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Moving Beyond Assumption to Acceptance

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Implant Dentistry’s Dirty Little Secret
Leo J. Malin, DDS

Recently, I had the opportunity to present at the IACA Conference in Hollywood, Florida. The advertised presentation purpose was to discuss the etiology; prevention and management of at least 20 surgical and restorative complications that occur in implant dentistry. The secondary purpose was to understand how to avoid these same complications.

In this short article, I would like to highlight just one of those challenges. This challenge, in my opinion, is implant dentistry’s biggest challenge, and is specifically: Long-Term Bone and Tissue Health around Dental Implants.

In my 20+ years of clinical experience with dental implants, this was the most misunderstood challenge that I have confronted. Too many of my clinical cases resulted in compromised long-term bone and tissue health. I never fully understood why some clinical cases performed well while others didn’t. Fortunately today, predictable bone and tissue health around dental implants isn’t left to chance. Simply by using better implant systems with superior connections, long-term bone and tissue health is predictable and achievable. I have discovered unfortunately for myself implant dentistry’s dirty little secret. Let me share with you!

First, to be fair, bone loss, and tissue inflammation, or tissue loss around dental implants can be multifactorial. However, there is one gigantic cause that trumps all the others. And what is it? It’s a dirty connection between the implant and the abutment, commonly called the implant abutment junctions (I AJ). If the I AJ has a micro gap of more than .8 µ, bacteria will invade the connection. If that connection is not reachable by the patient to perform normal oral hygiene, bone loss is guaranteed.

It is implant dentistry’s dirty little secret. It is why all of the implants that have hexed connections at the interface are dirty connections. They will almost always show bone loss when the connection is more than 3 mm below the tissue level, and always have significant bone loss when the connection is placed below the crest of bone.

I call it a dirty connection because it is descriptive of what it actually is, it acts like one and certainly smells like one clinically. You all know what I’m talking about if you have ever removed an implant abutment or healing cap from a hexed implant system in a clinical situation.

The bacteria in the Implant Abutment Junction has an odor that’s memorable. Unfortunately, that odor is just a byproduct of the bacteria that is deleterious to the bone and tissue surrounding the implant if that bacteria is not removed.

These dirty connections look and act like fractured teeth clinically. They look like cracked teeth, smell like cracked teeth and act like cracked teeth. A fractured tooth in bone always results in bone loss down to the fracture. The only treatment options in those cases are to hemi-sect the fractured root or remove the tooth.

**Why replace it with an implant connection that acts like a fractured root when placed in bone or to deep in tissue?**

**Why place an implant with an open or dirty connection?**

**Why replace a fractured tooth with a fractured implant. Why would anybody do that?**

Well, let me tell you why I did that, not once but hundreds of times. I did it simply because I didn’t know any better. I wasn’t aware of implant dentistry’s dirty little secret. I thought all implant systems had this challenge. My reward for not knowing is that I now have many implant cases in my practices that show some, or significant bone loss around the implant abutment junction and are a constant challenge for my patients and my practice to maintain. Bone and tissue health on these patients are compromised simply because I chose a poor implant system for their care.
Fortunately, my ignorance is over and I am aware now of better implant systems and better connections. These systems have IAJ micro gaps that are smaller than the size of oral bacteria, and do not open up under load or have clinically significant micro movement. These systems have a tapered connection of 12° or less and a connection length of at least 2 mm. The orientation component of the abutment is deep inside the implant and not at the IAJ; subsequently, the connection is machined much tighter, at the interface and is more stable. These implant systems are dramatically improved and significantly different than the implant systems the North American Market is used to. These type of implants are absolutely game changers in dental practice, and dramatically improve the definition of long-term clinical success.

The two-implant systems that I use in my office today can be placed at the crest of bone or below bone crest. In thin tissue or very thick tissue. Very robust systems that can be used in all clinical situations. Implant systems with clean connections rather than dirty ones. Systems that are a third of the cost of the more problematic systems of the past that I used in my practice. Most importantly these systems were designed to support long term bone and tissue health, and they do exactly that! My patients and I no longer have to accept compromised periodontal health around dental implants and compromise aesthetics. Enough said, evaluate the photographs.

