Expertise

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Welcome to the JSD

We are kicking off the new year with our 16th Edition of Journal of specialist dentistry, we will be sadly saying goodbye to a member of the team but welcoming a new one!

Dr Zulaikha Burki has left us here at UKDS as she has a new opportunity in Pakistan-we wish her and her family well for the future.

We would like to welcome Dr Sonia Alam to the team, keep an eye out for her first article in the next edition. For more information about Sonia visit us on www.UKDentalSpecialists.co.uk

We have three extremely good case studies with some interesting fields of dentistry a prosthodontic Case Study by Dr Pranay Patel on 'The Construction of a Same Day Crown'; Using our state-of-art CEREC Primescan, offering a much faster and more accurate experience for the patient compared to its predecessors. Alongside this we have also acquired the CEREC MC XL milling machine-saving valuable time in milling a single tooth same day crown or full arch case through the laboratory.

Dr Rajiv Patel has provided us with an excellent article on 'Piezosurgery Crown Lengthening Surgery' and an interesting read from our recent collaboration with Mark Weeks an independent photographer who worked alongside us to capture our new look.

Dr Poonam Kalsi has now returned from maternity leave and we would like to congratulate her on the birth of her daughter!

To keep up to date on case studies and practice information, visit our Facebook page-UK Dental Specialists at Chiswell Green or our new Instagram page at 'ukdentalspecialists'

If you are interested in developing your knowledge and practical skills, details of the new CPD seminar events organized by our partners can be found on page 12. The seminars are free of charge and certify 2 verified CPD hours.

You can also receive 1 hour verifiable CPD from our Journal of Specialist Dentistry by answering the questions on page 11. And emailing them to:

info@UKDentalSpecialists.co.uk and we will post you your certificate!

Best wishes, Dr Massimo Peru Chief Editor



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The Construction of a same-day single unit implant retained crown -

Dr Pranay Patel - Specialist in Prosthodontics

To meet increasing patient needs at UK Dental specialists at Chiswell Green, we have invested in a CEREC MCXL milling machine, CEREC Primescan scanner and the CEREC SpeedFire furnace. This allows us to construct same day monolithic CAD/CAM E-max and Zirconia inlays, onlays, crowns and screw-retained implant crowns. This allows us to grow alongside current digital dentistry as well as help in the growing knowledge into implant digital workflows.

What is usual practice for the construction of a screw-retained implant crown?

Currently once a patient has had an implant placed and the healing period allowed to occur, patients come in for two appointments. The first appointment would entail a polyether impression (e.g. Impregum) using an impression coping hand tightened into the implant. An opposing arch impression is taken and a bite registration using suitable materials. A shade is taken and the records are sent to the laboratory for the construction of a screw retained implant crown. The second appointment would be two to three weeks later where the patient would come back to fit the crown.

What are the downsides?

- Time
- Impression distortion
- Cost
- Laboratory error

Prosthetic chairside digital implant workflow post implant placement.

The following steps are for the construction of a screw retained maxillary left first molar (UL6).



www.dentsplysirona.com

Step 1: Digital impression

Advantages:

- Quick (once mastered)
- No need for impressions (more comfortable for patients especially if they have a gag reflex)
- Reduced laboratory fees

The CEREC Primescan has the ability to make digital impressions of newly placed implants, saving patients the unpleasant experience associated with impression trays. The virtual 3D model is calculated based on the intraoral scan of the scanbody, the adjacent and opposing teeth, and the gingiva. Taking all this information into account, the software automatically recognizes the three-dimensional position of the implant.

Benefits of the Primescan:

- Can be used for chairside restorations as well as sending scans to a laboratory (New acquisition centre).
- Improved accuracy – Smart Pixel Centre with dynamic depth scan technology for perfect sharpness even up to 20mm depth.
- Usability – Easy scanning of all dental materials with an increased field of view allowing visualisation of larger areas with less sweeps and immediate precision.
- Faster scanning and processing of the data.

The first screen allows you to choose your restoration type (in this case a screw retained implant crown), whether you want to copy an existing restoration or design a brand-new restoration (in this case we designed a new restoration and chose 'biogenic individual'). The type of restoration and position of the restoration are also chosen (maxillary left first molar (UL6) using an IPS E-max CAD lithium disilicate material from Ivoclar Vivadent).

