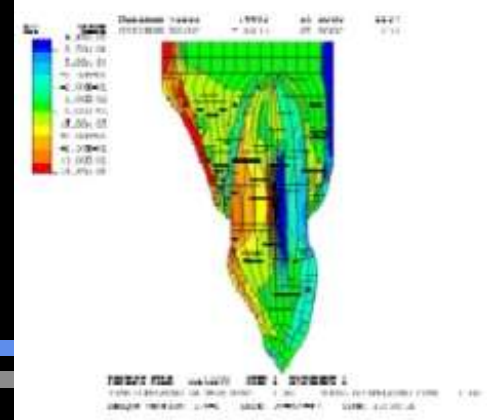




Rootposts



When is a rootpost needed (in a rootfilled tooth)?

Two contrasting views:

1. Only when there is need for retention of coronal restoration
2. A rootfilled tooth is "reinforced" with a rootpost has a better prognosis than rootfilled teeth without a rootpost

Rootposts & cores

1. Cast rootposts

1. Indirect technique

- impression

2. Direct: rootpost & resin

- Wax
- Resin
 - Accuset, ExactaCast, Luminex, GC Pattern Resin

Rootposts & cores

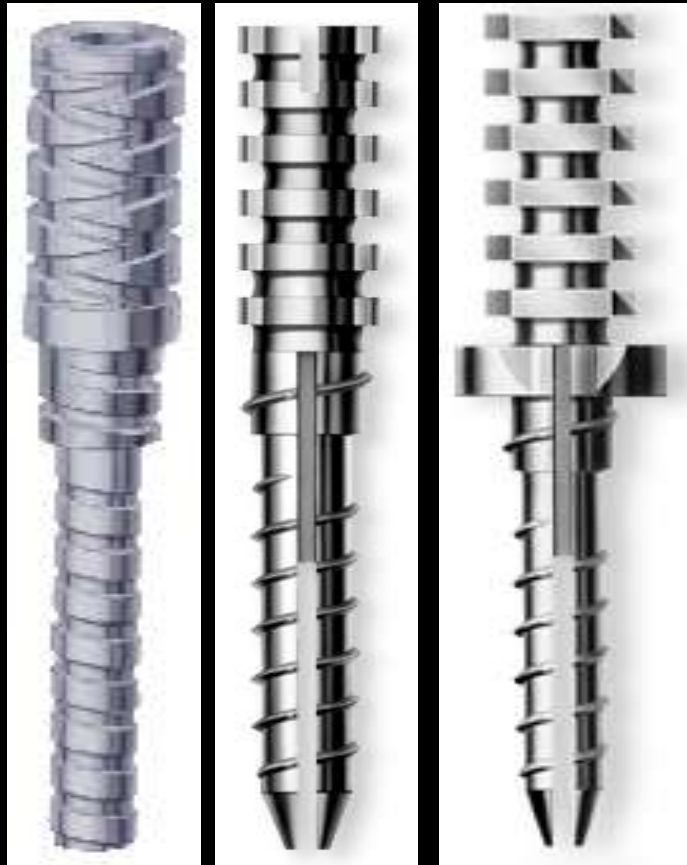
1. Cast rootposts

1. indirect
2. Direct: rootpost & resin

2. Prefabricated rootposts

1. Metal
2. Non-metal

Prefabricated rootposts in metal



Steel
Ti-Alloy
Titanium

active – Inactive?

