The endo-implant algorithm

A clinical case demonstrates the surprising importance of endodontists in dental implant treatment planning

By Jose M. Hoyo, DMD

There’s a new vision in dentistry that is gradually being recognized and is referred to as the endo-implant algorithm. This new approach considers the role of the endodontist as critical in considering whether a tooth can be saved or whether extraction and replacement with a dental implant is the correct treatment protocol.

An endodontist is in the unique position to evaluate critical factors leading to endodontic failures in order to determine whether another endodontic procedure will lead to a predictable and successful outcome. Should the outcome not be favorable, then extraction and replacement with a dental implant would be the protocol to follow.

In considering the ideal treatment plan, it is imperative to provide the patient with all treatment options, as well as the financial cost and procedures associated with each treatment option. The patient is thus given the opportunity to make an educated decision as to the best treatment protocol for him or her.

The information presented to the patient should include the endodontist’s opinion regarding which treatment option is more practical and predictable.

For example, a patient with a non-contributory medical history was referred to my office for evaluation of the maxillary left first molar. The patient was asymptomatic, and the tooth had been endodontically treated by a general dentist approximately seven months prior to the consultation and had never been restored. Clinically, it presented extensive decay, probing depths of 3 mm all around, exposure of the obturation material to the oral cavity and no temporary restoration. Radiographically, no periapical lesions were detected, and the bone levels around the tooth were adequate (Fig. 1).

In order to determine the integrity of the tooth structure, some excavation was performed using 4.5x magnification and supplementary illumination, provided by a fibre-optic headlight, with a dental rubber dam for isolation. After the removal of some decay, a bitewing X-ray was taken (Fig. 2) and the following was determined:

a) the floor of the pulp chamber replacement with a dental implant is the correct treatment protocol.

Fig. 1: Pre-op radiograph prior to extraction.
was too shallow;
b) it was too close to perfora-
tion and
c) the peri-radicular dentine
was so thick that it was
expected to support a
permanent restoration.

These critical factors, in my
opinion, rendered the tooth non-
restorable.

It was recommended that
the patient proceed with the
dental implant treatment
using implants to con-
serve the space or tooth in
question.

The bigger picture

It is very important in evalu-
ating treatment using implants to con-
sider the entire dentition and not
just the space or tooth in ques-
tion. It should be borne in mind that
implants, unlike teeth, do not move,
and if there are any mis-
alignments in the dentition, orth-
odontic treatment prior to implant
therapy is imperative should the
patient proceed with the dental
implant at a later stage.

If the treatment plan is not in
this sequence, the dental implant
could become a challenging obsta-
cle during the orthodontic treat-
ment.

The patient was prescribed
500 mg Amoxicillin (one every
six hours, beginning two days
before the next appointment) and
Chlorhexidine rinses (three times
a day, also beginning two days
before the next appointment).

The use of tartar-control tooth-
paste was also recommended in
order to avoid staining of teeth.

On the day of surgery, the patient’s
blood pressure was 119/75 with a
heart rate of 76.

Under local anaesthetic (Lido-
caine 2 percent HCI with epi-
nephrine 1/50,000 x 2 cpl) and using a
dental rubber dam, magnification
loupes and supplementary illu-
mination, the tooth was sectioned
into three pieces.

The rubber dam was removed,
and using PDL-Evator elevators
(Salvin) all three roots were
extracted without any complica-
tions.

Spoons were used to curette
the socket in order to clean any
granulation tissue and engage the
canals of mineral and collagen from the
area were then grafted with a
mixture of DBX and MCP using
a marshmallow technique. This
grafting mixture helps the site
produce its own bone in terms of
mineral and collagen from the
DBX, and it provides a better scaf-
fold effect from the MCP. The area
was covered with a PTFE mem-
brane, slightly tucked under the
perioistium (not more than 2 mm).
Sutures were done with polygly-
icolic acid using a criss-cross four-
s corner technique (Fig. 5).

Removing the sutures
The sutures were removed two
weeks later. Two weeks after suture
removal, the patient was
seen again for the removal of the
membrane. This was done by gen-
erally picking at the membrane with
cotton pliers and exerting pull
on it — there is often no need for
anaesthesia.

The benefit of using this
allograft cocktail is that the
waiting period for re-entry was
approximately four to six months
versus six to nine had a xenograft
been used. The quantity and the
quality of the bone appeared to be
much better with the use of this
allograft cocktail.

At the time of re-entry, the
patient’s blood pressure was
113/69 with a heart rate of 64
(Figs. 4, 5). Under local anesthetic
(Lidocaine 2 percent HCI with epi-
nephrine 1/50,000 x 2 cpl), a tissue
punch access was done using a 3,8
tissue punch XiVE drill (DENT-
SPLY Friadent).

The pilot drill from the ANKY-
LOS implant system (DENTSPLY
Friadent) was then used to drill 6
mm, just short of the sinus floor
(Fig. 6). A series of XiVE osteo-
tomes, from size 2.0 up to 3.4,
were used to perform a sinus lift
using the Summer's technique.
The osteotomy was prepared to a
depth of 11 mm (Fig. 7).

A Valsalva test was performed
to ensure that the sinus had not been
perforated. An ANKYLOS implant
A11 (3.5 mm x 11 mm) was placed
and primary stability was obtained.
The density of the bone perceived
as D-3 during the drilling stage,
likely changed to D-2 with the use
of the osteotomes.

The implant-transfer mount was
removed, as was the cover
screw that came pre-mounted
inside the implant, and a 1,5 mm
sulcus former (healing abutment)
was placed into the implant (Figs. 8, 9).

Conclusion
This case clearly demonstrates
one of the reasons that endodon-
tists are becoming increasingly
involved in implant dentistry.

They are able to provide a com-
prehensive evaluation of the tooth
in question, and they are able to

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present the patient with the best options based on clinical assessment.

Fig. 6: Guide pin in osteotomy following use of 2 mm pilot drill.

Fig. 7: Radiograph showing XiVE osteotome in place during the osteotomy.

Fig. 8: Radiograph of implant with sulcus former (healing abutment); the apical portion of the implant is under the Schneiderian membrane.

Fig. 9: Bitewing X-ray showing subcrestal placement of implant with sulcus former in place.

About the author

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