



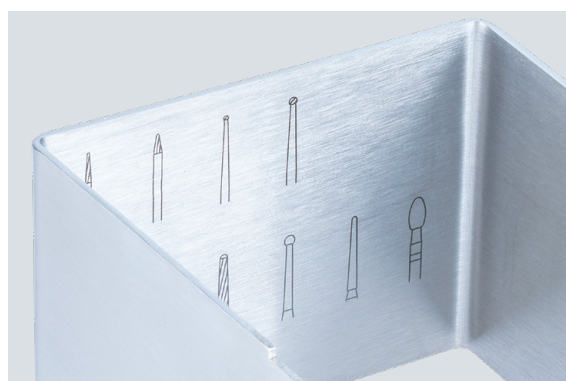
by Shanon Patel

A well-executed access cavity is the first and most important step of endodontic treatment. Locating all the canal entrances for subsequent preparation with minimal removal of sound dentine will improve the longevity of endodontically treated teeth.

There is no standardised access cavity design - the cavity preparation depends on several factors including the extent of dental caries, removal of defective restorations and negotiating calcifications as well as exploring crack lines.

The **Endo Access Kit** consists of a pragmatic set of burs for both general dentists as well as Endodontists to prepare access cavities. Their long shank burs and precision cutting tips improve vision and allow controlled, rapid removal of tooth tissue, respectively.

A novel feature of this kit includes the space to add additional bur(s), thus allowing the clinician to personalise the Endo Access Kit for their use. In addition, the reference numbers and silhouette of the burs on the bur block allow easy ordering and organisation.



Content of Kit 4697ST



EndoExplorer

Active head with tapered, extended neck for direct visualisation

- Precise, conservative removal of dentine overhangs
- Trace out isthmus between canal entrances
- Subtle refinement of the canal entrances, to enhance glide path and straight-line access
- Initial removal of gutta percha



EndoTracer

Tungsten carbide round head bur with slim neck for unobstructed view

- Controlled, rapid removal of (tertiary) dentine
- Locating calcified canals
- Conservative opening of the root canal entrances



EndoGuard

Cross-cut, non-end cutting bur with innovative cross cut design to minimize friction

- Minimise damage to the floor of the access cavity
- Tapered to prevent undercuts
- Efficient cross-cut surface for smooth, controlled preparation



H4MCL

Tungsten carbide (TG) with novel blade geometry to maximise efficiency & reduce heat generation

- Designed for cutting all commonly used metal alloys, titanium and veneers made of low fusion ceramics
- Large chip spaces allow quick chip removal and prevent clogging
- Rapid cutting through PFM crowns and amalgam



4ZR

Coarse grit diamond particles with innovative arrangement

- Rapid cutting through all-ceramic (lithium disilicate & zirconia) crowns
- Improved cutting efficiency
- Long service life



6801L

Coarse diamond round bur

- Initial access cavity preparation of enamel (and dentine)
- Suitable for pulp amputation in vital pulp therapy
- Investigating crack lines



6850

Elongated coarse tapered diamond for better visualisation

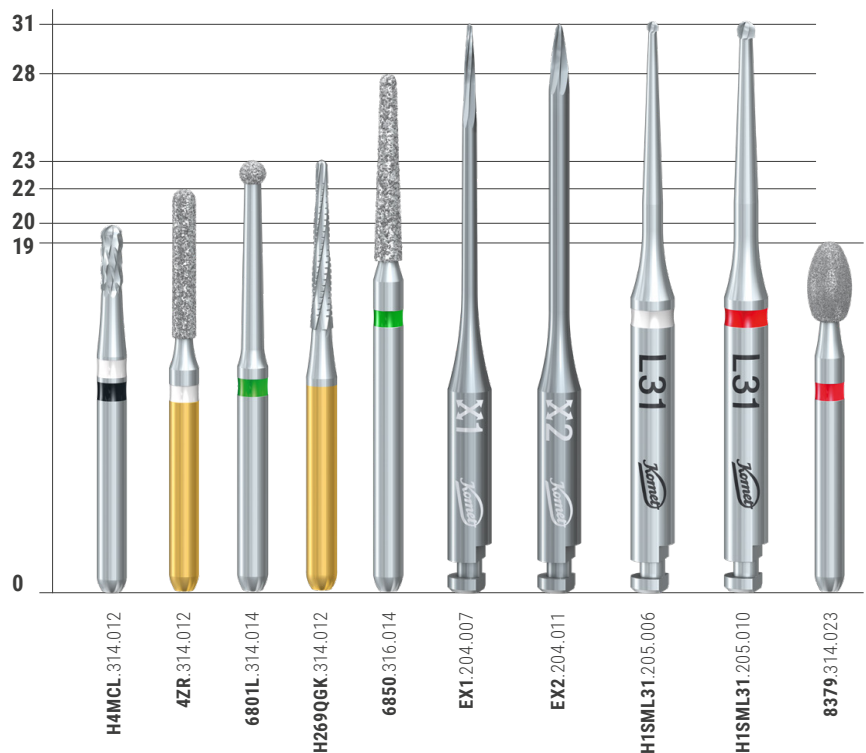
- Refining access cavity
- Vital pulp therapy