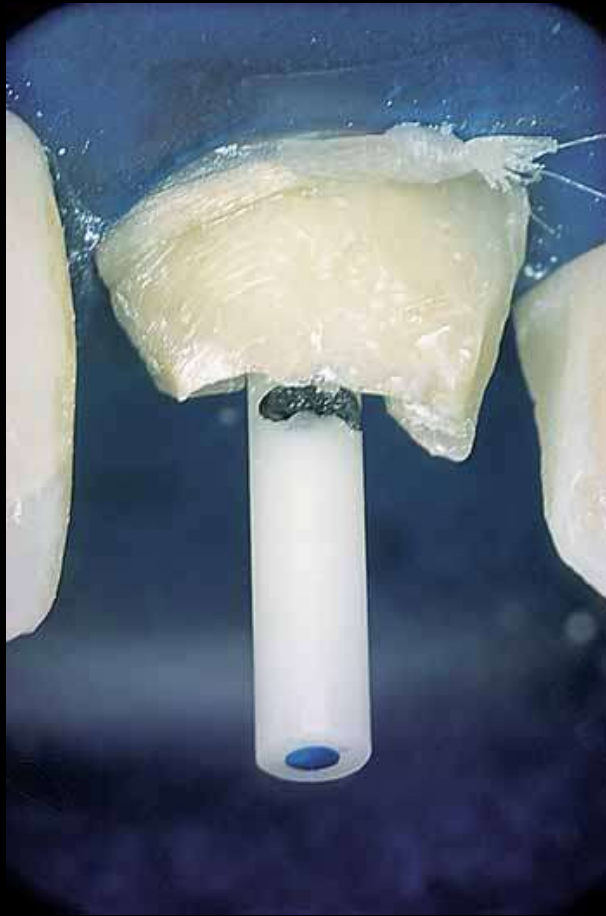
Slot?

conical
Parallel
Step

threaded
smooth
grooved

Flat
conical
Oval

Prefabricated tooth-colored rootposts



Rootposts & cores

1. Cast rootposts

1. Indirect
2. Direct: rootpost & resin

2. Prefabricated rootposts

1. Metal
2. Non-metal

Core-"shaping"

> 30 alternative "Core-pastes"

Core-materials

| | | | | | |
|---------------------|-----------|----------|-------------------|-----------|------------|
| Bis-core | Bisco | Dualcur | CuRay-support | Sci-Pharm | Dualcur |
| Bisfil core | Bisco | lightcur | Encore | Centrix | Chemcur |
| Bisfil II | Bisco | Chemcur | FluoroCore | Dentsply | Dualcur |
| Blue core | Teledyne | Chemcur | Fuji-II LC | GC | GIC-modif. |
| Build-It! FR | Jeneric | Dualcur | HardCore | Pulpdent | Dualcur |
| Ceracap | Brasseler | ceram | Infracore | Temrex | Dualcur |
| Clearfil Core | Kuraray | Chemcur | Ketac silver | 3M ESPE | Ag-GIC |
| Clearfil Photo Core | Kuraray | lightcur | Light-Core | Bisco | lightcur |
| Coradent | Vivadent | Chemcur | LuxaCore Auto | DMG | Dualcur |
| Core Paste | Den-Mat | Chemcur | MagnaCore | Bosworth | Dualcur |
| Core Paste Syringe | Den-Mat | Dualcur | Microrest Core | GC | Chemcur |
| Core-Flo | Bisco | Chemcur | Parapost Paracare | Coltene | Dualcur |
| CoreRestore2 | sds/Kerr | Dualcur | Rebilda | VOCO | Chemcur |
| CoreRestore2 HDOC | sds/Kerr | lightcur | Ti-Core | EDS | Chemcur |
| CoreShade | Shofu | GIC | Vitremer | 3M Espe | GIC-modif. |

Non-metallic rootposts - 5 main groups

ceram

1. prefabricated
2. made in dental laboratories

Rootposts in ceramics

Oldest esthetic rootpost type

Generally very hard

Surface treated as a ceramic re. etch,
silicification & cementing

Small user group, mainly esthetic

Marketing in Canada?

