

Dental implants: to probe or not to probe?

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What does the evidence based research recommend for the assessment of implants, and why is probing so controversial? Two questions that often provoke heated debate; the mere mention of probing around an implant is enough to send shivers down many a spine! Having examined the literature, this article aims to give the dental hygienist and therapist (DHT) the confidence to progress with treatment of the implant patient, confident that their clinical practice is founded on sound scientific research.

The introduction of dental implants has transformed the lives of partially dentate and edentulous patients, offering more solutions for replacement of missing teeth in restoring function and aesthetics than ever before. Therefore DHTs need adequate training to feel confident and competent in treating peri-implant diseases. It is uncommon for undergraduates to treat implant cases in dental school as these patients are often seen by consultants and post-graduate students. We, therefore, may graduate without ever seeing an implant in a patient's mouth.

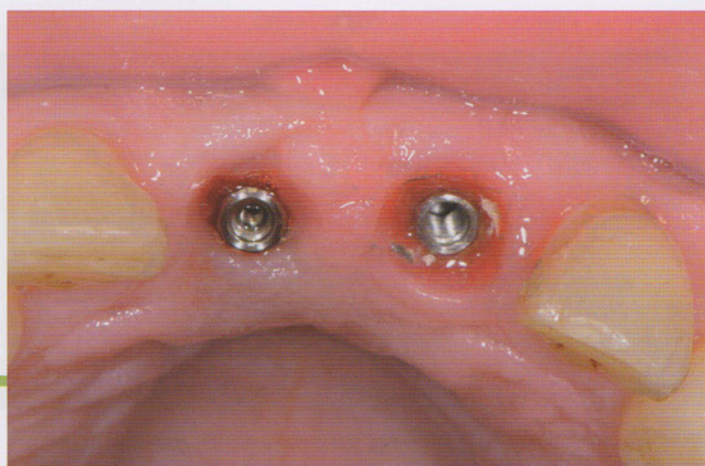
Risk of litigation

Earlier this year Dental Protection Ltd. released some alarming figures where undiagnosed and untreated periodontal and peri-implant diseases ranked highest in dental litigation cases. Failure to include implants as part of a routine patient examination, is grounds for supervised neglect. However, anecdotally, many DHTs report that they are advised to proceed with much caution around implant abutments and prothesis and rarely have access to a plastic probe or a suitable instrument to remove biofilm and calculus.

Prevalence of peri-implant diseases

Peri-implant diseases present in two forms: peri-implant mucositis and peri-implantitis. Peri-implant mucositis is reversible as it is inflammation of the soft tissues but there is no bone loss. Peri-implantitis is much more difficult to manage, there is destruction of the alveolar bone and osseointegration of the implant is compromised.¹ Non-surgical therapy is ineffective in these cases. More recently, a third category of peri-implant disease has been noted and this is where the failing implant is a direct result of residual cement. This is referred to as cementitis. The prevalence of peri-implant diseases is currently estimated at 48% for peri-implant mucositis and 11-47% for peri-implantitis.² Risk factors for the development of biological complications include inadequate biofilm removal, residual cement, previous history of periodontal disease and smoking. Failure to adhere to a good home care regimen and to return for regular professional maintenance significantly increases the risk of peri-implant complications.

To diagnose complications, and allow for earlier and less complex intervention, maintenance visits should include evaluation of the peri-



mucosal tissues, biofilm control and address the presence of any new risk factors. The literature suggests that non-surgical intervention may arrest and even reverse peri-implant mucositis, but only if intervention is implemented at the early stages.³ Sites that have deteriorated will need to be treated and the patient re-instructed, motivated and the recall interval adjusted. In cases of peri-implant mucositis, incorporating the use of a chlorhexidine and cetyl peridium chloride mouthrinse as an adjunct to mechanical cleaning, to reduce inflammation, has been shown to be effective.^{4,5}

Visual examination

Visual inspection should always precede probing of the soft tissues and the clinician should be competent and confident at recognising subtle changes in the colour, size, shape and consistency of the transmucosal site around each implant. DHTs are experts at detecting signs of inflammation and their skills used in recognising gingivitis and periodontal disease are easily transferable to that of peri-implant diseases. Therefore, the DHT has an important role to play in the prevention and early intervention of peri-implant mucositis and peri-implantitis. Patients often will routinely attend appointments quarterly with their DHT where changes to the soft tissues may be detected earlier in the disease process.