The two systems that I use in clinical practice are the American-made Implant One Implant System, and the Italian made Leone Implant System. More information on these two systems can be found at implantlogistics.com.
In summary, this short article and the IACA presentation were designed only to provide a message of encouragement to the reader that implant dentistry is changing in a positive direction. Technologies, products and procedures are evolving and complications are being eliminated. Predictable long-term clinical success is achievable. I understand that you have had implant challenges in the past and so have I. I hope that those challenges have not discouraged you from participating in the process. The solutions to those challenges are here. The implant game is changing, and improving. Success is achievable and predictable. I encourage all of you to get in the game of implant dentistry. Your patients need and want your help!

Leone implant system with superior conical or tapered connection at the I. A.J.

Radiograph of Implant one implant placed below the crest of bone, showing stability years after placement.

Healthy tissue and bone commonly associated with implant systems that have conical connections like Implant One and the Leone implant systems.

Implant One, implant system with a conical connection, or also known as a Morse Tapered Connection.

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Implantology

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Implant Dentistry: Moving Beyond Assumption to Acceptance

Gene St. Louis, Executive Vice President, McKenzie Management

Not all that many years ago, most dentists couldn’t fathom that a day would come when the patients would walk into the practice and tell the doctor what they wanted. After all, the dental visit was not about the patient’s wants or possibilities or excitement or opportunity. My how things have changed, patient expectations of dentistry have exploded, especially in the past decade.

When the new millennium dawned 13 years ago, patients wanted the bright white smiles they saw on popular reality television shows. Demand for whitening products and veneers skyrocketed. When clear braces arrived on the scene, patients that never would have considered orthodontics sought to correct crowding and other imperfections without the mouthful of silver wires and brackets. Today, more and more patients are asking about dental implants.

The demand for dental implants continues to increase each year as aging baby boomers expect 21st century solutions to their dental needs. They don’t want to settle for the same dental appliances their parents had.

The question is: Is your practice prepared to deliver? If ever there were an opportunity for dentists to help patients address a truly life changing dental need and make educated decisions on what could well be their most important oral health investment, this is it.

The Numbers

Those practices that are prepared can virtually count on significant financial gains. Consider this: A typical dental practice seats maxillary partial dentures on 38 patients in a year at an average price of $1,754 for $66,652 in revenue. If those patients were offered the option of dental implants, at a fee of $5,850 and only half of them accepted, that would yield $111,150 and an increase in revenue of $44,498.

A typical practice may extract roughly 524 teeth in a given year at a fee of $140 per tooth. If the patients are given the option to replace the tooth with an implant, and only half of them choose that route at a fee of $2,025, practice revenues jump nearly $500,000.

A partial, while it may serve as a cosmetic solution, will not address the long-term health and function of the mouth and cannot simulate the patient’s original tooth, an implant, however, can. Still dentists hesitate to present implants as an option.

Assumptions Kill Case Presentation

Intellectually, clinicians understand that implants are a superior choice. They recognize that patient acceptance of implants can translate into significant revenue gains for the practice. So what stops them from routinely offering implants as an option? Look no further than Gertrude Ederle and Roger Bannister. By the mid-1920s, only five people had successfully swum the English Channel, all men, and it was widely assumed that no woman could ever make it. They were wrong. Gertrude Ederle made history on Aug. 6, 1926. Before May 6, 1954 it was assumed that no man could run a mile in under four minutes. That day Roger Bannister proved that assumption wrong.

Assumptions are often wrong. Dentists assume that patients will balk at the price of implants. Indeed, some will. The problem is that too many dentists routinely make the wrong assumption, so they don’t offer the patient the ideal options, thereby limiting treatment considerations to only those that the doctor assumes will be financially palatable to the patient.

It is the doctor’s professional responsibility as a health care provider to recommend what s/he considers to be the best treatment options for the patient. From there, it is the practice’s responsibility to provide treatment financing options, such as those offered by CareCredit, so that patients can afford treatment recommended. After that, the decision is the patient’s. The key is to ensure the patient is well informed.

From Assumption to Education

It all begins with education, starting with your staff. No major procedure, particularly implant dentistry, should be integrated into the practice without educating staff.
It is essential that all employees, including the business staff, assistants, understand the value of care, are prepared to convey a positive attitude about the benefits of that treatment, and can explain to patients that doctor has extensive training in delivering this type of treatment. Prepare a list of frequently asked questions and their answers. Give the information to each staff member so that everyone can answer basic questions about the treatment.