Difficult to remove

Can break the tooth

Rootposts in ceramics

Prefabricated

Biopost (Incermed), zirconium-oxide,
Germany around 1990

Cerapost (Brasseler) 1995

Cosmopost (Ivoclar) 1998

Laboratory-made

Cosmopost + "Cosmopuck" (Ivoclar)

In-Ceram (VITA) 1994

Non-metallic rootposts - 5 main groups

1. Prefabricated ceramics
2. Ceramics, made in dental laboratory
3. Carbon fibres encapsulated in Resin ("black rootpost")
4. Quarts fibres encapsulated in Resin ("white rootpost")
5. "translucent rootpost"

Non-ceramic rootposts

Carbon fibres (1990) Quarts fibres (1997)

Most producers offer "black" og "white" rootposts,
i.e. Resin-part are identical

Resin is epoksy, BIS-GMA or other proprietary
resins

Big variation regarding product quality, batch-
homogeneity, production prcess, etc.

Different physical-mechanical properties between
products, unknown relevance

Can be removed if need for endo-revision

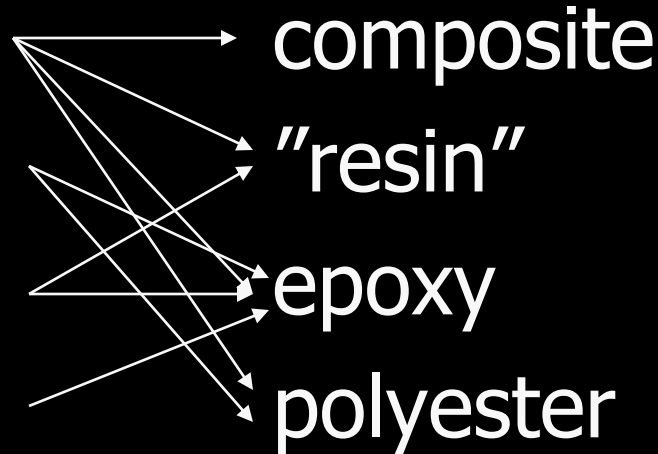
Non-ceramic rootposts - many variations

quartz

quartz+zirconia

(carbon)

quartz & carbon

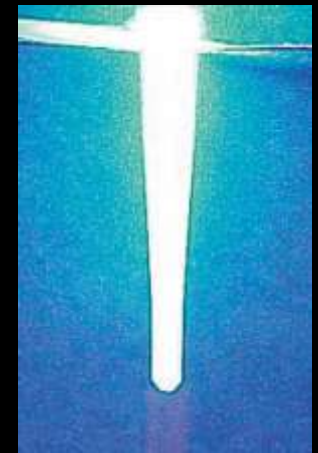


composite

"resin"

epoxy

polyester



Carbon fibres encapsulated in Resin ("black rootpost")

1. Composipost (RTD)
2. Absolu (SPA)
3. Carbonite (H Nordin)
4. Carbopost (Carbotech)
5. C-post (Bisco) (Composipost on license in USA/Canada)
6. Dental Perfect System (Dental Emco)
7. Miratfite Carbon (Hager) (Carbonite – other name)
8. Top Dent kullfiberrootpost

Quartz fibres encapsulated in Resin ("white rootpost")

1. FibreKor Post System (Jeneric/Pentron)
2. Glassix (Harald Nordin)
3. Parapost Fiber White (Coltene Whaledent)
4. Snowpost (Carbotech)
5. Top Dent quartzfiberrootposts
6. Æsthi Plus post (RTD) (also promoted as "white Composipost")

Translucent - (quartz) fibre-reinforced, resin matrix, mainly polyester

1. Luscent (Dentatus),
2. Snowlight (Carbotech)
3. Endo-composipost, D.T –light post or U.M. end-light post, etc. (RTD)

Posts

Metal-Free

1. ParaPost Fiber White
Coltene/Whaledent
2. ~~Æ~~stheti-Plus
Bisco
- 3a. Light-Post/D.T.Light-Post
Bisco
- 3b. Luscent Anchors
Dentatus
4. FibreKor Post System
Pentron
5. Cerapost
Brasseler

Metal

1. ParaPost XH
Coltene/Whaledent
- 2a. Flexi-Flange
EDS
- 2b. Flexi-Post
EDS
3. OptiPost
Brasseler
4. Vlock Post
Brasseler

Need for rootposts in rootfilled teeth

Two diverging views:

1. only when there is need for retention of a coronal restoration
2. a rootfilled tooth "reinforced" with a rootpost has a better prognosis than a rootfilled tooth without a rootpost

There is no clinical documentation that a rootfilled tooth with a cemented rootpost has a better prognosis than one without

Is the root "reinforced"?

