



Cone Beam CT: Imaging on Dental Emergencies

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INTRODUCTION

- Dental diseases is frequent finding on Head and Neck Images
- The high prevalence of dental trauma, infectious diseases, and complications of dental procedures, requires interpretation of dental images in daily emergency practice
- Dedicated dental images are not acquired in most emergency cases
- Knowledge of emergency dental imaging findings improves diagnostic confidence and the radiologist's role in guiding patient care

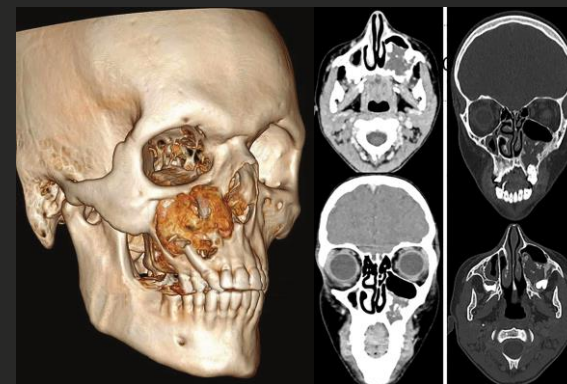
Dental Emergencies

any problem affecting the teeth or supporting tissues that is potentially life-threatening and requires immediate treatment to stop bleeding, remedy the infection, alleviate severe pain and to prevent biological, functional or aesthetic complications

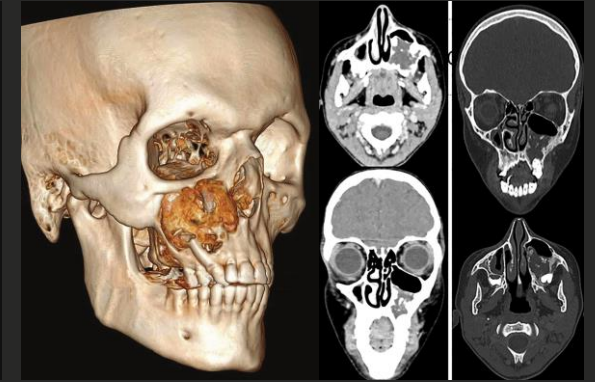
└ Post-procedural complications
└ Traumatic
└ Infectious



selection of the most appropriate imaging protocol

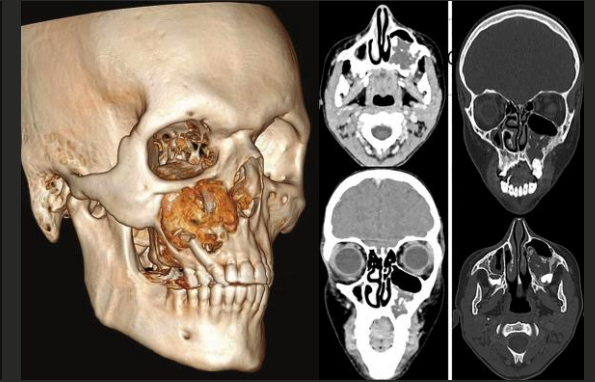


selection of the most appropriate imaging protocol



- Modality of choice
- Wide availability
- Scanning speed
- High spatial resolution hard and soft tissue
- Thin as possible image obtained sections
- High radiation doses