Other restorative materials that can be milled for all types of restorations are Zirconia, polymethylmethacrylate (PMMA), leucite glass-ceramic and composite).



Firstly, scan the mandibular arch incorporating as many teeth as possible in the mandibular left quadrant of the mouth.

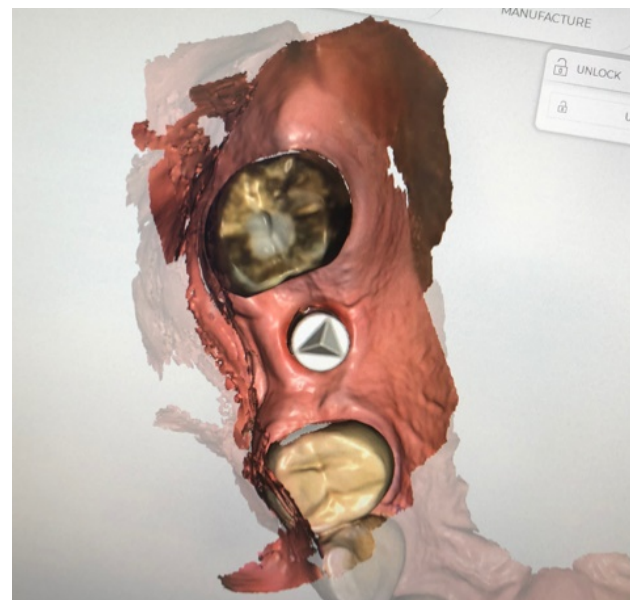
Secondly ask the patient to bite together and scan the left posterior occlusion.

Thirdly scan the maxillary left quadrant of the arch with the healing abutment in place. Then remove the healing abutment from the mouth and erase it from the scan taken. Rescan the area where the implant has been placed. This allows for the software to assess the emergence profile of the restoration more accurately.

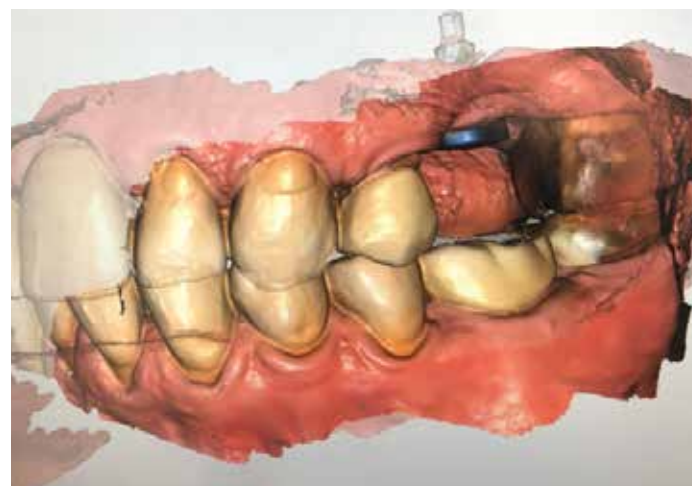
Hand tighten the scanbody making sure the notch is either mesial or distal. Snap on the grey scan head lining up the arrow with the notch on the scanbody. When kept mesial/distal the sprue will be placed by the software buccal or palatal allowing us not to disturb the contact points when polishing off the sprue.



Scan of ULQ quadrant without scanbody



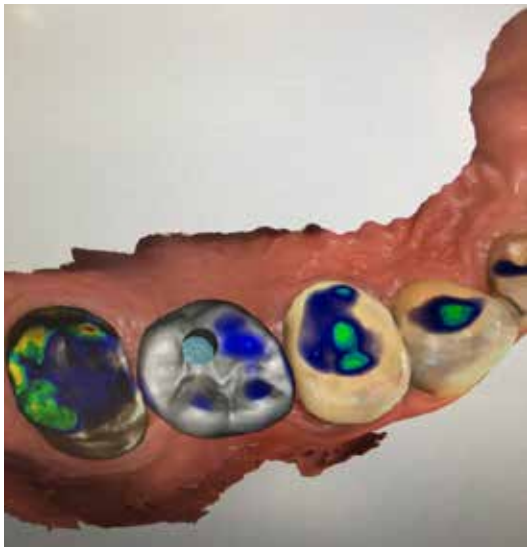
Scan of ULQ quadrant with scanbody in place



Scan of occlusion

Step 2: Prosthetic Design

The CEREC Software built in to the Primescan unit analyses each scan taken to generate a restoration proposal.