Flexible rootposts that "follows" the tooth by multi-point-loading due to "bonding" to the dentin wall. Does it reduce the risk for root fractures?

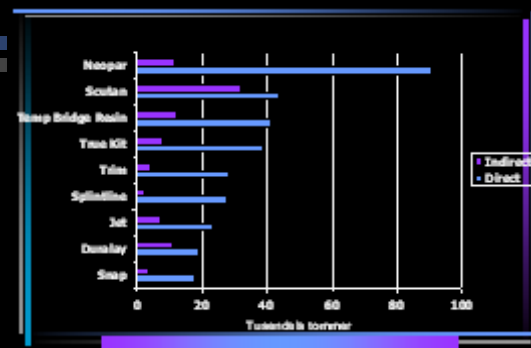
Controversial & difficult to establish

Relationship between physical data and clinical properties is complex

Effect of "root reinforcement" for clinical longevity is unknown

“Root reinforcement”

– in vitro



Many tests - no international standard

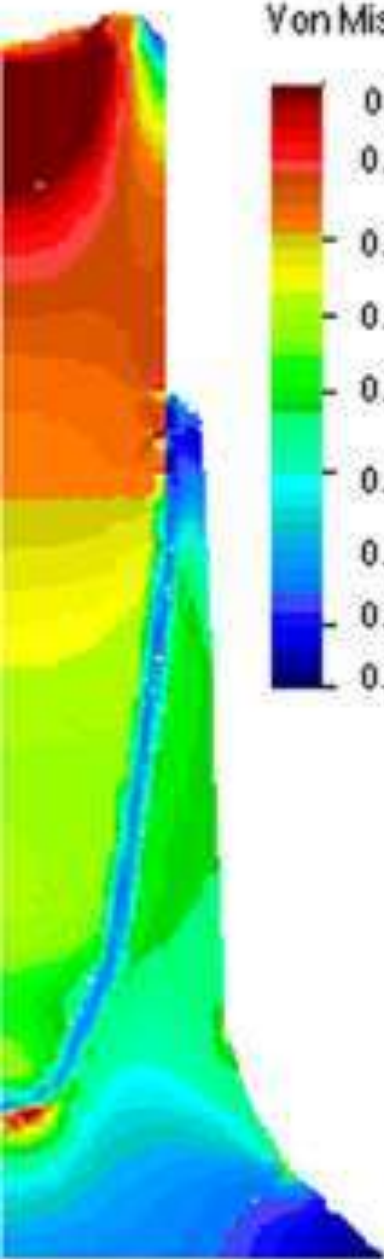
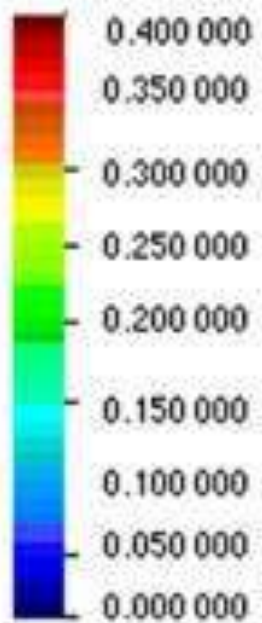
Different variables influence values:

- Slow or fast pull or bend to loosening
- Drag axially or angulated relative to tooth axis
- Varying or constant loading
- Testing in dry or wet conditions
- Time of experiment following cementing
- Storage of tooth
- Cementing area, etc.

