A novel solution for anterior implant aesthetics
Implant placement combined with hard- and soft-tissue augmentation via the VISTA technique

For achieving an appearance similar to natural teeth, adequate hard- and soft-tissue support is a prerequisite to implant placement in the ideal position. From a prosthetic point of view, the ideal position for an implant usually requires the establishment of a significant amount of bone and soft-tissue volume using grafts in order to maintain aesthetics during the healing process and tissue remodelling. An aesthetic outcome therefore still remains challenging, even for an experienced clinician.

The creation of a natural and harmonious restoration in the aesthetic zone has stimulated debate among clinicians for at least a decade. In this case report, hard- and soft-tissue augmentation was performed simultaneously with implant placement utilising the Vestibular Incision Subperiosteal Tunnel Access (VISTA) technique. With the help of this technique developed by Dr Homayoun Zadeh, it is easy to regenerate damaged labial bone and close the jumping gap of extraction sockets. Moreover, it can improve blood supply and soft-tissue stability.

Table 1: The extraction defect sounding classification.

<table>
<thead>
<tr>
<th>Defect Type</th>
<th>General Assessment</th>
<th>Bone</th>
<th>Brand Bone</th>
<th>Relative Bone</th>
<th>Hard Tissue</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Predictable</td>
<td>Thin</td>
<td>0 mm</td>
<td>0–3 mm</td>
<td>Achievable</td>
<td>Immediate</td>
</tr>
<tr>
<td>2</td>
<td>Moderate damage</td>
<td>1–2</td>
<td>Thin or dark</td>
<td>3–5 mm</td>
<td>Site preservation</td>
<td>Site preservation or immediate implant placement (two-stage)</td>
</tr>
<tr>
<td>3</td>
<td>Severe damage</td>
<td>2–3</td>
<td>Thick or dark</td>
<td>6–8 mm</td>
<td>Compromised</td>
<td>Site preservation or immediate implant placement (three-stage)</td>
</tr>
</tbody>
</table>

Since 2002, many articles focusing on immediate or early implant placement in extraction sockets have been published. Studies have shown that immediate placement can reduce treatment time. However, this involves different classifications and treatment recommendations. In 2005, for example, Dr Joseph Kan introduced a novel classification for immediate implant placement, in which buccal bone and biotype are carefully measured (Table 1). For Class 1 and 2, immediate implant placement is possible and predictable.

Soft-tissue contour is a concern in aesthetic restoration. Therefore, Kan tested a new technique called the bi-laminar subepithelial connective tissue augmentation and showed a higher survival rate for grafts in the aesthetic region. The VISTA technique is a new concept in aesthetic implant dentistry. Instead of making a horizontal incision in the sulcus or in the gingival margin contour. In this way, more blood supply is preserved and keratinised tissue remains intact. Overall, the VISTA technique reduces tissue remodelling and retains soft-tissue appearance, which results in a better clinical aesthetic outcome.

Clinical case report
A 48-year-old female patient of Asian ethnicity presented for treatment of tooth 21, which had been extracted the week before owing to trauma. She did not smoke, nor did she have any systemic disease. She also showed no signs of recreational drug abuse. No known drug allergy was reported. Generally, she was a healthy middle-aged woman (Figs. 1–4).

The clinical examination revealed a relatively healthy periodontium, with localised bone destruction visible on tooth 27. Previously, tooth 11 had been treated endodontically. She had a Class I interdental occlusal relationship, but denied bruxism and therefore the use of night-guard protection. There was no temporomandibular joint disorder and the head and neck examination was within normal limits.
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The extraction socket was healing with granulation tissue after one week. The CT image showed about 10 mm (mesiodistally), 7 mm (buccolingually) and 22 mm (coronal-apically). According to Kim's sagittal root classification, the sagittal root position was Class IV.

Local anaesthetic was administered (2% lidocaine with 1:100,000 epinephrine). The granulation tissue was then removed and buccal bone thickness was measured. According to the periodontal probe measurement, the buccal bone was very thin, as we could feel the vibration of the buccal plate. Therefore, hard- and soft-tissue augmentation were indicated in this particular case (Figs. 18–23) and the VISTA technique was consequently performed.

A vertical incision was made first on the middle frenum, 2-5 mm apical from the papilla in order to preserve the papilla. A Buser periosteal elevator was used to raise a full thickness flap from the vertical incision. The flap was extended to the bottom of the vestibule and coronal to the straight buccal surface of the sulcus at the extraction site (Figs. 14–17).

After the flap had been reflected, the loss of buccal plate could be observed at the extraction site. In order to obtain a good primary closure after grafting, connective-tissue grafting for coverage was recommended. After connective tissue had been harvested, platelet-rich fibrin was placed into the donor site, and sling sutures were used to achieve a good closure and haemostasis (Figs. 16–23).

Drilling was performed in accordance with the recommendation of the manufacturer of the implant system. The ideal implant position was determined to be 2.5 to 3 mm apical to the buccal gingival margin, with 1.5-2 mm between the implant and adjacent tooth and with 2-3 mm from the cervical height of contour to the buccal surface of the implant platform. After the osteotomy had been performed, a 4 x 14 mm platform-switching implant was placed, which achieved good initial stability (Figs. 24–28).

Two membranes were placed horizontally and vertically to augment the site via the vertical incision. Freeze-dried bone allograft mixed with heparin bone was used to maintain the volume. After that, the connective-tissue graft was sutured to the flap to cover the socket. The vertical incision was then closed and the graft was held in place (Figs. 29–36).

After four months of healing, a simple second-stage surgery was performed. Only a single incision was required to replace the healing abutment, which helped to push soft tissue buccally to improve appearance (Figs. 37–44). Two weeks later, after the soft tissue had healed, an open-tray impression technique was used to fabricate the final restorations on both teeth 11 and 21 (Figs. 43–44). Figures 53 to 60 show the seating of the crowns.

At the half-year follow-up appointment, a CT scan showed that the bone graft was stable. A harmonic result had been achieved (Figs. 57 & 58).

Discussion

Articles on immediate or early implant placement recommend preserving the labial bone and augmenting the soft tissue, changing the mucogingival position. In areas demanding high aesthetics, it rarely achieves satisfactory results. Fortunately, the VISTA technique with hard- and soft-tissue augmentation can help clinicians without preparing the blood supply and more easily maintain an intact gingival margin. In this case report, hard- and soft-tissue augmentation was performed simultaneously with implant placement. By utilising the VISTA technique to regenerate damaged labial bone and to close the jumping gap of the extraction socket, blood supply is improved and soft-tissue stability is increased. The VISTA technique can offer great benefits to the patient and operator, and it can shorten treatment time in the aesthetic zone.

In Asian populations, ideal candidates for anterior immediate implantation are rare unless the criteria stated above can be met by performing augmentation procedures. Combining immediate implantation with a lamellar subepithelial connective-tissue graft can change soft tissue from a thin to a thick biotype and offer better resistance to long-term remoulding and physical trauma. However, hard-tissue augmentation remains almost impossible.

In order to perform a bone-grafting procedure, an open-flap and tension-free peristaltic releasing incision is usually used in order to achieve adequate volume and primary closure. Inevitably, this ends with a large wound and incorrect mucogingival position. In areas...