Once the team is educated, attention turns to informing the patients. Educating patients is a continuous process. One conversation is not patient education. Patient education is ongoing and is both subtle and direct. For example, in the reception area, an 8x10 frame can promote the option to patients. “Cedar Pointe Dental now offers dental implants. Ask Dr. Ross if this is an option for you.” Hang an 11 x 17 frame in every treatment room. Type a bulleted list of questions and answers about dental implants in font large enough that patients can see it when they are sitting in the chair. For example, those below are adapted from the American Academy of Implant Dentistry and offer a good starting point for discussion: What are dental implants? Dental implants are substitutes for the roots of missing teeth. They act as an anchor for a replacement tooth or crown or a set of replacement teeth. Am I a candidate for implants? Implant patients are of all ages and implants may be the right choice for anyone missing one or more teeth due to injury, disease or decay. They are especially practical for patients who prefer an option other than removable dentures or partials. “Dr. Ross,” a credentialed implant dentist, can determine if you are a candidate for dental implants after a careful evaluation of your dental and medical history.

**Treatment Presentation is a Process**

Time and care should be given to properly presenting this treatment option to patients that are candidates for dental implants and would likely involve some or all of the following steps:

- **Implant introduction** – using a tablet PC or other patient education tool the doctor provides the patient an overview of implants and how they are used to replace decayed or missing teeth.

- **Face-to-face discussion** – The doctor explains the patient’s specific treatment options, risks, benefits his/her recommendations, and answers any questions about the procedure. Ideally this takes place in a treatment presentation room or other relaxed setting. Scripting is essential to ensure that the discussion does not become too technical or too graphic, and it enables the clinical team to anticipate likely questions from patients.

- **Financial Discussion** – Once the doctor has answered all of the patient’s questions regarding treatment, the patient is turned over to the financial coordinator who discusses the practice’s financing options with them in private, not at the front desk. The discussion should take place in an area where the patient can ask questions that s/he may not want a room full of other patients to hear. It is imperative that the patient understand that as the implant procedure is often completed over several months, payments can be made over time as well with the help of treatment financing programs, such as those offered by CareCredit. Regardless of the outcome of the financial discussion a follow-up appointment should be made with the patient, particularly if they didn’t accept the treatment.

- **Printed materials and websites** – The patient should leave with a treatment plan, a treatment financing plan, professionally printed materials about implants, as well as a list of websites the patient can visit to learn more.

- **Encouragement** – The patient should be encouraged to call or email the doctor with any additional questions that come up as s/he reviews the information. If the patient does not schedule, their record should be flagged for a follow-up call within the next few weeks.

**Subsequent Reinforcement** - Recognize that patients may be interested, but they may not be ready to move forward at this time for any number of reasons. It will be essential that the doctor and clinical staff reinforce the benefits of the recommendation at subsequent patient visits. Reinforcing the need for treatment and providing additional opportunities for the patient to ask questions or raise concerns can be the deciding factor for many patients who are seriously considering pursuing implant treatment but need time to make the final decision. Remember, patient reticence is not rejection; it is an indication that the patient has additional questions, concerns, or simply needs additional time to consider the benefits of your recommendation.

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Pictorial Profile:

Dr. James W. W. McCreight

Dr. James W. W. McCreight completed his dental degree at the University of Iowa in 1995, and then launched his dental career with the U.S. Navy, completing an AEGD residency in 1996 at the Naval Dental Center in San Diego, CA. He and his wife Wendy, also a practicing dentist, moved to Steamboat Springs, CO in 1998. They originally purchased two existing practices in a small town (Craig, CO) approximately 40 miles from Steamboat Springs, commuting daily to the practice. They then built their “dream practice” in Steamboat Springs where they now practice with an emphasis on neuromuscular reconstruction and cosmetic dentistry.

Dr. McCreight has completed a number of courses at the Las Vegas Institute for Advanced Dental Studies (LVI) and has been a Clinical Instructor at LVI since 2006 as well as an LVI Regional Director. He is a member of IACA, ADA, and CDA. Dr. McCreight is also a very active member of Rotary International and has been honoured as a “Paul Harris Fellow” by that organization.