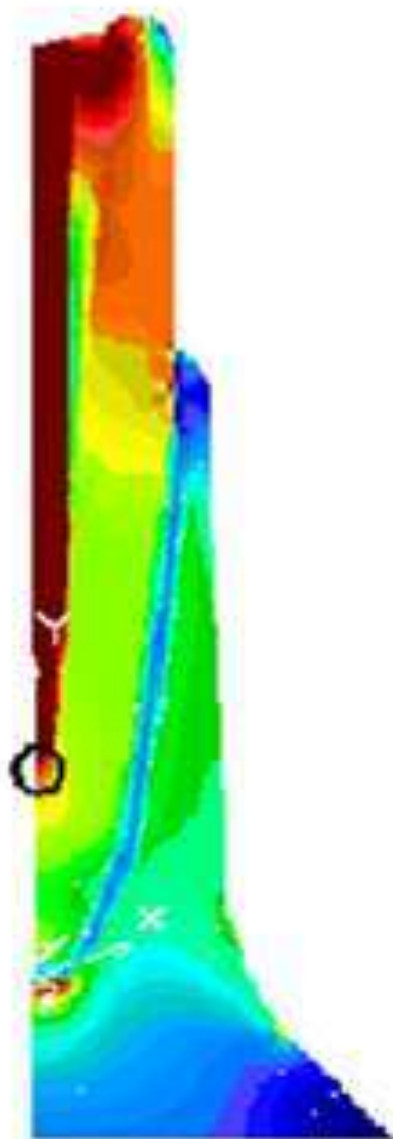
The relationship between the parameters complex

COMPARING THE MECHANICAL BEHAVIOR OF DIFFERENT POSTS ON THE RESTORED TOOTH BY THE FINITE ELEMENT STUDY

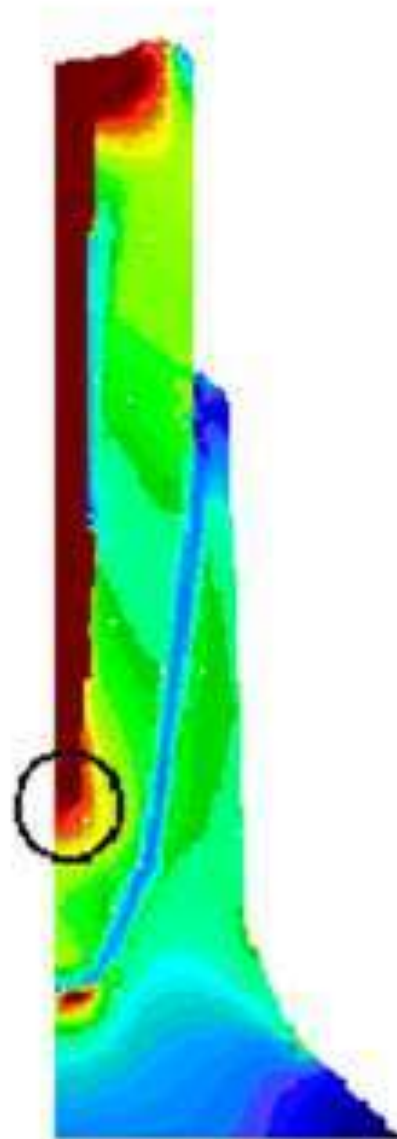
Von Mises Mpa



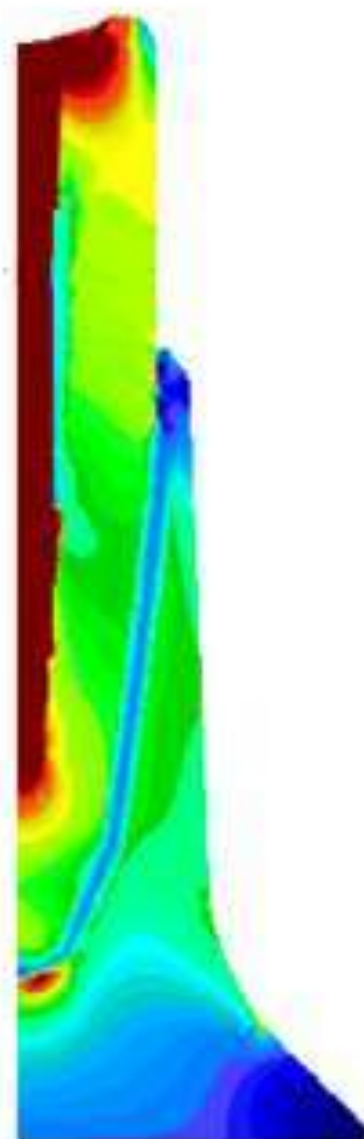
Healthy tooth



Snowpost



Steel



Carbon fiber

"Root reinforcement"

