Anatomical pin: A clinical case report

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Endodontic treatment of teeth with significant coronal destruction is a very common clinical procedure in the restorative clinical practice. When we are faced with this clinical situation, there will be an eminent need for the use of intra-radicular retainers to obtain greater stability and retention of the restoration to the remaining teeth.¹ ²

The use of an anatomical pin is proposed for the rehabilitation of anterior teeth with extensively compromised root canals and with significant loss of dentine tissue.³ In this restorative method, in addition to the fibreglass pin, a compound resin is used to model the radicular conduit with the objective of reducing the space that would be filled by the resin cement.

In this way, the combination of two restorative materials (pin and compound resin) will serve and behave biomechanically as a replacement of the dentine structure lost.⁴ Anatomical pins have an extremely favourable prognosis in cases of fragile roots due to loss of dentine structure and they contribute significantly to the rehabilitation of the tooth in terms of both masticatory function and aesthetics.⁵ In addition, the fibreglass pins have a more uniform distribution of tension in the occlusal and radicular regions compared with metal pins.⁶ Etching and silanisation of the pins are of the utmost importance for promoting interfacial adherence, especially in the region prepared for the core.⁷ ⁸

This study reports on a clinical case that demonstrates the preparation technique for the anatomical pin, using fibreglass pins and compound resin, in a maxillary central incisor with weakened roots, with the objective of re-establishing the coronal portion of the tooth.

Case report

A young male patient came into the integrated dentistry clinic at Universidade Severino Sombra needing restorative treatment of tooth #21. In the clinical and radiographic examination, significant coronal destruction and satisfactory en-
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Dodontic treatment were noted (Figs. 1–3).

Restoration with an anatomic-
cal pin was proposed to the pa-
tient, in order to recover the func-
tion and aesthetics of the tooth and provide for future rehabili-
tation of the tooth with a full ceramic crown.

First, the decayed tissue was
removed from the remaining
tooth structure and the fibre-
glass pin was selected (Exacto
& 3, Angelus) as well as the ac-

cessory pins (Reforpin, Angelus,
Fig. 4).

The radicular conduit was iso-
lated with mineral oil and the com-
pound resin was applied (Fill Magic
NT Premium, Vigodent/COLTENE)
over the remaining tooth with the
aid of a & 1/2 Suprafil spatula
(55 White, Figs. 5 & 6).

After filling of the conduit with
resin, the Exacto pin and the pre-
silanised accessory pins (Silano,
Angelus) were inserted with the
application of an adhesive (Fusion-
Durallink; Angelus, Figs. 7–9).

Next, the initial photoactivation
was conducted on the pin and resin for
20 seconds.

Finally, the coronal reconstruc-
tion was performed with the
previously used compound resin in
incremental portions and photoac-

tivation was conducted (Figs. 10 & 10).

A marking was made on the
most incisal portion of the pins to
guide the subsequent cropping of
the pins (Fig. 12). The anatomical pin
was then removed and the final
photoactivation was performed for
40 seconds (Fig. 13).

Soon after, the pin was adapted to the remain-
ing coronal structure (Fig. 14).

After the preparation phase of
the anatomical pin and coronal
portion of the core with com-
pound resin, preparation for ad-
hesive cementation to the re-
maininng tooth began (Fig. 15).

Acid etching of the pin was
performed for 30 seconds, and
then it was washed and dried. The
silane was then applied (Silano)
for 20 seconds, as well as the
adhesive (Fusion-Durallink) with
subsequent photoactivation for
20 seconds (Figs. 16–18).

After the anatomical pin had
been prepared, acid etching was
performed on the remaining tooth
for 30 seconds, followed by wash-

ing and drying it lightly to leave
the dentine moist (Fig. 19). The
dentine primer and the adhesive
(Fusion-Durallink system) were
applied and then photoactivated
for 20 seconds (Fig. 20).

The cementation was done
with auto-polymerisable resin ce-

ment, waiting a period of 5 min-
utes for the cement to chemically
set (Figs. 21 & 22). Once the cemen-
tation of the anatomical pin was
finished, the adhesive was ap-
p
plied to the coronal portion and
photoactivated for 20 seconds,
and the compound resin was ap-
p
Pplied in incremental portions for
creation of the core (Figs. 23 & 24).

In order to complete the re-
storative process, the prosthetic
preparation of the core was per-
formed for future seating of a full

ceramic crown (Fig. 25).

Conclusion

The anatomical pin constituted
a clinical alternative for coronal
and radicular reconstruction of
dodontically treated teeth with
significant destruction of dentine.
In addition to rehabilitating the
tooth, this clinical approach pro-
motes a more balanced distribu-
tion of masticatory forces with-
out compromising the remaining
tooth structure, minimising the
risk of radicular fracture.

Moreover, this restorative al-
ternative provides the possibility
of an aesthetic result with the use
of a metal-free full crown.

Editorial note: A complete list of references is available from the publisher.

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