The shape of the crown can be added to, removed from and smoothed. The occlusion, contacts and emergence profile can be adjusted to the clinician's needs. The clinician has full control over all aspects of designing the crown.

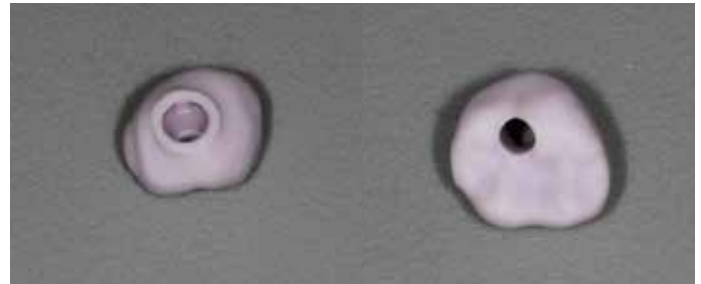
Step 3: Milling

The CEREC MCXL milling machine and CEREC Software are a perfect match, making it possible to produce temporary or final restorations using the materials mentioned above easily and quickly.

The correct shade and restoration must be screwed into the machine and chosen in the final stage on the Primescan unit. The sprue position can be adjusted if need be but is mainly determined by the position of the scanbody and scan head in the mouth. The restoration is milled in approximately 15 minutes.



The sprue could not be moved from the distal aspect of the restoration after the scans were taken as I had initially taken the scans with the notch of the scanbody placed buccally.



Post milling crown after sprue removal

The appropriate Tibase (titanium abutment) is tightened into the implant to the appropriate torque value and the crown tried over the top. The occlusion and contacts are checked and if any adjustments are required, they are carried out.

Step 4: Finalisation

Once the sprue has been removed and polished, glaze is applied to the constructed crown and any staining that needs to be applied for aesthetics. Putty is placed into the inside of the crown and smoothed against the margin of the crown. This is to allow the crown to be placed into the furnace upright but also to prevent any glaze and stain from being applied to the fit surface or the margin of the crown.



To finalise the process, the world's smallest and fastest sintering furnace, the CEREC SpeedFire, can sinter the restoration in approximately 24 minutes. Once cooled, the putty is removed from the inside of the restoration and polished.

The crown is then re-tried on to the abutment and the marginal fit is checked. Once happy the crown is treated and cemented onto the Tibase using Multilink Automix by Ivoclar Vivadent as per the manufacturer's guidelines (or with an alternative suitable cement). The cement is a dual-cure cement which allows enough to clean the screw access hole and the margin of the crown from excess cement. Excess cement at the margin can cause peri-implantitis if left.



The screw retained implant crown is then tightened to the correct torque as per the manufacturer's instructions. The occlusion is checked and should be free of shim stock. The crown should also not be involved in anterior or lateral guidance. The contacts should be checked with floss that they are not loose and not too tight. If the floss cannot be passed through the contact should be adjusted as the implant crown could be 'wedged' rather than fully seated. A post-op loading radiograph should be taken to check that the implant is fully seated.



Conclusion

Like any new technology the learning curve is steep. There are numerous steps that must be carried out to make sure the final restoration is of good quality. Each step is very technique sensitive from the scanning to the cementation of the crown on to the titanium abutment. In the long-term this process will reduce the time the patient waits for a restoration to be constructed and the cost of the construction of the restoration to the clinician. The patient that this UL6 implant crown was constructed for was very happy that she had it made in a day. One potential pitfall is for anterior restorations as there is a steep learning curve to get the aesthetics correct. Lab technicians should still be the ideal person for the construction of a restoration with high aesthetic demand.

I hope the advantages of an 'implant restoration-in-a-day' are seen in this article as well as the pitfalls and the limitations regarding aesthetics.



Piezo-surgery facilitated crown lengthening surgery: a case report.

Rajiv M Patel - Specialist in Periodontics

Crown lengthening surgery aims to increase the amount of supragingival tooth tissue by resection of the adjacent soft and or hard tissues to enable otherwise unrestorable teeth to be restored by increasing the retention and resistance forms of the teeth.