– in vivo

15 studies, mainly case-series & -studies

4 clinical trials from one producer (RTD)

short follow up of a carbonfibre post (Composipost), and a quartz fibre post (Æstheti Post). Study design obscure.

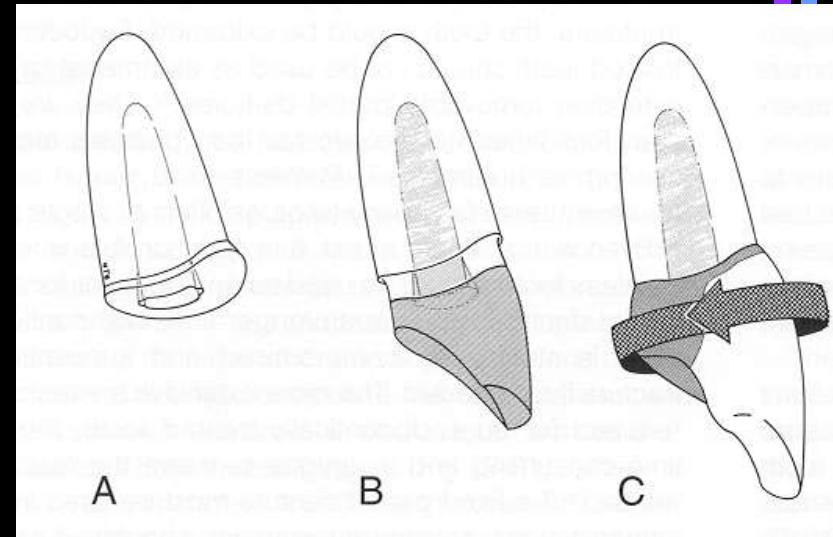
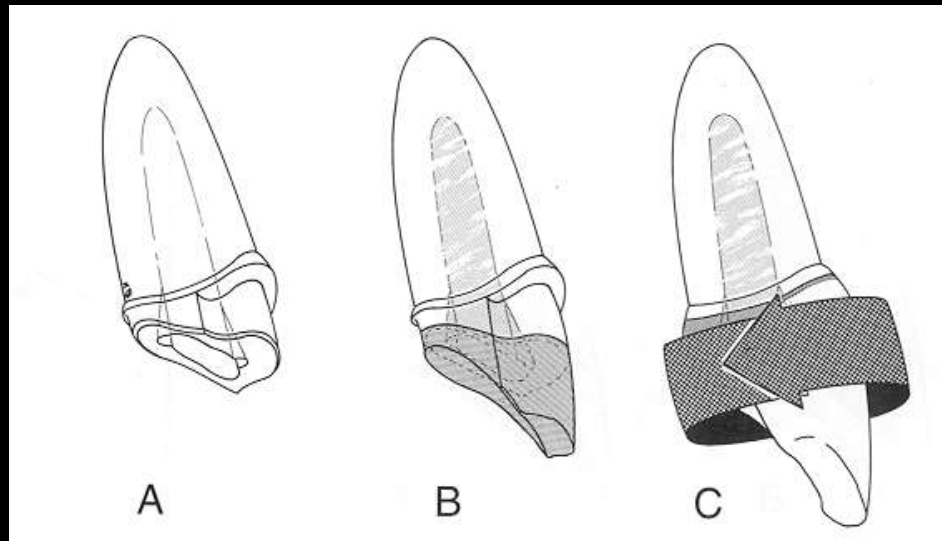
Evidence that fiber reinforced rootposts are clinically comparable to individually made cast rootposts is incomplete