selection of the most appropriate imaging protocol



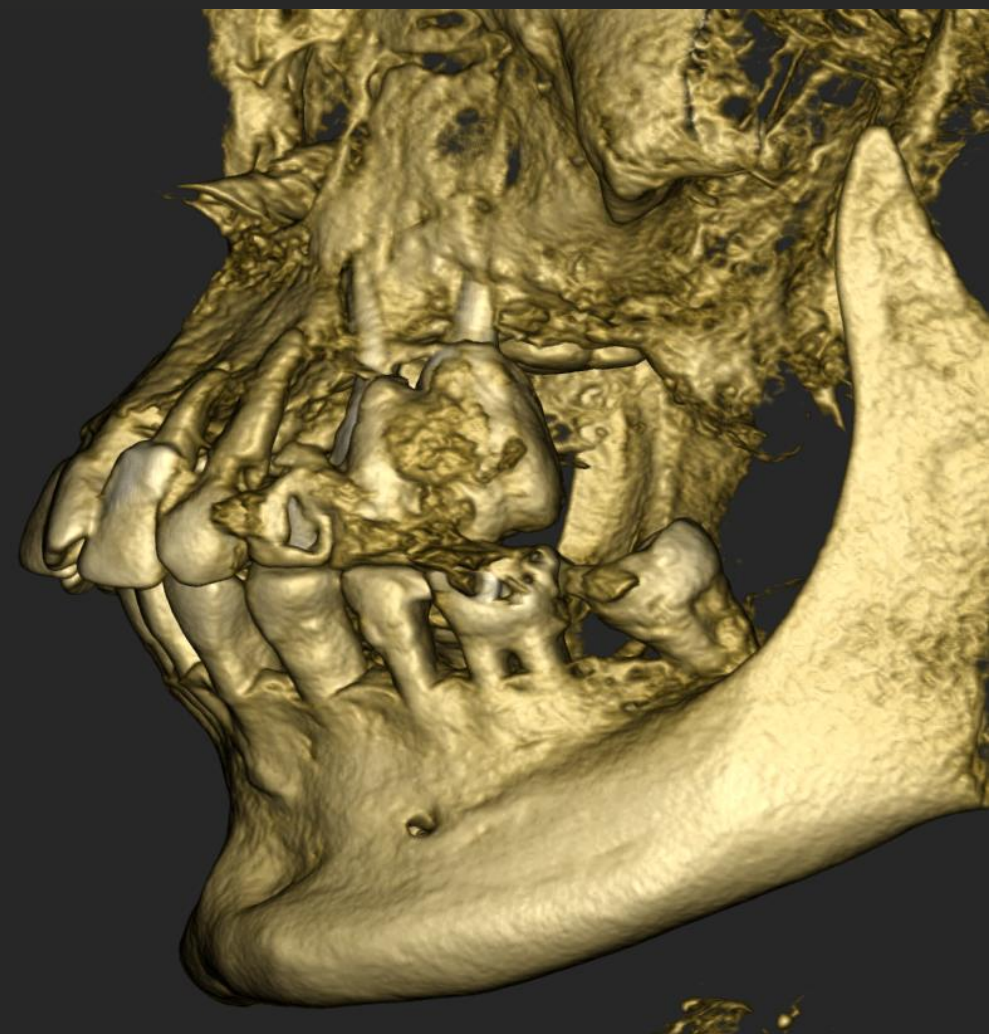
- Evaluation teeth, alveolar bone and surrounding structures
 - High spatial resolution
 - Axial, coronal, sagittal and 3D images
 - Low radiation dose
-
- Poor image quality of soft tissues
 - Limited availability in emergency centers



POST PROCEDURAL COMPLICATIONS

- Complications of dental procedures are widely seen in daily practice. Some complications may require imaging evaluation, and the radiologist should be prepared to evaluate them
- It's important to ask the patient about the procedures they've had and when they were done
- Commonly:
 - Post tooth extraction
 - Post dental implant procedures
 - Post endodontic procedures