In the case of endodontically treated teeth, a post and crown restoration is far more likely to have a favourable long term outcome if a minimum 2 mm of supragingival dentine can be maintained circumferentially. This would allow the crown margins to finish on dentine and is known as the ferule effect. Retention of the crown would therefore not be solely reliant on the strength of the bond between the dentine and core material. Caries and previous restorations can however make it difficult to find the required amount of dentine. If the endodontic prognosis for the tooth is good, crown lengthening surgery may be considered to enable adequate restoration of the tooth and ultimately maximise the lifespan of the tooth.

Excision of the surrounding gingival tissue alone to expose the desired amount of dentine is rarely sufficient; resection of the underlying alveolar crest must also be carried out. Thus, due consideration must be paid to the biologic width. The biologic width is said to represent the tissue attachment as measured from the apical extent of the gingival sulcus to the alveolar crest. It is comprised of approximately 1.5 mm of junctional epithelial attachment and 1 mm of connective tissue attachment. The measurement does not include the sulcus or probing depth. Therefore the biologic width can be measured clinically by subtracting the probing depth from the depth to the alveolar crest. The biologic width can then be used to determine how much bone removal is required (if required) to maintain healthy marginal periodontium. E.g. a biologic width of approximately 3 mm plus a pocket depth of 2 mm would require bone adjustment such that a distance of 5 mm was present from the new gingival margin position to the alveolar crest. In thin gingival tissues, encroachment of restoration margin on the biologic width may result in gingival recession. In thick tissues it may result in chronic inflammation.

Removal of supporting alveolar bone (known as osteotomy) can be performed with a number of different instruments including bone chisels, rotary instruments and ultrasonic instruments. The following case report describes the use of

a Piezosurgery unit to facilitate crown lengthening surgery at a lower premolar tooth.

Piezoelectric Bone Surgery is a process that utilizes piezoelectric vibrations in the application of cutting bone tissue. The process was developed by Tomaso Vercellotti. The special ultrasonic microvibrations of the Piezosurgery technique cut bone and nothing else. No soft tissue is damaged, which allows you to work with a precision that facilitates not only surgery, but reduces postoperative discomfort for patients.

By adjusting the ultrasonic frequency of the device, it is possible to cut hard tissue while leaving soft tissue untouched by the process. The ultrasonic frequency is modulated from 10, 30, and 60 cycles/s (Hz) to 29 kHz. The low frequency enables cutting of mineralized structures, not soft tissue. Power can be adjusted from 2.8 to 16 W, with preset power settings for various types of bone density. The tip vibrates within a range of 60–200 μm , which allows clean cutting with precise incisions.

Initial presentation:

A 65 year old gentleman presented with a failed crown on the lower left second premolar tooth. Insufficient supragingival dentine remained to allow restorations following the removal of caries. The tooth subsequently required endodontic treatment and provision of a post.



Figure 1 & 2. Buccal and lingual views of the lower left second premolar tooth following completion of endodontic treatment and provision of a fibre post and composite core. Note the absence of any supragingival dentine buccally and interproximally. Minimal supragingival dentine remained lingually.

Crown lengthening surgery was required before the tooth could be prepared for a crown. Sufficient keratinised tissue was present both buccally and lingually to allow a 2 mm resection. There was no medical contraindication to surgery.

Crown lengthening surgery



Figure 3 & 4. Buccal incision to remove 2 mm of tissue made with a scalpel blade.

Incisions were made buccally and lingually to excise 2 mm of adjacent gingival tissue. The tissue was removed with a surgical curette. Full thickness buccal and lingual muco-periosteal flaps were reflected to allow access to the alveolar crest.

A piezosurgery unit (Piezotome® Cube LED, Acteon) was used with sterile saline irrigation to carry out the ostectomy.



Figure 5 & 6 Piezotome® Cube and tips

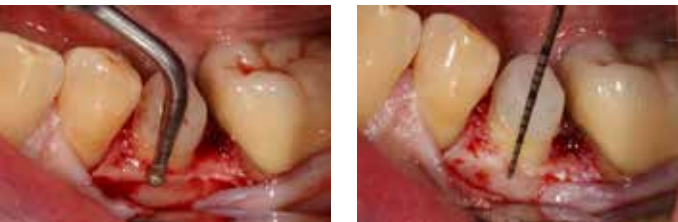


Figure 7 & 8. Ball ended tip used to create a depth gauge of 2 mm in the alveolar crest.

