MECHANICAL REAMING OR CHEMICAL Penetration:
AN ENDODONTIC CHOICE

Doctor Pierre FOHR - (Nice - France)
C.E.S. d'Endodontie, Docteur de 3ème cycle en Sciences Odontologiques,
member of the Académie Nationale de Chirurgie dentaire of France
Lecturer at the Faculty of Dental Surgery in Montpellier (France).

For decades, endodonty followed the evolution of dentistry. It has become more and more scientific in comparison with the empirism that prevailed in the previous generations. One would have thought that this evolution would reduce the mechanization of the dental treatments. We now notice that it did not. The new techniques and materials are being inspired by a simplified catheterization, reliable, semi-automated but remaining evidently mechanical and tending to become more and more so.

Key Words
- Heavy calcium oxide: Chemical product for endodontic cleaning
- Bioalex: Trade mark of heavy calcium oxide (O Ca).
- Expansion: Intrusion of the paste into the tooth by its affinity with the residual water.

A molecule (H2O) plus a molecule of (O Ca) gives one molecule of calcium hydroxydite: Ca(OH)2 of added initial volume. It is a molecular permutation without compression.

All the researches "in vitro" upon dentinal permeability have always shown a disparity regarding the access to the tubuli and the depth of penetration upon the same tooth. Bernard's radiographics on the odontic technique prove the enormous difference that can exist between the levels of infiltration of the endosseous paste. Now, the permeability to our products of treatment is identical towards infection. There are zones of low and high resistance, and a gangrenous tooth will not be uniformly invaded by bacteria and microbes.

When we consider the shaping of the tooth and the regularity of a reaming, we are bound to observe that in certain dentinal zones, we eliminate some healthy tissues while in others we fail to eliminate some infected or affected tissues. In other words, the mechanical procedure is far from being perfect, and it will always be necessary to keep silent the remaining organic and microbial matters; this is one of the roles of the chemical irrigation. We must also remember the iatrogenic production of smear layer produced by reaming which has to be eliminated by chelating agents. We claim that rather than having to eliminate this smear layer it is preferable to avoid producing it.

Prevention is extolled in all Medicine...

MEDICINAL NOXIOUSNESS: It is permanent works of J. Vreven - Belgium -. Inevitable and uncheekable in time and space. We believe that the risk of apical or focal (at a distance) reaction is as important with medications than by chronic infections. The only biocompatible product is calcium hydroxide. The tooth is an integral part of the whole organism and its close connections with the dasmodontal and bony environment do not permit to fill it but with biocompatible materials.

Respect of the Endodontic Structure
The endodontic gaps, and particularly the main canal, have a constant relationship with the volume of the root. Nature made them so in order to assure a maximal resistance of the lateral tooth structure to pressures and tractions. When we double or triple the canal aperture, we reduce considerably this lateral natural resistance and solidity. This weakening is all the more evident that the tooth, without its pulp possesses a dessicated dentine, more fragile and breakable. Together, these two factors weaken the natural solidity of the tooth and risks to bring about cracks.

Case n° 1: Pulp Capping

Negative 1: Pulp area penetration.
Negative 2: Capping with Bioalex + 100% O 2.
Negative 3: After 3 years complete closure of the pulp exposure - 3 layers capping.
and radicular breakage. We cannot
without major risk, distort the ideal na-
tural architecture of the tooth.

**The Chemical Remedy**

It follows from the above situation that we
must limit the remaining process to a
selective cleaning: elimination of all or-
ganic matters and micro-organisms
whenever they are and respect all healthy
or not contaminated parts. It is obvious
that is mechanically impossible.
However, the chemical and selective
washing system allows us to respect
the nature. Thanks to the heavy calcium
oxide, which is an ideal product of en-
dontal elimination. It lysates the organic
matters and bacteria. It inhibits toxins
emitted by the pulp carbolization. It inhib-
its the proteolytic enzymes. It penetrates
the tubules by its expansion in contact
with the water molecules. It caps and
respects all remaining healthy living ele-
ments (secondary canals for example) by
the presence of CO2 which reacts by for-
moving CO3 Ca (hard calcium carbonate).
Furthermore, its alkaline pH guarantees
its biocompatibility, on account of its "in-
dente" reaction of Oca + H2O = Ca
(OH)2, or calcium Hydroxide, unani-
mously recognized as being the best tole-
rated treatment product.

**Modus Operandi**

We have practiced the heavy oxide of
calcium method for the past fifteen years
with a percentage of success much higher
than with any other method that we for-
merly practiced before knowing the heav-
y oxide of calcium.

It is necessary to begin from classical
basis.
- Penetration or catheterism;
- Disinfection;
- Obturation.
But this triad operation is possible with
only one and same product: heavy oxide
of calcium, whose natural and excep-
tional properties allow us to fulfill these
three functions.

**Penetration**

It will be higher in the principal canal
thanks to the gromatic with special
reapers which are barbed branches or the
canal-finder; they are the only supple
ments that never break. The penetra-
tion is done under irrigation of NaCl
O at 3%, this alkaline product settles the
ground for the alkaline OCa. In this way
we obtain an appreciable elimination of
the canals’ contents.

**Disinfection**

It is first realized by irrigation and com-
pleted by the specific action of the paste
of OCa which is deposited with the leu-
tulo (paste filler) into the space cleared
by gromatic reamer or with canal-finder.

**Obturation or Filling**

*(In two sessions)*

The paste is allowed to completely
disinfest the tooth for about a week, the
expansion will "particularize" or distribute
the paste which will, even in certain
cases, infiltrate into the dentine.

In a second phase we eliminate the
central portion of the initial filling and
add a new paste with the paste filler
(leutenol) taking care this time, to add to
the powdered Bioalex, the same quantity
of light zinc oxide. This constitutes the
filling product.

**Filling (in one session)**

This is possible but not so reliable: the
procedure is the same, but the paste will
have to be recharged immediately with
light zinc oxide. We thus obtain the
complete filling of endodontic spaces,
thanks to the affinity of the paste with the
residual water to effect its expansion.
The complete drying of the tooth will be
accomplished, while with any other
method this would be utopian.
The OCa by its presence, will realize a
coping of living tissues on any
endodontic level. In the necrotic zones,
the paste penetrates by expansion into
canals/tooth, secondary canals, dentinoclasia.O
This is realized without compression
whose dangers are well known: septi-
egous injections (empyema).
The addition of light zinc oxide gives the
paste a great radiographic opacity and
makes it easier to apply with a paste-
filler, and also assures its durability.

**Clinical Cases**

All our cases were treated and filled with
Bioalex. Because gaps in the tooth
under treatment were identical before and
after the operation. There was no wid-
ing or alteration but the utilization of its
natural shape.

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BIBLIOGRAPHY


Negative 1: with important chronic infection.
Negative 2: Partial and apical partial filling.
Negative 3: Control after one year - the paste has been partially filled and the apical zone has been completely filled.
Case no 3: Immature tooth

Negative 1: Before treatment.
Negative 2: Treatment during same visit (fractured dentin in the root).
Negative 3: After 3 months.
Negative 4: After 6 months.
Negative 5: After 2 years formed apex.

Case no 4: Important chronic infection of apical zone

Negative 1: Necrosis tooth in 11.
Negative 2: Canal obturation during same visit.
Negative 3: After 5 months.
Negative 4: Control after 5 years.