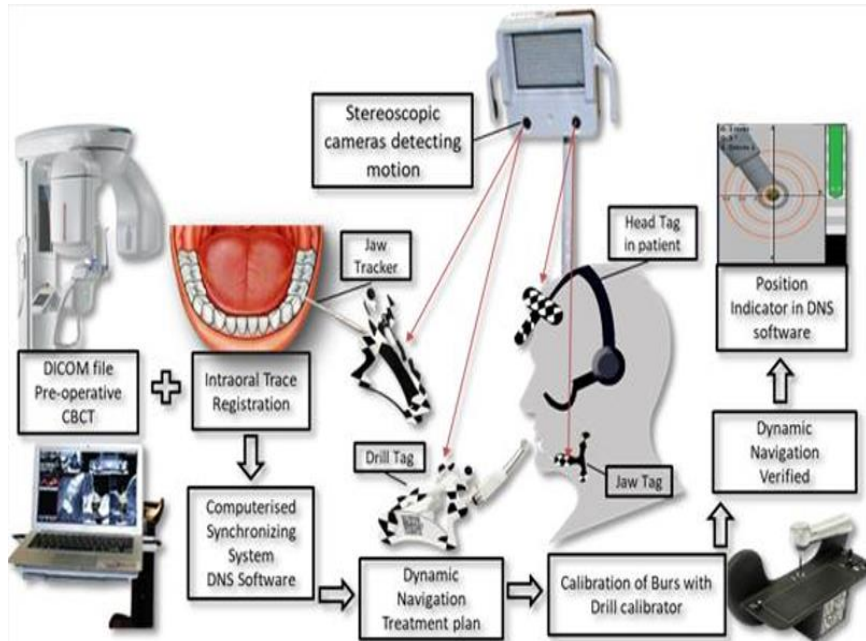


# From Guesswork to Guided Work: Dynamic Navigation Shapes Modern Endodontics

Dynamic navigation in endodontics enhances precision with real-time 3D imaging and computer-guided canal treatment, particularly in complex or calcified cases, enabling minimally invasive procedures for challenging anatomies or apical surgeries

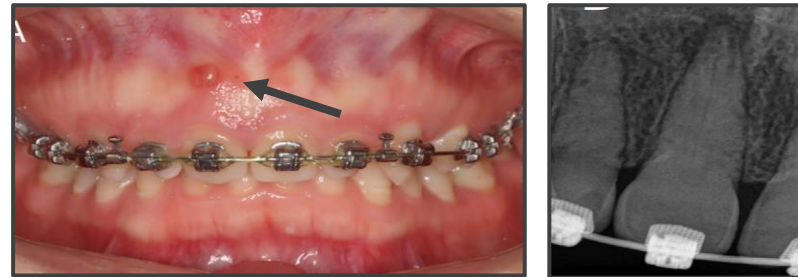
## How does Dynamic Navigation work?



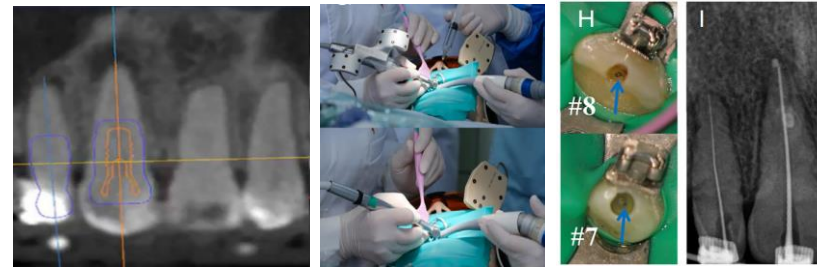
## Key applications

|                           |                               |
|---------------------------|-------------------------------|
| Locating calcified canals | Apicectomy                    |
| Complex anatomies         | Endodontic retreatment        |
| Post and core placement   | Endodontic surgical osteotomy |

## Case study: Navigating calcified canals



**Case:** Clinical examination revealed that teeth 11, 12 did not respond to thermal and electric pulp test. Radiological exam revealed it had calcified pulp chambers and canals and apical radiolucency of tooth 11



Pre-op CBCT imaging was used to create 3D map of the tooth. DNS was employed to guide clinician to precise location of calcified canals



## Benefits outweigh the limitations

- ✓ Improved accuracy and precision
- ✓ Enhanced treatment of complex anatomy
- ✓ Faster and more predictable procedure
- ✓ Improved treatment outcome
- ✓ Increased confidence for clinicians
- ! High investment and training costs
- ! Bulky equipment and high calibration time
- ! Limited applications in simple cases
- ! Dependence on CBCT availability

## Outlook for Dynamic Navigation

- Increased adoption leading to decreased cost
- Integration with other digital workflows
- Improved tracking and sensor accuracy
- Miniaturization and portable devices
- Robotic-assisted Endodontics
- Improved data analytics and case documentation

**Key takeaway:** The evolution from analog 2D-imaging and diagnostics to digital 3D imaging has led to increased understanding of complex nature of endodontic RCTs. The increased utilization of this digital 3D-diagnostic and therapeutic modalities allows the endodontist to overcome the limitation of free-hand cavity preparations in complicated situations.