Endodontics

Long term success

Easy & fast technique

BioRoot™ RCS

Succeed.
What if you didn’t need to **compromise** between long term clinical success AND easy & fast technique?
Endodontic obturation implies facing a number of requirements.

Clinical requirements

1. Lateral and apical seal
2. Antimicrobial
3. No shrinkage

Long term clinical success

Procedural requirements

4. Easy to implement
5. Time effective
6. Cost effective
7. Easy to re-treat if necessary

Optimised patient chair time

Current techniques all have compromises

Single Cone Technique

Benefits
- Easy to implement: no learning curve.
- Time effective: a fast procedure in only 3 steps.
- Cost effective: need for Gutta-Percha and sealer only.

Drawbacks
- Lateral and apical seal limited to sealer penetration, i.e. relatively low seal.
- Sealers’ shrinkage leads to gaps and voids.

Lateral Condensation

Benefits
- Lateral and apical seal achieved by “pushing” the sealer inside the tubules & lateral canals.
- Cost effective: need for Gutta-Percha and sealer.

Drawbacks
- Lateral and apical seal limited to sealer penetration.
- Time consuming to:
  - learn the technique
  - compact each GP cone individually.
- Implementation: requires additional finger spreaders.
- Sealers’ shrinkage leads to gaps and voids.

Warm Vertical Condensation

Benefits
- Tight lateral and apical seal through melting and compaction of Gutta-Percha.

Drawbacks
- Implementation: need for a highly tapered canal.
- Time consuming to:
  - learn the technique
  - implement the technique properly
- Heat may modify properties of sealers.
- Cost: Purchase of additional equipment.
No More Compromise!

BioRoot™ RCS is easy to use and brings long term clinical success.

BioRoot™ RCS introduces the concept of Hydraulic Filling, which releases the achievement of a tight endodontic seal from technique dependence. Both the lateral and apical seal are obtained with a simple cold technique. The procedure is simple and fast while, at the same time, BioRoot™ RCS ensures long-term clinical success.

New Concept: Hydraulic Filling

- BioRoot™ RCS is hydrophilic: it flows into the dentinal tubules & lateral canals
- Crystallisation while setting: chemical bonding with dentine and tight seal
- Gutta-percha: soft core in case a retreatment is needed
- Bioactivity: it supports peri-apical healing

BioRoot™ RCS: only benefits

Clinical requirements

1. TIGHT LATERAL AND APICAL SEAL
   3-dimensional seal achieved without compaction.

2. LIMIT BACTERIAL GROWTH
   Superior calcium ion release leading to pH increase (>11).

3. NO SHRINKAGE
   Resin-free material, maintains the seal quality over time.

Procedural requirements

4. SIMPLE & EASY OBTURATION TECHNIQUE
   No learning curve.

5. FAST IMPLEMENTATION TIME
   Through placement of a single cone.

6. HIGHLY COST EFFECTIVE
   No need to purchase additional equipment, reduced cost per obturation.

7. EASY RETREATMENT
   Dissolve gutta-percha with eucalyptol and remove obturation with endo instruments.
Clinically proven

BioRoot™ RCS: similar clinical success as vertical condensation.

2 techniques compared

Single cone technique and BioRoot™ RCS* VS Warm vertical condensation of gutta-percha and AH Plus**

Success rate criteria

Non randomised clinical trial CBCT and PA radiographs were made at baseline and at 12 months recall. The increase or decrease in the size of preoperative periapical radiolucencies and development of new radiolucencies were assessed by a consensus panel consisting of two pre-calibrated examiners. At 1 year recall 104 teeth were assessed.

BioRoot™ RCS obturation with apical healing

BioRoot™ RCS obturation after retreatment procedure

What if you could reach a new paradigm?

*Septodont **Dentsply Sirona

Technical Insights

Hydraulic filling for stable chemical bonding

- Hydraulic infiltration of dentinal tubules and lateral canals
- Creates a mineral interaction zone in the dentine tubules along with biomineralisation and phosphate deposition at the dentine interface (1,2)
- The bonding of BioRoot™ RCS is chemical in nature, as opposed to resin based sealer (2) and provides tight 3D seal. (Resin-free)

Tight lateral and apical seal

- No shrinkage, less than 0.1% dimensional change maintaining seal quality over time
- Obliteration of lateral canals
- Stronger seal at short times than warm technique (BioRoot™ RCS Science File)

BioRoot™ RCS (cold technique) shows less microleakage than warm technique

Apical penetration length after teeth immersion at 37°C and 100% relative humidity for 7 or 30 days. Source: Internal Scientific file.

Bioactivity* to support peri-apical healing

- Crystallises as biological apatite inducing osteogenic** properties (5)
- Stimulates periodontal ligament (PDL) cells proliferation (5,6)

*Bioactivity: any effect on, interaction with or response from a living tissue.
**Properties of a material to bring proper conditions for bone cells to form bone.

Limit bacterial growth for obturation success

- BioRoot RCS releases twice as much calcium as Endosequence BC sealer and ten times more than MTA Filapex (1)
- Based on proprietary Active Biosilicate Technology
- Maintains high pH (7) to limit bacterial growth (3,4)
- Reduces the risk of bacterial reinfection


Fast placement

- Easy coating of root canal walls
- Rapid insertion of the Gutta-Percha point
- Optimised working and setting times:
  - Working time: > 10 minutes
  - Setting time: < 4 hours

Clinical implementation

- Take mixed BioRoot™ RCS.
- Coat the root canal walls with BioRoot™ RCS.
- Coat the apically adjusted cone with BioRoot™ RCS.
- Insert the cone gently into the root canal.
- Immediate post-operative radiograph.

Simpler & better retreatment

- Shorter retreatment times (8)
- Less sealer remnants observed (8)

Easy follow-up

- 5 mm Al radiopacity for easy follow-up on the radiograph

What if you could obturate beyond cold compaction boundaries?
### References

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**Presentation**

**35-application pack**
- 15 g powder bottle
- 35 single dose containers

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