“Every now and then, all of us are challenged by a really complex case. This veneer case was certainly no exception. This male patient lived 5 to 6 hours away from our practice in Steamboat Springs, CO working as a snowboard instructor in Wyoming in the winter and a fly-fishing guide in the summer – a real outdoorsman as evident from his full face photos. He had six veneers placed about ten years ago and had been very unhappy since that time, thinking the shade was too dark right from the start. However, his placing dentist had convinced him that the yellow shade was appropriate for him. In addition, he was not happy with the dark triangle that was very visible every time he smiled. It made his smile “look old”, particularly as he has a very wide smile – and he is only in his early 30’s. Finally, one veneer was starting to “leak”, leading to noticeable discoloration. Hearing about our practice by word of mouth, he made the trip to discuss his options with us.

In that original dentist’s defense, the patient has a 3.5 mm diastema between 8 and 9 (which will be evident as we proceed through the photos documenting this case). In fact, he pretty much has diastemas across his six front teeth. While this situation certainly impacted on the current treatment plan that we eventually developed together, in all honesty, I’m not sure I could have created a better functional result a decade ago. The key is the materials, technique, communication between clinician and technician, and, most importantly, the Continuing Education opportunities we now have available through the Las Vegas Institute (LVI) that allow us to pursue a comprehensive test. Sometimes, this whole process can be a little overwhelming for patients. Let them live with their new smile a bit and tell you what they think. Far better to hear “those teeth are really white” at that stage then having that nasty surprise after the restorations are crafted and bonded. When you hear it with the temporaries, you can always adjust the shade if needed.

During our original consultation, the patient mentioned that he had always wanted a youthful smile with white teeth. His current shade was certainly not acceptable, particularly when you consider the shade of his lower arch is actually lighter than the veneers (as you can see in his pre-op photos). We sat down together and used the LVI Smile Catalogue to discuss his options. As I mentioned, one of the first considerations was his “big smile” that revealed 8 to 10 of his upper teeth.

In combination with trying to resolve his diastemas, we decided that a total of ten restorations was the best alternative for optimal esthetics and to avoid negative space back in his posterior area. The decision to move to 10 restorations was made far easier with Aurum Ceramic’s program where 10 restorations can be created for the price of eight. I was able to pass this saving on to the patient helping him decide to accept the treatment plan.

As we planned and proceeded through the case, extensive verbal, email and photographic communication with the Aurum Ceramic AE (Advanced Esthetic) Team was critical to achieving a successful result. You have to give the laboratory the information they need. A great example of this is supplying photos of the preps – let the technician see where the margin is prepared and you’ll be amazed at the results. Aurum Ceramic also sends photos of the bisque bake – a great idea allowing you to make adjustments at that stage if necessary. All of this communication is accomplished quickly and easily on-line via the Brightsquid Dental Link being offered as a service to Aurum Ceramic/Classic clients.

Another key area is the Diagnostic Wax-up and the temporaries developed from that wax-up. Put the “smile” to the test before the porcelain is fabricated. Check how the shape and shade looks – and get feedback from the patient. This also lets you put the proposed new restorations in function for a comprehensive test. Sometimes, this whole process can be a little overwhelming for patients. Let them live with their new smile a bit and tell you what they think. Far better to hear “those teeth are really white” at that stage then having that nasty surprise after the restorations are crafted and bonded. When you hear it with the temporaries, you can always adjust the shade if needed.

We chose to restore this case with two IPS e.max® crowns on the centrals and IPS e.max® veneers on 5 to 7 and 10 to 12, all beautifully crafted by the Aurum Ceramic AE [Advanced Esthetic] Team. The shade match with IPS e.max® is superb, whether veneers or crowns, and e.max has the
strength to allow us to close the diastema esthetically on 8-9. I purposely prepared 8 and 9 a little more aggressively to allow closure of that diastema. One key aspect that made this case so successful esthetically is the incisal translucency that Aurum Ceramic reliably delivers time after time. It is evident in the photos here with the After upper anteriors isolated on a black background. Just compare that to the opacity evident on the pre-op photo also presented.

