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Short Communication

Post and Core is it a Necessity?

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Post and Core

- A post is a rigid restorative material placed in the radicular portion of an endodontically treated tooth.
- A core is a restoration the replaces the missing coronal portion of a tooth.

Figure 1

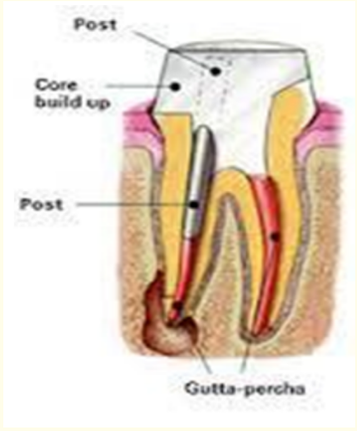

Figure 2

Requirements of Post

- High strength.
- Good retention.
- Fit passively.
- Accurately fit.
- Resist corrosion.
- Ease of removal.
- Not harmful.

Requirements of Core

- High compressive and tensile strength.
- Dimensionally stable.
- Bond to tooth structure.
- Quick setting.
- Easy manipulation.

Indications

- Restoration of badly mutilated endodontically treated teeth.
- Retainer for short span bridge when abutment is endodontically treated.
- Endodontically treated tooth with long, thick and strong root.
- Endodontically treated tooth with perfect apical and lateral root canal filling seal.
- Endodontically treated tooth without any periapical pathosis.
- Endodontically treated tooth with healthy periodontal and alveolar support.

Contraindications

- Improper root canal filling.
- Presence of periapical pathosis.
- Weak, thin, curved and very narrow root.
- Abnormal occlusion.
- Patients with periodontal problems.

Advantages

- Good retention.
- Strengthening endodontically treated teeth.
- High esthetics.
- Correction of misaligned teeth.
- Possibility to use a root.

Disadvantages

- Limited to endodontically treated teeth.
- Weakening of root due to widening to root canal.
- Root fracture may occur.

Classification

According to material

Figure 3

According to shape

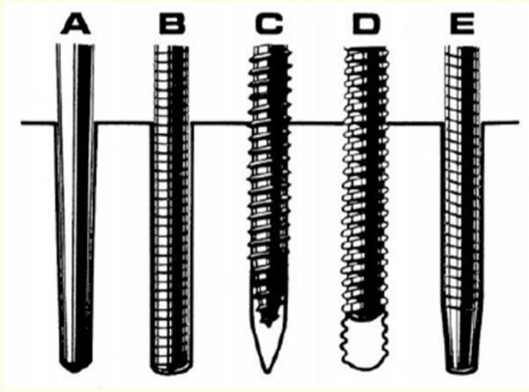

Figure 4: Prefabricated post design . A: Tapered, Smooth. B: Parallel serrated. C: Tapered self-threading, D: Parallel Threaded, Note that post fits into petnapped threads in the detin. E: Parallel serrated Tapered end.

According to retention

- Retained by post inserted inside prepared root canal.
- Retained by post and pins inserted in dentin of the coronal portion.
- Retained by post and collar.

According to attachment

Attached

Figure 5

Detached

Figure 6

According to method of construction

Prefabricated post

- Supplied in different sizes, designs and shapes.
- Can be smooth, serrated or threaded.
- They match special drills or endodontic files.

Figure 7

Custom made post

- Made from Ni-Cr, Co-Cr, Titanium and extra hard type IV Au alloy.
- Indicated in: Non-circular root canal.

Extreme taper of root canal. Amount of tooth loss > 50%

Figure 8

Fabrication of custom made post and core

- Direct Technique.
- Indirect Technique.

Types of Core Material

Figure 9

Principles of Tooth Preparation

1. Conservation of Tooth Structure.
2. Retention Form.
3. Resistance Form.

Conservation of Tooth Structure

Radicular Preparation

- Removal of minimal tooth structure from the canal to enable the post to fit accurately and passively.
- Post must not be more than 1/3 the diameter of root.
- Apex of post should be surrounded by radicular dentin by at least 1 mm.

Coronal Preparation

- Must be conserved as much as possible.
- Removal of undercuts.
- Extension of axial wall of the crown apical to the missing tooth structure (ferrule effect).

Retention Form

Post Length

- Greater post length = Greater retention.
- 2/3 length of root/post length should equal crown length.
- Maintain 3 – 5 mm apical seal.

Post Diameter

- Shouldn't exceed 1/3 diameter of the root.
- A minimum of 1 mm of sound dentin should be maintained circumferentially.

Surface Texture: Serrated or roughened post is more retentive than smooth post.

Luting Cement: Adhesive resin and Glass ionomer cements increase retention of post.

Resistance Form

Stress Distribution

- Should distribute stresses over larger areas as possible.
- Increasing post length decreases stresses.
- Parallel sided post distributes force more than tapered post.
- Avoid sharp line or point angles.
- Excess cement increases stresses.

Rotational Resistance

- Preparation of vertical coronal wall similar to a box.
- A small groove is placed in the canal wall in the bulkiest area cervically with 2-3mm length.
- Placing an auxiliary pin in the root face.

Ferrule

It is the extension of the crown margin into sound tooth structure helps binding the remaining tooth structure together which prevent root fracture during function.

Recent Posts

- Composi Post.
- Flexi Post.
- Ceramic Post.
- Luscent Anchor Post Technique.
- Parapost Fiber White Technique.
- Zirconium post.
- Light cure composite post.

Composi post

Carbon fiber reinforced root canal post.

Wide variety of posts are available and include parallel sided, tapered smooth and serrated forms.

These posts have a high tensile strength and modulus of elasticity similar to dentin.

Figure 10

Flexi Post

- Is a split shanked, parallel-threaded posts.
- Achieves maximum retention with minimal stress.
- Split-shank design absorbs stress of insertion by gradually closing under pressure.
- The post conforms and adapts to the root rather than the root adapting to the post.
- Based on the studies "The flexi post system displayed twice the retention of the other systems evaluated".
- Available in five sizes 00,0,1,2,3.

Figure 11

Ceramic post

- **Advantages:** Esthetics.
- **Dis-advantages:** Cost, Long term data are limited, Ceramic materials may have a tendency to fracture.
- **Indications:** Teeth requiring very translucent all-ceramic crowns.
- **Contra-indications:** Metallic ceramic crown is planned.

Luscent Anchor Post Technique

- The luscent anchor post (Dentatus) is a fiber glass, clear resin post.
- It is designed to refract and transmit natural tooth colors for esthetic post and foundations.
- Is Radiolucent.
- Designed to be placed passively in prepared canals.
- Available in 3 diameters.

Figure 12

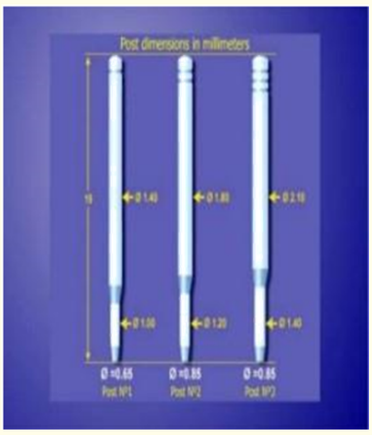

Figure 13

Parapost Fiber White Technique

- A filled resin, mono-directional fibers matrix with a flexural modulus that very closely approximates that of the natural dentin.
- White translucent.
- Available in four diameters.

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