



By **Ash Vasanthan, DDS, MS**
SDDS Member

Dr. Vasanthan is a Diplomate of the American Board of Periodontology and American Board of Oral Implantology. He has a practice limited to periodontics and dental implants in Roseville and Citrus Heights.

Minimally Invasive Dental Implant Surgery (MIDIS) to Preserve the Soft Tissue Profile

Papilla preservation along with good soft tissue margins around dental implants is an important aspect of dental implant planning for patients in the esthetic zone. Periodontists have mastered and perform soft tissue grafts with relative ease and great predictability to enhance gingival thickness, gain root coverage and improve esthetics with teeth, crowns and implants. Hence regeneration of lost soft tissue thickness or gaining additional thickness

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and coverage is quite predictable today. However, the inter dental papilla or the implant papilla is not easy to regenerate in the mouth once it is lost. There is no predictable technique till date to regenerate the papilla. Although restorative and surgical options are available, they are not always predictable. Hence, it is best to avoid the papilla being a part of the incision or flap whenever possible.

Surgical Trauma

Good vascularity is the single most critical factor for tissue integrity and quicker healing along with any regeneration or new tissue growth. Every time an incision is made, this vascularity is compromised and tissue collapse could occur. It has been shown that flap reflection can be associated with bone loss especially when the bone is very thin. Vertical releasing incisions can also lead to scarring of the tissue and can compromise the blood supply to the region as well. Care should be taken to minimize vertical releases and periosteal releases and avoid reflecting the papilla whenever possible so as to avoid its collapse. Anytime the peri-implant



Picture A



Picture B



Picture C

Figure A, B, & C – A case of root fracture from trauma (A) on #9 replaced with an implant showing the position of the implant at the time of surgery in the MIDIS protocol (B) and restored showing healthy keratinized gingival tissue along the buccal margin (C).

tissue has to undergo any kind of release, the vascularity and thereby healing gets compromised. Thick tissue biotype with a flat profile is the best kind of tissue and is usually resilient. The thick tissue is the keratinized kind which we call as "gingiva." Lack of gingiva is associated with "mucosa" or thin tissue biotype. If one gets to work on tooth with mucosal tissue in the esthetic zone with a high concave profile, it can be very challenging to achieve a good result as the tissue will have a much easier tendency to collapse or retract. Hence it is a good practice to avoid making incisions or reflecting the tissue whenever possible. This makes a great case for flapless surgical options to be considered whenever possible.

Picture D



Picture E



Picture F



Pictures D, E, F – Tooth #8 being replaced (D) with an implant in the MIDIS protocol, showing good healing at 3 months (E) and final restorations with veneers from #6 – 11 with an implant crown on #8 (F). Notice the healthy keratinized gingival tissue and tissue marginal integrity.

MIDIS

Minimally Invasive Dental Implant Surgery, or MIDIS, is a term that I have loosely used during my time in teaching and in private practice although the minimally invasive surgical approach is not new. It is essentially a flapless surgical approach. The minimally invasive approach to preserve the soft tissue begins with the extraction process. Care should be taken to carefully incise the soft tissue attachment from the tooth and extract the

tooth with minimal trauma. Periostomes have been recommended for this but is not required and I actually don't use them. MIDIS can be of great value in the anterior esthetic zone and I've used this technique with great results and high predictability over the past 10 years. Case selection is of great importance with the need to assess the clinical condition leading to the loss of the tooth and the need for any bone grafting.

Steps in MIDIS

When immediate implants are placed in the anterior region, tooth extraction should be done without flap. Great care should be taken to avoid fracturing off the buccal plate and so patience is critical. Once the tooth is extracted and the socket is cleaned out the bone profile is assessed typically with a periodontal probe to make sure there is an intact buccal plate. It is important to know if there is any dehiscence or fenestration along the buccal wall. Once it has been determined that there is a good bone profile, the immediate implant osteotomy is performed. With use of Cone Beam Computed Tomography (CBCT) it is possible to know the bone profile prior to extraction and this also tends to help with identifying the trajectory of the implant to be placed. It is also possible to use Guided surgery with the utilization of the CBCT generate surgical guide. The implant osteotomy is prepared through the surgical guide all through the process and at times even the implant is placed through the guide. This is a viable option but can be a lengthy process with more expense added to the case. The attached photos are examples of clinical cases of extractions without flap reflection where an implant was placed immediately following the MIDIS protocol. Bone grafts can be placed to bridge the gap between the implant and bone although it may not

Picture G



Picture H



Pictures G and H – Note the implant positioning without any trauma to the tissues. Note the intact keratinized gingiva maintained along #8

..... always be necessary. Most times suturing is not even required as there is no flap to approximate and at times the size of the healing abutment may seal the coronal part of the socket.

The peri-implant tissue has been described by most dental gurus as very difficult to manage once it has been compromised. With the advent of technology and advancing evidence of science, there is no reason that MIDIS cannot be incorporated in everyday clinical practice for selected cases. When indicated, it can help provide predictable soft tissue results that may otherwise not be possible or lead to compromised esthetic results requiring additional surgical and restorative procedures. ■