Earlier in this profile, I mentioned that one of the original veneers was failing due to microleakage. One of the major reasons outlined in the literature for this occurrence is that the teeth were not properly isolated during the bonding process. I can’t stress enough that rubber dam isolation is absolutely key to a successful long-term result. Again, we don’t want any surprises, especially when the patient lives 6 hours away. Personally, I want the best guarantee I can get that there will be a long-term bond when I am finished placing the restorations — and proper rubber dam technique as illustrated photographically here is one of the best guarantees I’ve found.

The patient was absolutely thrilled with the final result, as evidenced by the big smile in his final Full Face photograph. I always have patients come back to do ‘chew cycles’ to ensure the case is free of interferences and make any adjustments. At this appointment, he told me he was so happy with the result he now wants to whiten his lower anteriors to match. A simple request that I took as a great compliment to our joint efforts as clinician and laboratory.“
Restorations fabricated by Aurum Ceramic (cont.)

▲ Close-up of new smile.

▲ Full Face After.

▲ Opaque veneers pre-op.

▲ Note the beautiful incisal translucency on the final restorations!

▲ Happy patient!
Stop Ignoring Your Patients!

Louis Malcmacher DDS MAGD

Yes, you, the one reading this article – right now you are ignoring your patients. Specifically, you are ignoring one major clinical complaint that your patients have on a regular basis and you are doing nothing about it. Remember Mrs. Jones who came in last week holding the right side of her lower jaw complaining of pain in that area? You meekly kind of touched the muscle that she was pointing to, told her that she must be clenching her teeth, suggested a night guard, only to find out that she has been wearing a bruxism appliance that you had already made for her. Or, how about Mr. Smith, who came in a couple of weeks ago who pointed straight to his left TMJ area and complained how sometimes he can barely open his mouth and wants you to do something about it. You responded that you will just watch the area for a while and hope the problem will go away. Mr. Smith gave you a strange look considering that he is in your office, has a specific complaint, and you seem to either not take it seriously or he can see you have no idea how to even approach the problem. This does not inspire great confidence in patients to say the least.

Let’s be brutally honest here – most dentists are scared of TMJ and facial pain patients. We think of them as crazy, they will probably end up being a pain our behinds who won’t go away, and we are unaware that there are any successful treatments available. The bottom line is that most general dentists have very little understanding and training of TMJ and myofascial pain and lack any real practical systematic frontline approach to help patients with these problems. Many dentists think that treatments for myofascial pain have to be very complicated and that these patients will never get better.

Nothing can be further from the truth. Most patients with mild to moderate TMJ and myofascial pain are easily treatable and they do get better when a general dentist has learned some basic skills on how to properly diagnose these patients, come up with a frontline systematic treatment plan based on symptoms and the diagnosis, and then deliver the treatment in a timely manner.

Myofascial pain occurs in many of your patients and if you don’t believe me, try doing this for the next week in your practice – start asking your patients if they ever have TMJ and facial pain. Then observe carefully as subconsciously their hand shoots up to the area that is bothering them. I often use this technique when I am lecturing to dentists and ask them if they ever have a problem with head, neck, or shoulder pain. You should see the hands jump to the sides of their face, neck, and upper back. These are all dental professionals who experience these symptoms themselves and haven’t the faintest clue how they can get rid of their own facial pain when this should be a vital part of every dental practice.

There are many simple frontline treatments available for treating myofascial pain. Where appropriate, these include bruxism appliances, trigger point injections, Botox injections, spray and stretch techniques, and numerous other methods that can be used successfully in the dental practice. What it requires is taking the training to learn and perform these frontline treatments for TMJ Syndrome and myofascial pain.

Just as important, don’t underestimate the value of your dental laboratory in this process. Laboratories like Aurum Ceramic/Classic, with extensive knowledge and unsurpassed experience in full mouth rehabilitation and comprehensive cases, are invaluable no matter the complexity of any individual case. Their success is rooted firmly in extensive communication between clinician and technician. Make sure the laboratory receives all the pertinent information they need right from the beginning, starting with orthotic therapy through to finalizing the bite, diagnostic wax up, temporization, and final insertion of the restorations (or prosthesis/appliance) while maintaining the desired position in the lab and clinical chair using whatever occlusal philosophy you adhere to.

