

Problem-Solving Flowchart

PROBLEM: *Unable to observe the pulp chamber floor due to excessive bleeding*

Cause

- This is usually caused by pulp tissue either in the chamber or in the canals

Remedy

- Enlarge the access by removing the pulp chamber roof without touching the chamber floor (Never touch the pulp chamber floor unless the floor-wall junction is fully seen)
- Place hemostatic agents in the chamber
- Use a barbed broach to remove the tissue

PROBLEM: *Unable to observe the pulp chamber floor due to inadequate removal of pulp chamber roof*

Cause

- Improper selection of the initial access penetration point
- Inability to see the floor-wall junction 360 degrees around

Remedy

- Return to previous bur (either round or tapered) and continue to shave back until the floor-wall junction is visualized

PROBLEM: *Unable to observe the pulp chamber floor due to restorative materials impinging onto the pulp chamber*

Cause

- Inadequate removal of all restorative material before access has begun (in particular, Class V restoration may impinge onto the pulp chamber floor)

Remedy

- Remove all restorative material before beginning the access

PROBLEM: *Calcification/pulp stones*

Cause

- Degenerating pulp

Remedy

- Following the complete removal of the pulp chamber roof and cessation of bleeding, a large smooth round bur (#6) can be used to smooth the pulp chamber floor to remove the calcification and delineate the floor-wall junction clearly

PROBLEM: *Unable to observe the pulp chamber floor due to inadequate light*

Cause

- Access too small
- Presence of crowns or restorative materials
- Lack of smooth surfaces of walls or pulp chamber floor (usually caused by too small round burs)

Remedy

- Enlarge access until floor-wall junction can be seen
- Remove restorative materials
- Use accessory light (LED headlight or surgical operating microscope) when crown is present¹¹
- Smooth all irregularities on walls and pulp chamber floor with round burs

PROBLEM: *Unable to observe the pulp chamber due to loss of orientation*

Cause

- Using occlusal surface as reference point
- Failure to observe tooth orientation such as rotated or tilted tooth
- Losing sight of CEJ circumference
- Improper angulation of initial access

Remedy

- Proper pre-access observation of tooth orientation
- Proper mental imaging of the CEJ
- Remove rubber dam during access to regain orientation
- Appropriate angle of penetration of initial access bur

PROBLEM: *Floor perforation***Cause**

- Premature attempt to identify orifices
- Failing to measure occlusal-furcal distance
- Improper identification of the floor-wall junction
- Inadequate access

Remedy

- Remove entire pulp chamber roof before identifying orifice location
- Observe floor-wall junction 360 degrees around
- Set bur at length less than occluso-furcal distance
- Direct accessing bur towards center of the CEJ perimeter

PROBLEM: *Lateral chamber wall perforation***Cause**

- Failing to mentally image the CEJ
- Improper angle of access entry
- Using occlusal anatomy to begin access penetration

Remedy

- Remove entire pulp chamber roof before identifying orifice location
- Observe floor-wall junction 360 degrees around
- Direct accessing bur towards center of the CEJ perimeter
- Choose initial penetrating access point based on CEJ imaged perimeter

PROBLEM: *Unable to identify all orifices***Cause**

- Failure to establish a complete access
- Lack of delineation of a distinct floor-wall junction
- Presence of restorative materials
- Presence of calcifications

Remedy

- Make sure a complete access is performed
- Smooth the pulp chamber floor to remove calcifications and delineate floor-wall junction
- Use laws of pulp chamber floor anatomy to identify the positions of orifices

Summary

In order to increase the success rate of endodontically treated teeth, as much of the pulp complex should be removed as is possible. In order to accomplish this, all of the root canal orifices in a pulp chamber must be found. The only rational way to do this is by utilizing the laws of anatomy of the pulp chamber floor. The only way to utilize these laws is by having an access that permits the visualization of the pulp chamber walls meeting the floor 360 degrees around. This newsletter has demonstrated and provided solutions to all of the clinical conditions that may hinder this visualization. In addition, we have presented a problem-solving flowchart that addresses all of the common pitfalls during access and orifice location that may confront a general practitioner.