A depth gauge cut was made in the alveolar crest to a measurement of 2 mm corresponding to the amount of gingivae removal. This ensured that the biologic width could be maintained.



Figure 9 & 10. Ostectomy performed with the small ball ended tip. Note the good visibility.

The ultrasonic vibrations with irrigation produces a cavitation effect. This helps to maintain a clear field of view. Additionally, cavitation helps to produce microbubbles, releasing oxygen which has a mild haemostatic effect.

Following the completion of ostectomy, the exposed root was scaled with a curette to remove any remnants of periodontal ligament. This ensures that there is no chance of re-attachment and no 're-bond' effect in the months after surgery.

Flaps were sutured and primary closure achieved with 5/0 PTFE sutures.



Figure 11. Immediate post-operative occlusal view demonstrating primary closure.



Figure 12 & 13. Immediate post-operative view buccally and lingually. Note the increase in the amount of supragingival dentine.

Sutures were removed one week after surgery. No post-operative complications were reported and the patient reported only minimal post-operative discomfort.



Figure 14 & 15. Comparative pre and post-operative views. Adequate supragingival dentine is now present to allow restoration.

In this case, the use of a piezosurgery unit enabled the speedy and accurate removal of alveolar bone with no risk of damage to the buccal and lingual flaps. Consequently post-operative healing proceeded without complication and with minimal patient discomfort.



Photography in a Dental Environment

Mark Weeks

One of my favourite types of shoots is working with a company that has rebranded. Work of this nature typically happens when a successful business takes a moment to reflect on where they are now and where they wish to be in two or three years' time. The results are quite amazing, actually. In my experience, a successful rebranding exercise starts from the top-down and brings the whole team along for the journey.

I was approached by UK Dental Specialists at the onset of their rebranding project. They had the foresight to understand that their practice was unique amongst other regional dental practices—they provided specialised services that many in their area did not, and their customer base came from well beyond Chiswell Green. We spoke at length about the style of imagery they wanted and from that created a shot list that would reflect their imaging needs. Bright, airy with a mix of good nature and trustworthiness rolled in was the overarching message. Upon my first visit, I knew that we would be able to achieve this.

Having worked with a number of medical professionals over the years—from dentists to opticians to hypnotherapists to veterinarians to even botox doctors, I understand the importance of portraying a clean and welcoming environment as well as one that helps put patients at ease. Walking in the door the very first time, I felt an air of clean—the kind of clean you feel on your teeth when you get them polished by a professional. The newly-branded offices were spic and span. It didn't feel like they had rushed around to make it as such, but rather it felt as though the place was always that way. I instantly bonded with the space—the reception, the surgery rooms and even the staff room upstairs were crisp and inviting. I knew I would get good results when photographing the space.

We did the shoot on two non-consecutive days to try and ensure we would be able to get as many staff included in the shoot. As with many shoots I do, we did end up with one staff member who missed out because of a last-minute two-week holiday, but hey-ho, such is the luck of the draw. The shoot was broken down into three primary different types of shots—team portraits, staff in action shots and purely location shots. I'm a pretty focused guy and like to have a sense of order with my shoots. Yes, there is always room for flexibility, however, I do find it easier to allocate different types of shots to different times during the shoot. Staff portraits—always a great way to start and end a session, particularly if the portrait style is non-ambient light dependant. We chose a simple white background with no natural light required—resulting in portrait

sessions that could be done readily at the beginning or the end of a day. Action shots needed to be done when the staff were ready and presentable, but clearly not when they needed to be in surgery—and of course the staff and the facility needed to be spotless. Finally the shots of the building and the surgery rooms all needed to be done when the practice didn't have clients. It can be stressful enough going to a dental specialist, but if someone shoves a camera in your face as you're arriving, it's no fun for anyone involved.

We started the first day doing some staff portraits. The first two are always the trickiest, as it involves finding the right lighting for the first subject and then applying that same lighting to the second for continuity. Once the second subject has been photographed, I find I fall into a natural rhythm and it becomes much easier. In the first set, I think we shot about eight to ten different people, working to achieve the very best for each. With my shoots, I like the subjects to have a chance to review their shots. The photo is of them, their face still be on the website, of course they should have a say about how they look their best. After flipping through the shots, finding a few they either like (or simply can live with), we move onto the next person—or in the case of UK Dental Specialists—we move onto the next type of shoot—the team in action.