Palpation technique

Palpation is an effective and non-invasive method of evaluating the soft tissues and health of an implant. If there is inflammation present, palpation will cause exudate to ooze from the implant sulcus. The recommended technique is to place the pad of the thumb and pad of the index finger on either side of the alveolar ridge and squeeze gently moving in a coronal direction.⁶ This will indicate the need for more thorough investigation, such as probing and a radiographic evaluation.

Probing technique

The current research advises probing around abutments to determine the presence or absence of bleeding. This is to date the most reliable method of determining inflammation. However, it is important to clearly state that probing around implants requires a different approach to natural teeth due to the biological variation in the anatomy surrounding implants. The peri-mucosal seal around the implant is far more delicate than that of the natural attachment surrounding a tooth and may be easily punctured by forceful probing. The implant does not have a periodontal ligament or perpendicular gingival fibres, hence the sulcus must be approached with caution.^{7,8}

Current recommendations are to probe using a very light force of 0.25N, ideally using a flexible plastic probe that will permit access around the

suprastructure and improve access to the abutment surface without risk of damage. The guidelines suggest waiting six months after loading to probe, or until the final prosthesis is in-situ when osseointegration will have taken place. Probing is useful to determine the presence of complications at the buccal and lingual sites of implants which cannot be evaluated on a radiograph. Probing depths are of less significance around an implant due to the surgically created sulcus to allow for the emergence profile and connection of the prosthesis to the body of the implant. The primary objective of probing implants is to detect bleeding and/or suppuration.

Biofilm and calculus removal

The anatomy and physical makeup of implants and their restorations are different from natural teeth. Moreover, curettes and scalers were originally designed for scaling and root surface debridement of teeth. Adaptation of scalers and curettes to implants are usually poor, and an implant simply cannot be scaled. However newer designs have taken this into consideration and the working ends are considerably smaller for ease of access.⁹⁻¹¹

Medical grade titanium which is lower on the rockwell hardness scale shows greater efficiency in calculus removal and less surface alteration when compared to stainless steel instruments. When used with copious irrigation, ultrasonic instrumentation can help remove implant surface deposits and flush out the peri-implant sulcus, however caution must be employed to avoid contact with the implant surface.¹³ Studies have shown that the primary disruptive effect on sub-gingival biofilm is the action of the lavage and swirling fluid within a confined space.

Caution must be exercised to minimise damage, regardless of the instrument used, but the complete removal of all hard and soft supra- and sub-gingival implant surface deposits is necessary to maintain health.¹² Sub-gingival mechanical instrumentation should be avoided at sites with excellent plaque control and peri-implant health to prevent iatrogenic damage to implant components. Treatment should be targeted to sites that display signs of active

disease to best maximise the appointment time.

Radiographic examination

Baseline radiographs should be taken when the final prosthesis is placed and a point of reference established to determine the baseline level of the alveolar bone at inter-proximal sites. Radiographs are recommended once per year and should be compared to baseline to determine any changes surrounding the abutment or detect the development of any defects. Without baseline data, it is difficult to identify changes to the alveolar bone height. If there is bleeding on probing or suppuration, radiographs are recommended, as this is the only method to assess bone levels.

Take home messages

Caring for implants has some similarities to natural teeth, however these fundamental and essential skills need to be taught more extensively in undergraduate or postgraduate curriculums. The approach to implants requires training in techniques and skills in data collection and interpretation, instrumentation and patient education. All dental professionals should consider additional training in this area.

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Image courtesy of Dr Amit Patel

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