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Screenshot



W/L



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ACTEON



Undo



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3D Settings



Data Import



CPR Settings



Nerve Drawing



Teeth Setup



Implant Planning



Reports/Export



Advanced Tools



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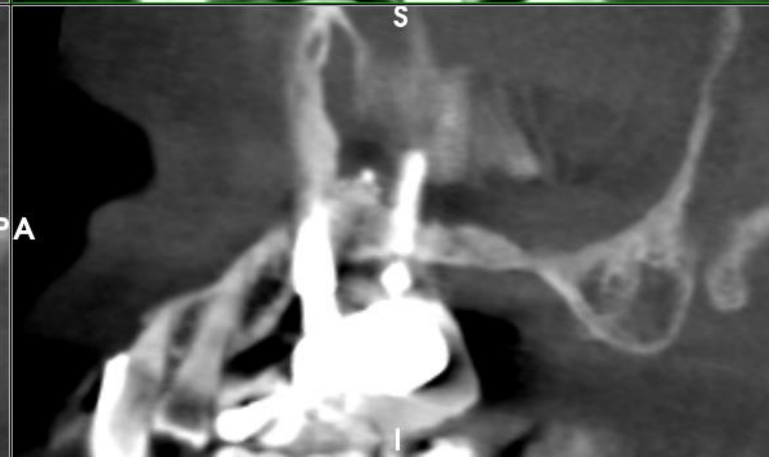
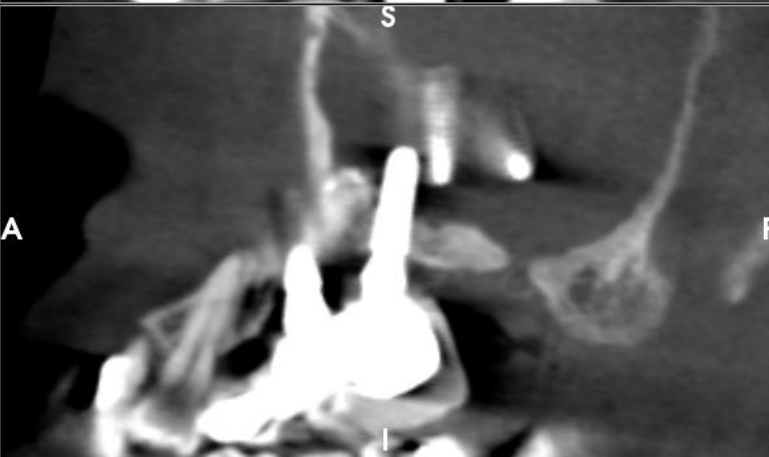
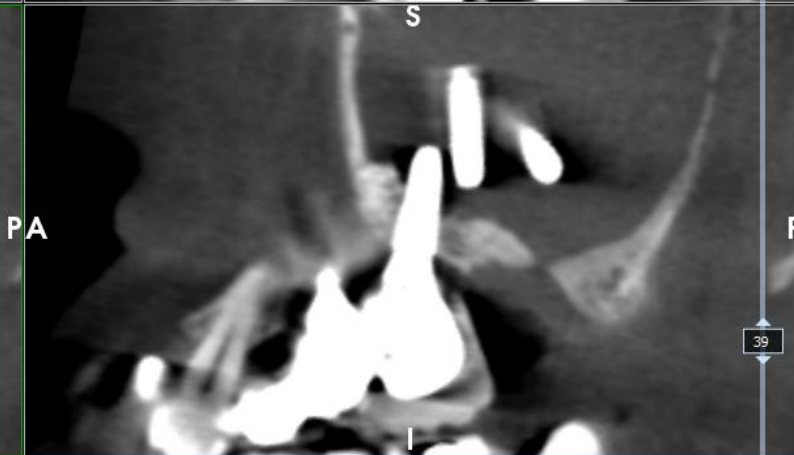
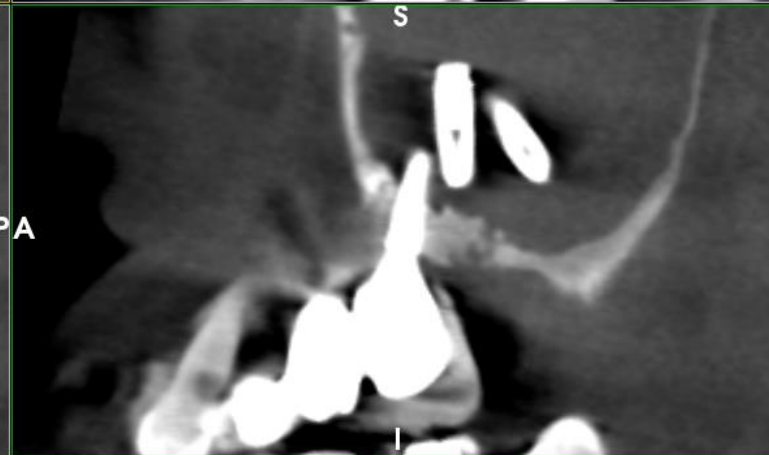
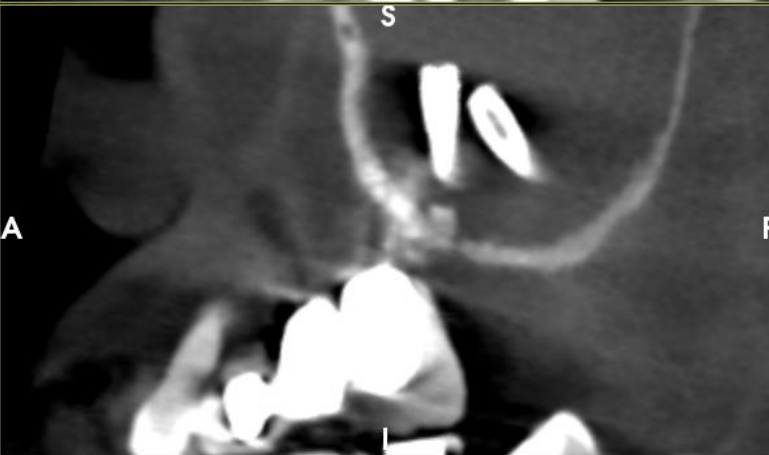
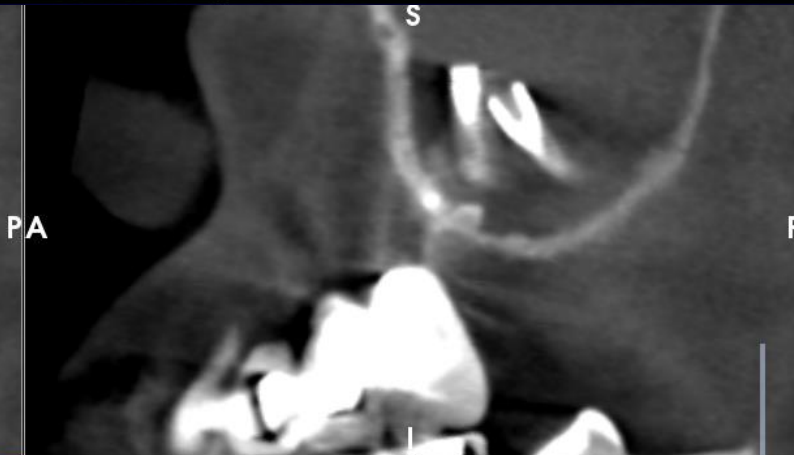
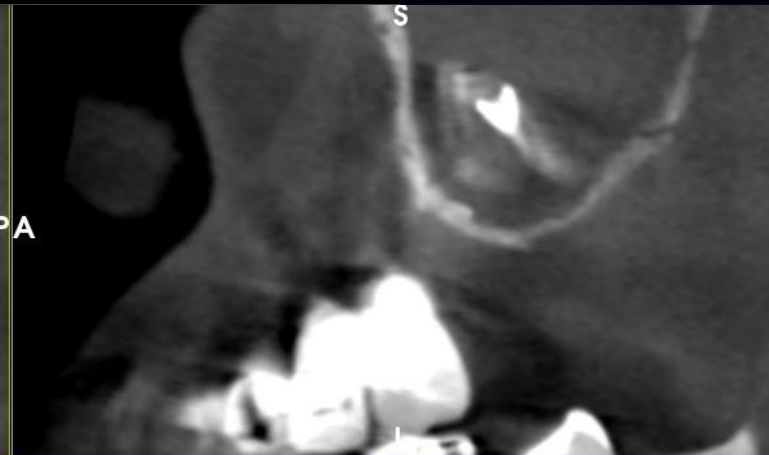
Guide Design