Catching people "in action" is a total misnomer—they need to look like they are in action. I once did a shoot at a very busy print shop and although the guys working the printer were attending a high-speed printer, they remained standing while they monitored the machine. I made the mistake of saying, "look busy," to which one of the guys retorted, "I AM BUSY!" This is perhaps my own lack of vocabulary at fault here—I should have said, "Look ENGAGED!" With the team at UK Dental Specialists, this was not a problem. They not only looked engaged, but they looked happy and willing to be engaged. When going through the proofs with their team, it was easy for me to identify my favourite shots, because these were the ones that were properly lit, captured at just the right time, and at the same time, the subject look engaged. Often I find it is not work that makes people engaged, but rather ask them about their dog, their partner, their kids or even their favourite film. In having people actively respond to a question, if caught just before they speak, the look of intent shines through, helping create a brilliant shot.

Having an expert on hand as well during the shooting is imperative. I can't count the number of times I've shot something and another person comes in and says, "you need to have this in the shot as it's required." This happened at the UK Dental Specialist shoot as

well. We were about to photograph a shot with one device next to another because they looked great together and were corrected by one of the nurses to ensure that we had the proper tools to make the shot. Working in this manner takes a bit longer, but it does ensure that the shots created have a lifespan beyond the memory card in my camera.

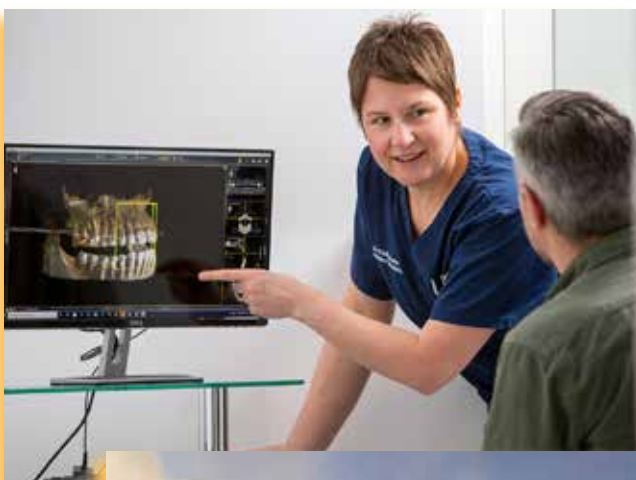
Finally, shooting the newly refurbished building—that was the easy part. The exterior gleamed and the interior was stunning. But how to make it stand out? The practice has four big windows at the front and I thought it would make sense to showcase four different people within the practice welcoming patients. We shot it during lunch break when no clients were on site. We had to ask one early arrival to park in a nearby lot as we finished the shot.

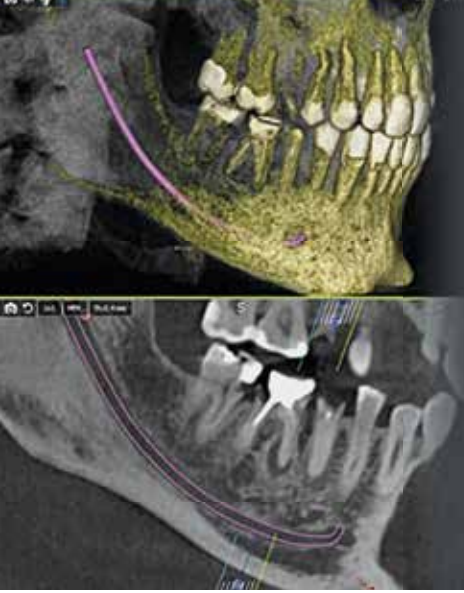
Bringing together four people was an exceptional way to represent the surgery. It was clear that the shoot wasn't about any one person more than another, but the team who has come together to create such a great practice. The fun, warmth and professionalism of each stood out to me when I was creating the shot, and when it was completed, I knew we had a winning photo.

With every shoot I do, I assess if it is a success or not. This assessment is based partially on my overall experience, but even more importantly if I felt I ended up with a portfolio piece. With UK Dental Specialists, I ended up with a few portfolio pieces, and for that I can say with confidence, "the shoot was a success!"