Stop ignoring your patients, your friends and even your family who suffer from TMJ Syndrome and myofascial pain. Every dentist has the ability to be able to provide consistent and predictable therapeutic outcomes for patients with facial pain once you learn the basics of frontline diagnosis and therapy.
Implant-based Overdentures

Gary Wakelam, RDT, CDT

Implant-based overdentures have been used for many years as an enhanced alternative to complete dentures. Their most significant advantages lie in the realm of increased retention and stability, as well as the protection of underlying biological structures and elimination of sore spots.

There are six major overdenture attachment systems in use today: the ZAAG®, the Stern ERA®, Overdenture Attachment, the Locator, clip/bars, Ball Attachment/O-Rings and stud attachments. One of the first basic decisions is which of two primary design concepts for implant-retained overdentures will be employed: unconnected implants (retention via an abutment containing some form of retentive attachment) or a Bar (the splitting of implants with a rigid interconnecting bar and incorporates an attachment mechanism for overdenture retention) as this eliminates many systems from consideration.

Stud attachments vary the most in their design configurations but they can be used in almost all situations. They usually require either custom abutments, or more commonly bar systems.

Ball Attachment/O-rings are an inexpensive, widespread solution for implant-supported overdentures. Ball attachments are retained into two (or more) freestanding implants using screws and a corresponding cap containing an O-Ring is incorporated into the denture base. The overdenture is both implant and mucosa supported. The ball attachments allow for rotational movements while placement of spaces in the cap permits vertical displacement of the overdenture. Their weaknesses lie in their unknown quality of retention, lack of adjustability and restriction of the occlusal space available.

The simplest overdenture bar design includes two implants, a round cast bar and a clip embedded in the overdenture. The bar is rigidly attached to the implants and, in most cases, a screw is used to retain it in position. The implants are usually placed in the approximate position of the canines. This allows the use of a bar that, if extended directly between the implants, neither encroaches on tongue space nor promotes excessive labial flange thickness. The cast bar can have some variation in design such as rigid distal cast extensions, a Hader bar or Dolder bar (ovoid shape of these bars helps better retain the metal clip). When unloaded, there should be a small space between the top of the bar and the clip to permit the overdenture to move toward the tissue when loaded. Clip/bars work well in many situations but they are prone to excessive maintenance and repair.

The ERA System is an excellent all-around two-part solution, especially for individual attachments, and it has the advantage of angulated abutments when necessary. A titanium female abutment (available in various degrees) screws directly into the implant and a nylon male (available in various amounts of retention) is incorporated into the denture base. The ERA is a bit weak in the construction of overdenture bars however, and is often used in conjunction with other attachments.

The ZAAG® system is ideal with good implant placement for both Class 1 Division 1 and Class 1 Division 3 restorations. If the implants are relatively parallel and well positioned, the ZAAG attachment provides a system with excellent retention, stability and maintenance. It is the only arrangement that allows the male portions to fit directly over the implants in a bar system.

The Locator features a reduced interarch requirement of only 2.5 mm, permitting use in tight spaces, and the advantage of built-in guide planes (male self-aligns with female) providing precise insertion and longer lifespan for the resilient portion of the attachment. It also features a combination of external and internal retentive mating surfaces providing “dual retention”, which creates more than twice the retentive surface area of other attachments.

In treatment planning for implant-supported overdentures, some basic principles must be observed. By answering the following series of questions for each subsequent decision area (and noting the individual explanations), you can easily begin to narrow down the appropriate attachment for virtually any case.

How much support is there for the abutments?

The dental implants must have definite and confirmed osseointegration. The use of short abutments and low attachments prevent shearing loads.

How will the attachments be combined with the implants?

Attachment/implant designs are generally accomplished in one of three ways:

- Attachment screwed directly into implant. Most implant manufacturers provide components (such as ball attachments) that can be screwed directly into their implants to retain a denture. They are economical, simple and work extremely well. Provided the angulation of the implant is not severe and does not interfere with the denture’s path of insertion. If it does interfere, a UCLA-type component and a castable attachment allow a corrected angulation and an ideal path of insertion.

