Guidelines for Foundations

Basic Guidelines:

1) The choice of foundation is based on evaluation of the remaining tooth structure **after** decay and any existing restorations are removed.
2) It may be necessary to prepare the tooth in order to decide which foundation is appropriate. (when in doubt, prepare)
3) The **more** tooth structure remaining between the anticipated foundation material and the crown margin, the **less** important the foundation material/technique used. (and visa versa)
4) Composite materials:
   a. Should not be used when they will be in close proximity (< 2 mm) to an anticipated crown margin.
   b. Cannot be used if isolation during placement is compromised.
5) Without at least a 2 mm ferrule, 360 degrees around a tooth, the long term prognosis of any foundation, as well as the final restoration, will be compromised.
6) The preparation design of a foundation must take into account the tooth reduction necessary for crown preparation, and whether that foundation will be adequately retained after crown preparation.
7) The choice of foundation also depends on the overall treatment plan for the tooth balanced with operator's preference.

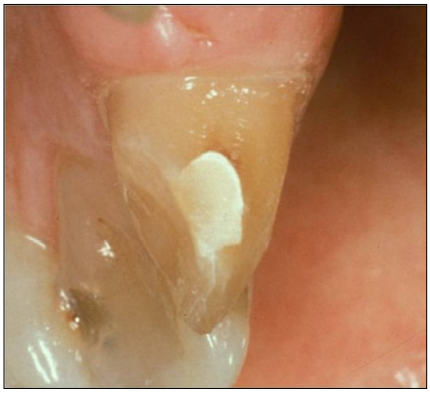
Recommended Foundations for Vital Teeth:

Materials available:

- Foundations: amalgam, composite core material
- Block-out: glass ionomer (as well as amalgam & composite)

Vital Anterior teeth:

1) Minimum missing tooth structure (block out): – operator's choice of material
2) Moderate missing tooth structure but 2-3 mm of sound tooth structure apical to the foundation: – amalgam or composite core material



Vital Anterior Minimum

Vital Anterior Moderate

3) Substantial missing tooth structure, insufficient to retain the foundation after tooth preparation (< 2mm of sound tooth structure apical to foundation): – elective RCT, (possible crown lengthening), cast post & core

Vital Anterior Substantial

Vital Premolars:

1) Minimum missing tooth structure (block out): – operator's choice of material
2) Moderate missing tooth structure:

   a. 2-3 mm of sound tooth structure apical to foundation 360 degrees around tooth, at least one marginal ridge remaining and adequate retentive features for foundation: – amalgam or composite core material

   b. < 2 mm of sound tooth structure apical to foundation in some areas but adequate tooth structure to retain foundation after tooth preparation: – amalgam
3) Substantial missing tooth structure: < 2mm of sound tooth structure apical to foundation, and/or insufficient to retain the foundation after tooth preparation: – elective RCT, (possible crown lengthening), cast post & core (see non-vital premolars)

Vital Premolars Moderate

Vital Molars:

1) Minimum missing tooth structure (block out): – operator's choice of material
2) Moderate missing tooth structure:

   a. 2-3 mm of sound tooth structure apical to foundation 360 degrees around tooth, at least one marginal ridge remaining and adequate retentive features for foundation: – amalgam or composite core material

   b. < 2 mm of sound tooth structure apical to foundation in some areas but adequate tooth structure to retain foundation: – amalgam

Vital Premolar Substantial

Vital Molar Moderate

3) Substantial missing tooth structure: < 2mm of sound tooth structure apical to foundation, and/or insufficient to retain the foundation after tooth preparation: – elective RCT, (possible crown lengthening), amalcore or pre-fabricated post (see non-vital molars)

Vital Molar Substantial

Recommended Foundations for Non-Vital Teeth:

Restoration choices: amalcore, composite core material, cast post & core, pre-fabricated post & direct core

Non-Vital Anterior teeth:

1) Minimum missing tooth structure (access opening only, with intact marginal ridges): – operator's choice of material
2) Moderate missing tooth structure, including one or both marginal ridges (2-3 mm of sound tooth structure apical to foundation): – cast post & core or pre-fabricated post & direct core
3) Substantial missing tooth structure, including both marginal ridges (< 2mm of sound tooth structure apical to foundation): – (Possible crown lengthening), cast post & core

Non-Vital Anterior Minimal

Non-Vital Anterior Moderate

Non-Vital Anterior Substantial

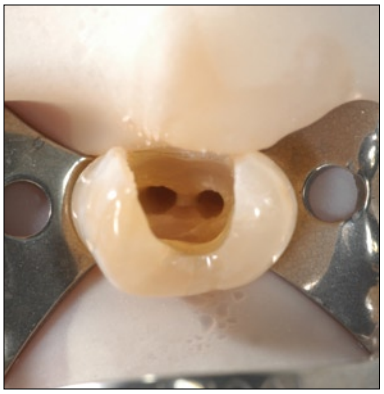
Non-Vital Premolars:

1) Minimum missing tooth structure: – operator's choice of material (**cusps should be capped if crown preparation is delayed**)
2) Moderate missing tooth structure:

   a. 2-3 mm of sound tooth structure apical to foundation 360 degrees around tooth (and adequate tooth structure/pulp chamber to retain foundation): – amalcore, composite core material

   b. < 2 mm of sound tooth structure apical to foundation in some areas, and missing one or both marginal ridges: – amalcore (adequate tooth structure/pulp chamber (>3 mm) to retain foundation) or cast post & core or prefabricated post & direct core (insufficient tooth structure/pulp chamber to retain foundation)
3) Substantial missing tooth structure: < 2 mm of sound tooth structure apical to foundation: – (possible crown lengthening), cast post & core

Non-Vital Premolars Minimal



Non-Vital Premolar Moderate

Non-Vital Molars:

1) Minimum missing tooth structure: – operator's choice of material (**cusps should be capped if crown preparation is delayed**)
2) Moderate missing tooth structure:

   a. 2-3 mm of sound tooth structure apical to foundation 360 degrees around tooth (and adequate tooth structure/pulp chamber to retain foundation): – amalcore, composite core material

   b. < 2 mm of sound tooth structure apical to foundation in some areas and missing one or both marginal ridges but adequate tooth structure/pulp chamber (> 3mm) to retain foundation: – amalcore

Non-Vital Premolar Substantial

Non-Vital Molar Moderate

3) Substantial missing tooth structure: < 2 mm of sound tooth structure apical to foundation: – (possible crown lengthening), restore with:

   a. pre-fabricated post & amalgam if < 3 mm depth of pulp chamber

   b. divergent cast post & core (resident or faculty only)

Non-Vital Molar Substantial

Additional Considerations:

1) An amalcore foundation requires a pulp chamber of at least 3 mm depth.
2) A pre-fabricated post & direct core is used when there is minimal remaining tooth structure as well as inadequate retention from the pulp chamber.