8379

Rugby ball, fine grit diamond

- Rapid adjustment of occlusal surface
- Contouring of post-endo composite restoration



Case 1

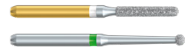
Step 2. EndoTracer

Removal of tertiary dentine
Locating MB2



Step 1. 4ZR or 6801L

Initial access



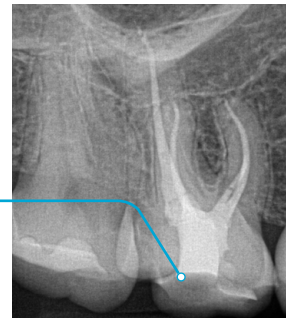
Step 3. EndoGuard

Refine axial walls



Step 4. 8379

Polishing composite



Case 2

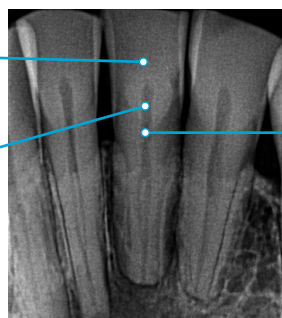
Step 1. 6801L

Initial access



Step 2. EndoTracer

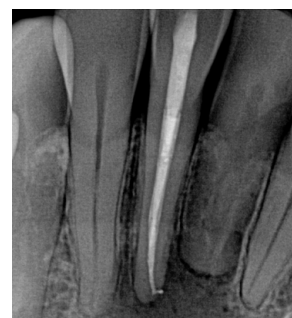
Refining cavity



Step 3.

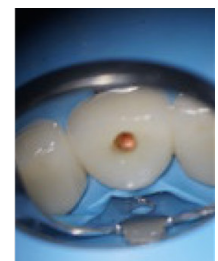
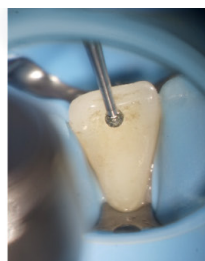
EndoExplorer EX1