- Multiple implants connected with bar. Bar-retained prostheses are usually indicated in situations where four or more implants are used in either the maxillary or mandibular arch, but can be employed in treatment situations were only two or three implants are used. The bar distributes the load and increases strength, splinting questionable abutments together for mutual support. If a bar is used to connect the implants, it should be rigid to prevent bending and shear forces created from the overdenture. Vertical forces transmitted through the long axis of the implant are desirable, whereas horizontal loads will be destructive to the implants. When properly related to gingival, bar should not cause food entrapment, blanching of tissues, or encourage tissue proliferation. Some bar attachments are ideal for situations with limited vertical clearance, however, the connectors can be smaller and require use of a stronger alloy.
• Adding attachments to a connecting bar. Ample clearance is required for this design but making a bar that has distal extension attachments placed on the sides of the bar, or stud-type attachments on top of the bar, can offer tremendous strength and retention. Attachments with a self-paralleling feature are very useful here. However, distal rigid extension bars may overload the implants due to the continuous resorption of the denture-bearing mucosa and should be used with caution.

Resilient or non-resilient?
Resilient overdenture attachments are selected more often as they are transferring stress away from the implants and towards the tissue. Solid, rigid, non-resilient types of attachments transfer stress towards the implants. A resilient attachment is favoured if the ratio of lever arm to implant is less than one. Attachments must permit small tilting movements of the denture because of the resilience of the denture-bearing mucosa.

Vertical height available?
Consideration of interarch space is just as critical here as with the other attachment applications considered earlier in this series. The attachment must have a low-profile height to allow enough space for adequate thickness of denture acrylic and necessary strength of the prosthesis.

With bars, is the attachment intra-bar, extra-bar or circum-bar?
Extra-bar attachments require more interarch space than do intra-bar attachments, which may restrict their use in some cases (examples of minimum male/female total height over the bar include ERA 4.85 mm and O-Ring 6.14 mm). However, the placement of extra-bar attachments on the superior aspect rather than within the bar (intra-bar) results in a cast bar of greater strength (as there is a greater bulk of metal at the cross-section adjacent to the attachment). With intra-bar attachments, the connection between the two components directs the forces of mastication closer to the crest of the ridge, thus decreasing the lever arm mechanics on the supporting implants. Circum-bar (wrap around the bar) attachments such as Hader clips and Dolder clips allow a functional rotation of the prosthesis around the bar, if they are properly placed along the anterior portion of the bar. If improperly placed along the posterior distal extension of the bar, rotational ability is greatly minimized and stresses are placed on the attachments, leading to increased wear. Circum-bar attachments must also be perfectly parallel in the vertical orientation or proper seating of the denture is hampered.

By employing this suggested common sense, systematic question-based approach, you can easily identify the appropriate attachment based on how it works and where it can (or can’t) be used. The skilled, experienced Precision Attachment Teams at Aurum Ceramic Dental Laboratories LLP are always ready to assist you in selecting the most suitable attachment for each individual case situation.

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*Designed and Manufactured in North America
Here is my inner secret: I used to hate seating crowns. You know the feeling, there is no production, there is a small window of time on the schedule. On smaller cases we do those in the afternoon with a number of other smaller cases. The blood pressure rises, the sweat on the brow or down the back comes when I have to pull out the green stone to adjust the contact, then the hand piece to adjust the bite. Then the multiple passes with articulating paper because there is a little something quite not right with the bite that is not showing on the ink dots. Now the pressure builds with being off schedule and running late.

Now, I take inner pride in seating crowns. I tell my patients that. Omer Reed taught me that you wanted gold inlays done so perfectly that “you try them in with the cement already on them”. Now my saying is, I am so confident of the crown that I will be receiving back from Aurum Ceramic, I can finally try it on with the bonding resin on! The difference? iTero. The only difference. Same clinical technique, same high quality lab. I waited a few years after studying several digital image systems before pulling the trigger to purchase the iTero. iTero does not require any powder dusting of the teeth. It is simple. No more rubber bites that wiggle or compress. Like most offices, I felt like I did not have the extra room for another piece of equipment. That has not been an issue and it is so easily portable from room to room. Really!

I also knew that deep inside I did not want to become a lab tech or hire an in office lab tech to do my own same day milling of crowns. My time is too valuable to be milling crowns and stocking the additional inventory to do that. Aurum Ceramic can do a better job at that than I ever could hope to do and much more efficiently.

**My only regret is that I did not purchase it sooner!**

P.S. I have talked all about me – I like the improved quality in the work that I do. My patients LOVE not having the gooey, smelly impressions and they brag about their dentist with the high tech office!
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