Mark Weeks

Director & Lead Photographer





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ø 110x80 mm



ø 80x80 mm



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Young People and Consent

When can a young person or child consent to their own dental treatment?

Whilst the Children's Act of 1989 states that a person legally becomes an adult on their 18th birthday, young adults aged 16 or over are presumed in law to have capacity and are entitled to consent to their own treatment. However, their refusal to accept medical treatment can be overridden in limited circumstances, such as risk of death or of irreversible mental or physical harm. Those under 16 must be deemed 'Gillick competence' in order to be able to consent to their treatment.

What is Gillick Competence?

The concept of Gillick competency arises from a House of Lords case from 1985. The House of Lords held that;

"A girl under the age of 16 years had the legal capacity to consent to medical examination and treatment if she had sufficient maturity and intelligence to understand the nature and implications of the proposed treatment"

How do you make the assessment?

The British Medical Association has provided very helpful guidance on the test to be applied when assessing Gillick competence. The link to this guidance can be found here:

file:///C:/Users/lpear/Downloads/children
youngpeopletoolkit_card2.pdf

What about children who are under 13 years old?

There is no lower age limit for the Gillick competence assessment to be applied. However, it is very unusual for children under 13 years old to be deemed to have Gillick competence.

Who should make the assessment?

It is the dentist themselves who need to assess whether the young person has Gillick Competence. Where other members of the team know the young person, or have built up a rapport with them, their assessment can be taken into account when considering competence.

The assessment is ongoing; if the young person presents as competent at their first appointment, this does not mean they cannot be assessed as lacking competence at a later date.

A: 7b Bayham Street, London, NW1 0EY

T: 0207 388 1658

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CPD Questions

All questions relate to articles in this issue of the JSD by completing the answers you can earn 1 hour verifiable CPD.

How many mm of tissue was to be removed lingually?

- a) 5mm b) 2.2mm c) 2mm

Cavitation produces microbubbles, which of the following is not a benefit of this?

- a) Clear field of view b) Removes gingivae c) Mild haemostatic effect

What was the effect on the milled restoration after the scan body notch was placed buccally?

- a) Crown was milled with spruce on the distal aspect
b) Crown was milled with spruce on the Buccal aspect
c) Crown was milled with no spruce

Please email your answers to: cpdjsd@gmail.com

Providing your name GDC number Postal address

We will then post your certificate

Upcoming CPD Events

As part of UK Dental Specialists committal to dental excellence we periodically organise evening seminars on different dental related subjects. These seminars are free of charge and valid for two CPD hours.

To register for your place please contact our reception team on 01727 800 372 or email

info@UKDentalSpecialists.co.uk Registration with refreshments starts at 6.30pm and the course begins at 7pm.

The next available seminars will be:

27th Feb	Julia Furley	Complaints Handling	24th June	Dr Dhru Shah	Periodontics
6th March	Dr Luisa Lucchesi & Dr Kali Ranshi	Orthodontics & Prosthodontics	21st July	Dr Rajiv Patel	Implants
24th April	Dr Kostas Ioannidis	Endodontics	24th Sept	Dr Aisling Quinn	Endodontics
21st May	Dr Poonam Kalsi	Prosthodontics	21st Oct	Dr Pranay Patel	Prosthodontics
			16th Nov	Dr Kostas Karagiannopolous	Prosthodontics

Lunch & Learn

Book a "Lunch & Learn" session. We can visit you or you are welcome to bring your team to us. Let us show you the practice and give you a quick overview of the different treatment options available to your patients. We will provide a light lunch with refreshments. Just let us know how many members of your team will attend and each person will receive training worth 1 CPD hour. A certificate will be issued.

If you would like to participate in these sessions please email info@UKDentalSpecialists.co.uk or call us on 01727 800 372 for more information.



Private referral form

Practice and referring dentist details

Referring practice

Practice address

.....

.....

Patient details

Patient's name

Patient's address

Town/City.....Post code:

.....

Treatment required:

Orthodontics

Implants + Restorations

Implants placement only

Periodontics

CT Scan

Endodontics

Endodontics + Crown

Prosthodontics

Oral Surgery

OPG

Biopsy

Crown Lengthening

Opinion only

Other Treatment (please specify below)

Radiology Report

Reason for referral/provisional diagnosis.....

Treatment carried out to date

Medical and dental history

.....