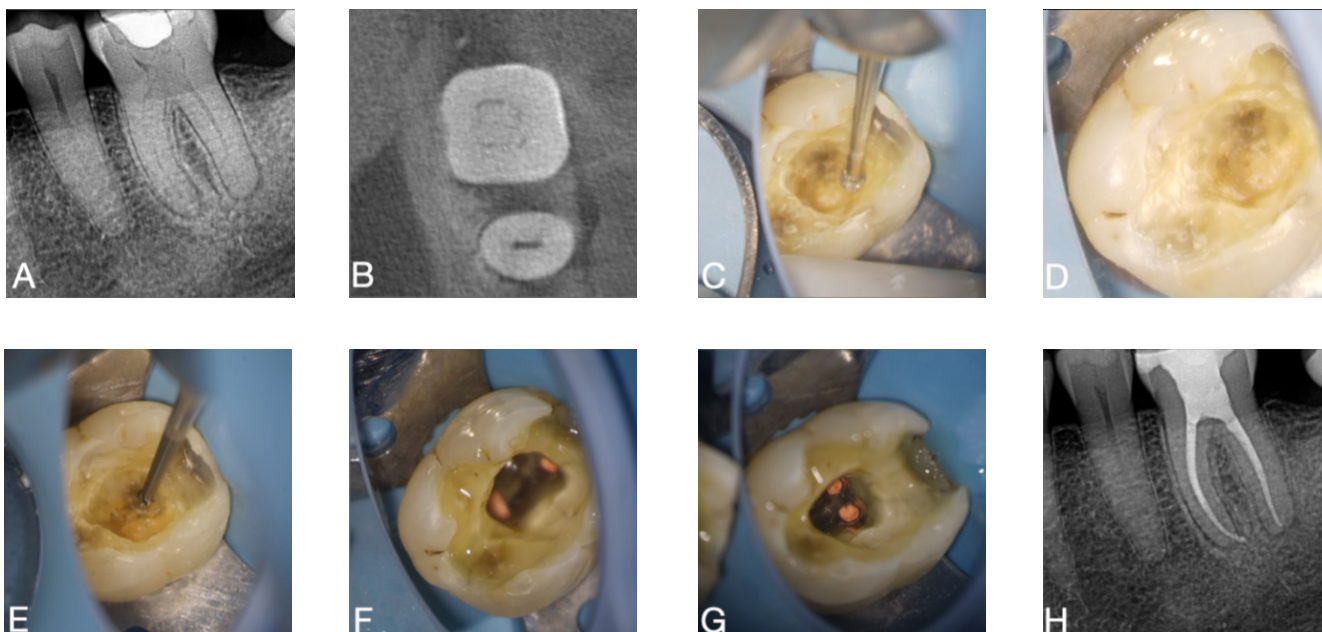
Tracing isthmus
between canals



The aim of a pragmatically prepared access cavity is to provide access into the canal entrances whilst maintaining sound tooth structure. Each access cavity is unique and dictated by the nature of the patient's tooth pulp chamber, position of the canal entrances and accessibility.

- Magnification and illumination are essential.
- Use recent periapical radiographs, and when indicated a CBCT scan to assess the anatomy of pulp chamber, degree of calcification and location of the canal entrances. Appreciate the distance from the occlusal aspect to the pulp chamber floor to avoid perforation.
- Remove the existing restoration, if there are signs of secondary caries, questionable restorability and/or potential evidence of cracks.
- The pulp chamber lies in the centre of the tooth at the cemento-enamel junction (CEJ) level. Probe around the CEJ circumference and orient the bur along the tooth's long axis of the tooth, directed towards the centre of the CEJ (Law of Centrality).
- The borders of the access cavity will follow the external surface at the CEJ level (Law of Concentricity).
- Refine and/or remove dentine overhangs to ensure smooth, straight-line access into root canal entrances to minimise iatrogenic errors.
- The canal entrances are located at the junction of the floor and walls of the access cavity.
- Identify dark developmental lines (dentine map) on the floor of the pulp chamber, the canal entrances are located at the end of these lines.
- Excluding maxillary molars, the canal entrances are equidistant from/lie on an imaginary central line drawn in a mesial-distal direction through the pulp chamber floor (Law of Symmetry 1).
- The floor of the pulp chamber is darker than the access cavity walls.





(A) Radiograph (B) axial CBCT image of symptomatic, irreversible pulpitis of lower left molar, note the extensively calcified root canal system, (C) diamond round bur (6801L 014) used to remove existing restoration and deroof pulp chamber, (D) revealing calcifications over canal entrances (E) long shank round bur (H1SML 010) allows better vision to remove calcified (tertiary) dentine (F, G) root canal treatment completed (note the incomplete fracture line on mesial aspect and pragmatic access cavity design) (H) Post endodontic radiograph.



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Shanon divides his time between working in an interdisciplinary specialist practice and King's College London teaching and carrying out clinical research.

His main research interests are management of longitudinal fractures, root resorption and treatment outcomes. He has supervised 80+ master's and PhD students.

Shanon's background as a clinical academic has resulted in him publishing over 140 papers. He is recognized internationally as a

leading authority on 3D (CBCT) imaging and root resorption and was lead author of 4 European Society of Endodontology position statements (CBCT 2014, 2019 and External Cervical Resorption 2018, Root resorption 2023).

Shanon has been invited as a keynote or plenary speaker at over 150 international meetings spanning 5 continents and has co-authored 7 textbooks which have been translated into 5 different languages.

References

Krasner P, Rankow HJ. Anatomy of the pulp chamber floor. *Journal of Endodontics*, 2004; 30(1):5.

Patel S. Access cavity preparation in Pitt Ford's Problem-Based Learning in Endodontics 2nd Edition, editors Perry E, Patel S, Kanagasigam S, Hamer S, 2024, Wiley Blackwell.