General consideration

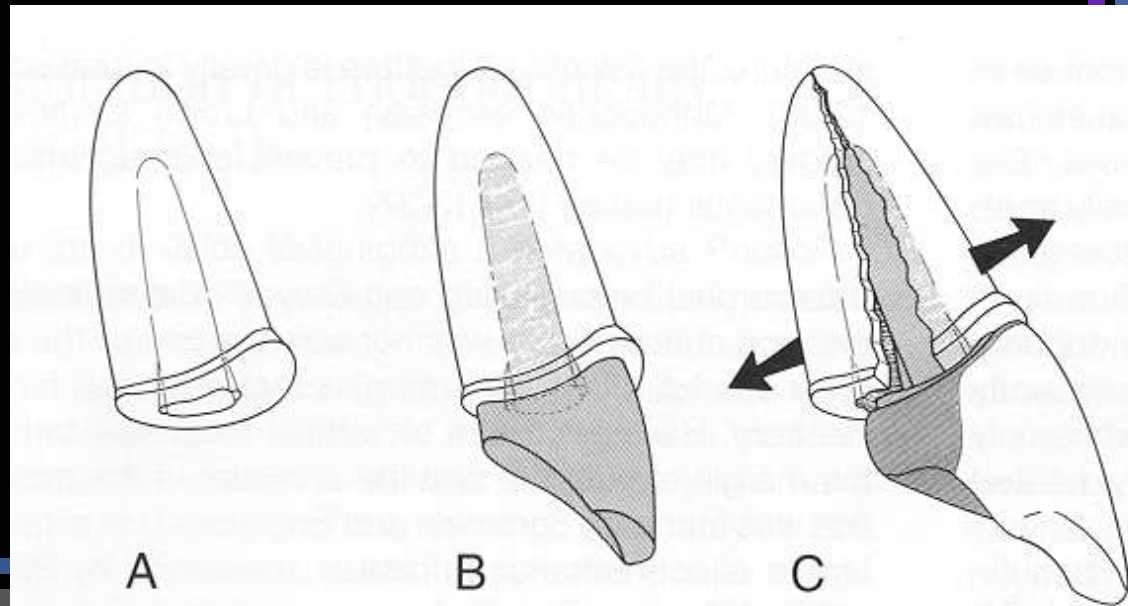
Fiber reinforced rootposts combined with coronal restoration can be attempted when the alternative is extraction or too extensive damage of the rest-tooth limit restoration from cost-benefit concerns

Carbon and quartz-fibre rootposts is a good low cost alternative to retention of coronal restoration in damaged teeth when ordinary fixed prosthetics is not choosed for economic reasons

Central principle for rootpost retention



Ferrule!



