Peri-implant soft tissue recessions

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Introduction

A beautiful aesthetic result is difficult to obtain with im-
plants in the anterior areas. Both the alignment of the gingi-
val margin and the presence of papillae are essential elements in
resolving aesthetic implant problems to achieve an harmo-
nious smile. These two soft tissue entities, however, are
closely related to the patient’s biotype and to the quality/
quantity of underlying structural alveolar bone.

The peri-implant gingiva, particularly if it is narrow, with a
thin-scalloped biotype, inevitably retracts six months after
the abutment connection and restoration, owing to the refor-
mation of the biologic space (Small and Turnow, 2000).

The process of soft and hard tissue healing must be under-
stood and incorporated into a carefully coordinated se-
quence of therapy. It is also im-
portant to identify complica-
tions and clinical mistakes and their implications on the final
esthetic outcome (Saadoun et al., 1999).

How then, should soft tissue recession (bone and gingiva)
around an implant be pre-
vented or treated?

Prevention of peri-implant recession

Marginal bone loss of 1 mm in the first year following the
abutment connection, fol-
lowed by loss of 0.2 mm per
year, were among the criteria
defined for implant success (Albrektsson et al., 1986). Sav-
ing a few teeth of a millimetre of bone around an implant does
not increase the longevity of the implant, and should be
done only for aesthetic rea-
sons. To prevent or to decrease peri-implant bone resorption
and consequent gingival re-
cession following implant restorations in the anterior zone,
several strategies have been suggested, which are ex-
plained in detail in the follow-
ing points.

1) Implant design and diameter

The design of the collar of the implant should stabilize the
crestal bone by bringing the roughened surface right up to
the platform, and the threads/microgrooves as close
as possible to the platform, with no divergence of the col-
lar walls.

The thread position of the implant determines the effec-
tive level of remodelling after loading, and this is perhaps
even more important than the position of the implant abut-
ment microgap. (Rompen et al., 2005).

Placement of the implant platform 1.5-2.5 mm above
the bone, helps to minimize bone loss as the biological space
around the implants is estab-
lished on the collar (Lezly
Miller, 2003).

2) Implant placement and extraction timing

To make the best choice be-
tween different alternatives of implant placement, a precise
pre-surgical diagnosis is nec-
essary in order to evaluate the
implant-related parameters, to determine the optimal mo-
tem to extract the tooth and place the implant, and to de-
cide whether implant place-
ment and loading should be immediate, early or delayed
(Saadoun and Landsberg, 1997).

Orthodontic treatment is the best solution for patients
who wish to limit the surgery required for the placement of
implants to a single session, and to enhance the hard and
soft tissue profile prior to ex-
traction and implant place-
ment (Salama et al., 1993).

5) Flap design

On healed site the limited
flap design minimizes inter-
proximal bone and papillae
loss. Many flap design have
been described for healed
sites, some raising the total in-
ter proximal papillae with su-
cular incision around adjacent
joints, others using mid-cervical/
palatal crest incision with sul-
cular envelope flap and, fi-
nally, tissue punch flap recom-
mended in large amount of keratinized gingiva.

Flapless approach using tis-
ssue punch procedure has many
advantages: less trauma to the
bone and disturbances to the
soft tissue stability, reduction
of pain and oedema, and less
past surgical information.

Immediate implant place-
ment after extraction is usually
a flapless surgical procedure, the extraction being done us-
ing a periostome to minimize traumatic damage to the hard
and soft tissues.

4) Tridimensional implant placement

Satisfactory morphology of
the papilla and of the gingival
margin after anterior implant restoration depends ultimately
on two factors: implant place-
ment (Esposito et al., 1995),
(Saadoun et al., 1998, Jo-
avanic, 1999, Grunder et al,
2005) and implant restoration.

The tridimensional criteria
for implant placement in the aesthetic zone are:

• Mesio-Distal: 1.5-2.5mm be-
tween implant and adjacent
tooth 3.5-4mm between im-
plant and adjacent implant
• Bucco-Lingual: 2.5-5.5mm from the cervical height of
contour of the adjacent teeth
against the buccal surface of
the implant platform.
• Coronol-Apical: 2.5-3.5mm apical to the buccal gingival
margin depending on the bio-
type

Therefore, if immediately
post extraction implant place-
ment is indicated, the os-
tonomy must be performed
against the palatal wall to pre-
vent any damage to the re-
main (and usually thin)
buccal cortical bone (Testori,
2003).

5) Connective osseous grafts

An autogenous bone and
xenograft with a membrane is
used to gain buccal thickness
knowing that bone resorption/ gingival recession always oc-
curs after extraction/implant placement.

Gingival biotype plays an
important role in determining
tissue levels achieved around
implants. A thin biotype is gen-
erally more susceptible to peri-
implant recession, induced by
the resorption of a thin latal
rugal plate. The use of os-
seous and connective grafts
converts a thin gingival biotype
into a thick gingiva (Mathews,
2000), which can enhance gin-
gival marginal stability and

diplay tissue management
during the restorative treat-
ment phase.

6) Abutment and restoration

Optimal aesthetics will be
promoted if the final abutment
is installed at the time of im-
plant placement, and left in
place undisturbed, throughout
the final restoration phase,
avoiding disturbance of bone
and soft tissue architecture.