Central principle for rootpost retention

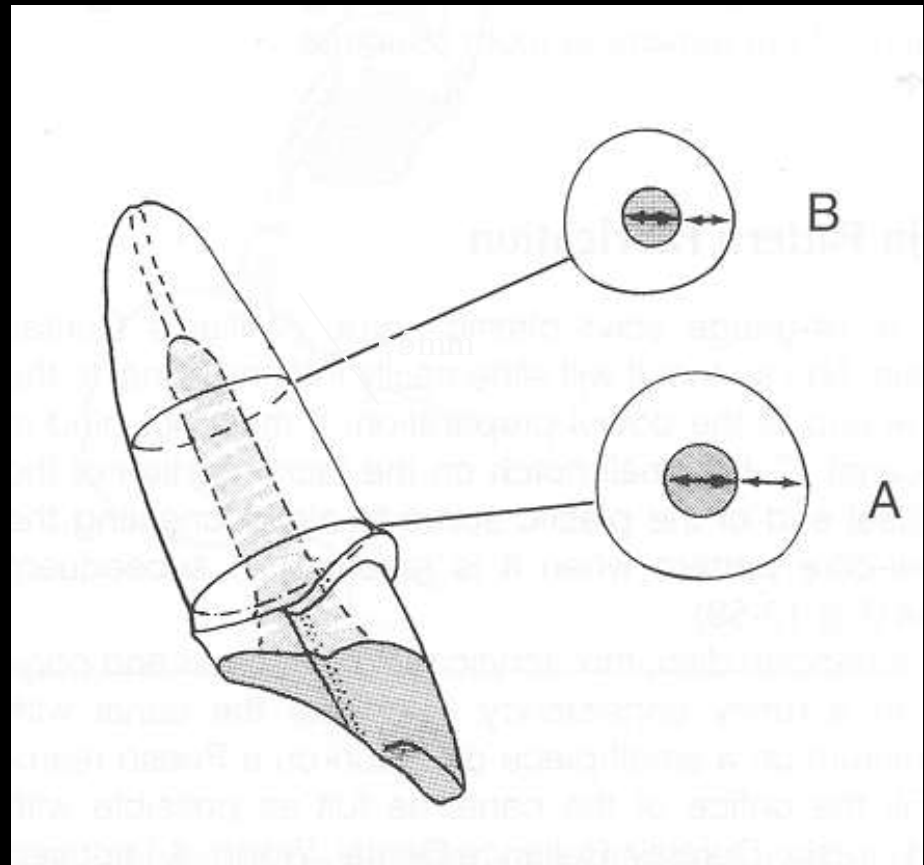
Rootpost length

Alternative suggestions:

- 9mm ideal (Turner)
- 3/4 root length (Sorenson)
- > Crown height (Shillingburg)

but

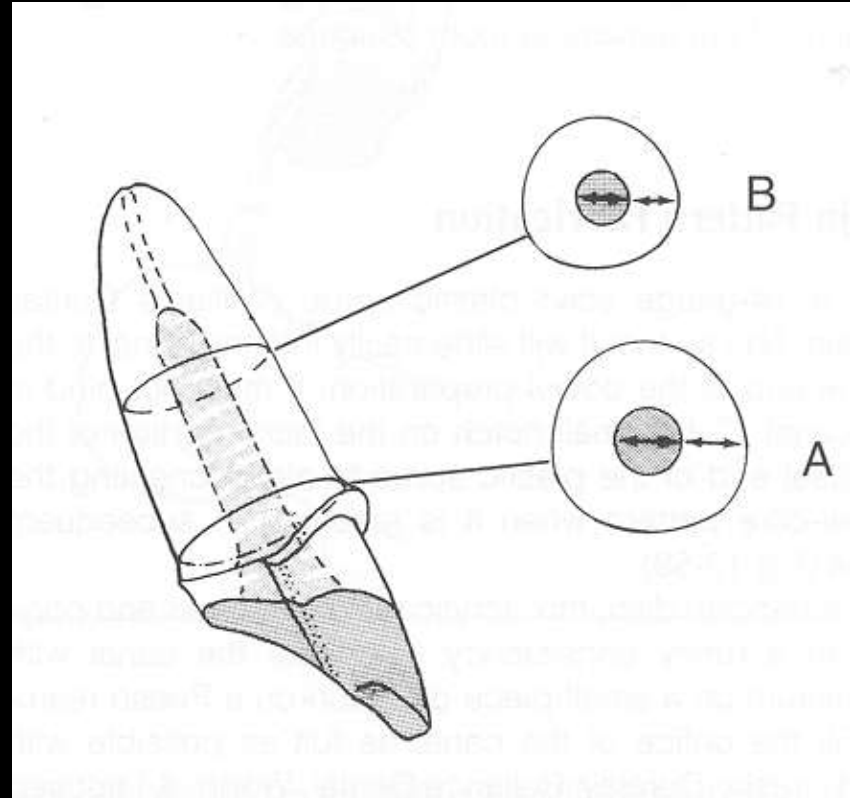
- Minimal 5mm rest - guttapercha



Central principle for rootpost retention

Rootpost diameter

- A. Max 1/3 root diameter by CEJ
- B. Minimum 2mm less than diameter



On other words: remove
as little tooth substance
as possible!