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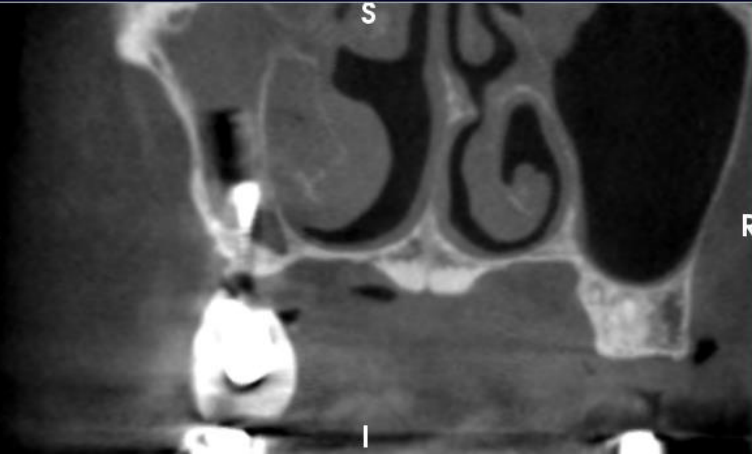
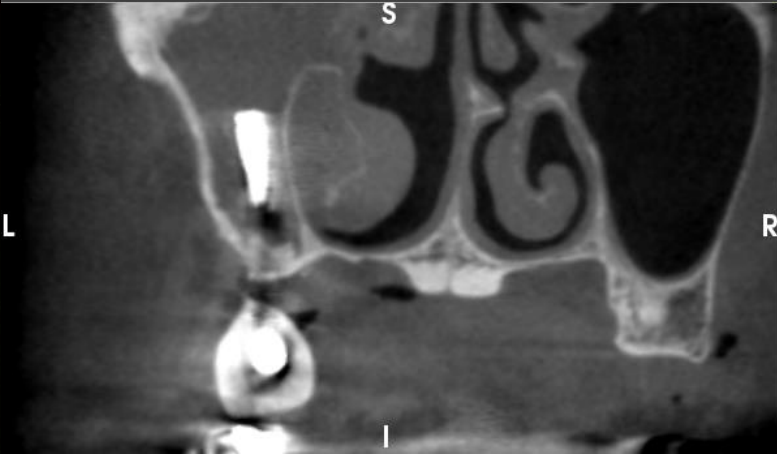
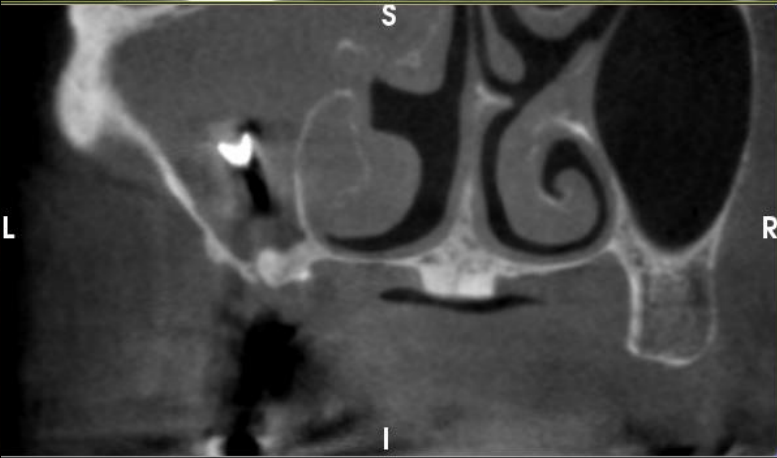
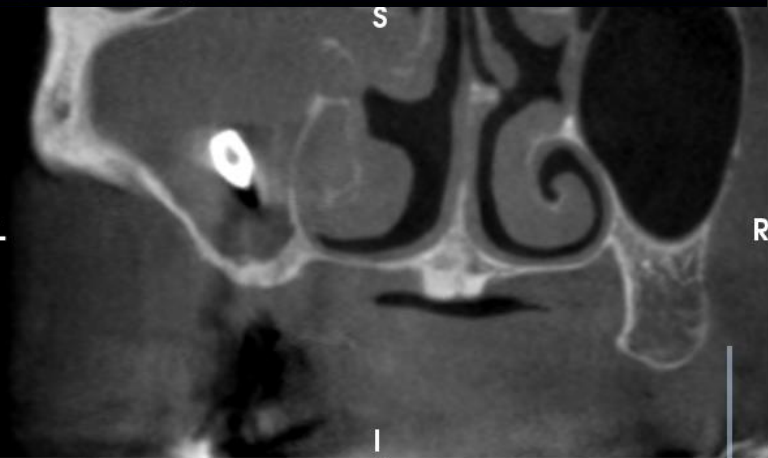
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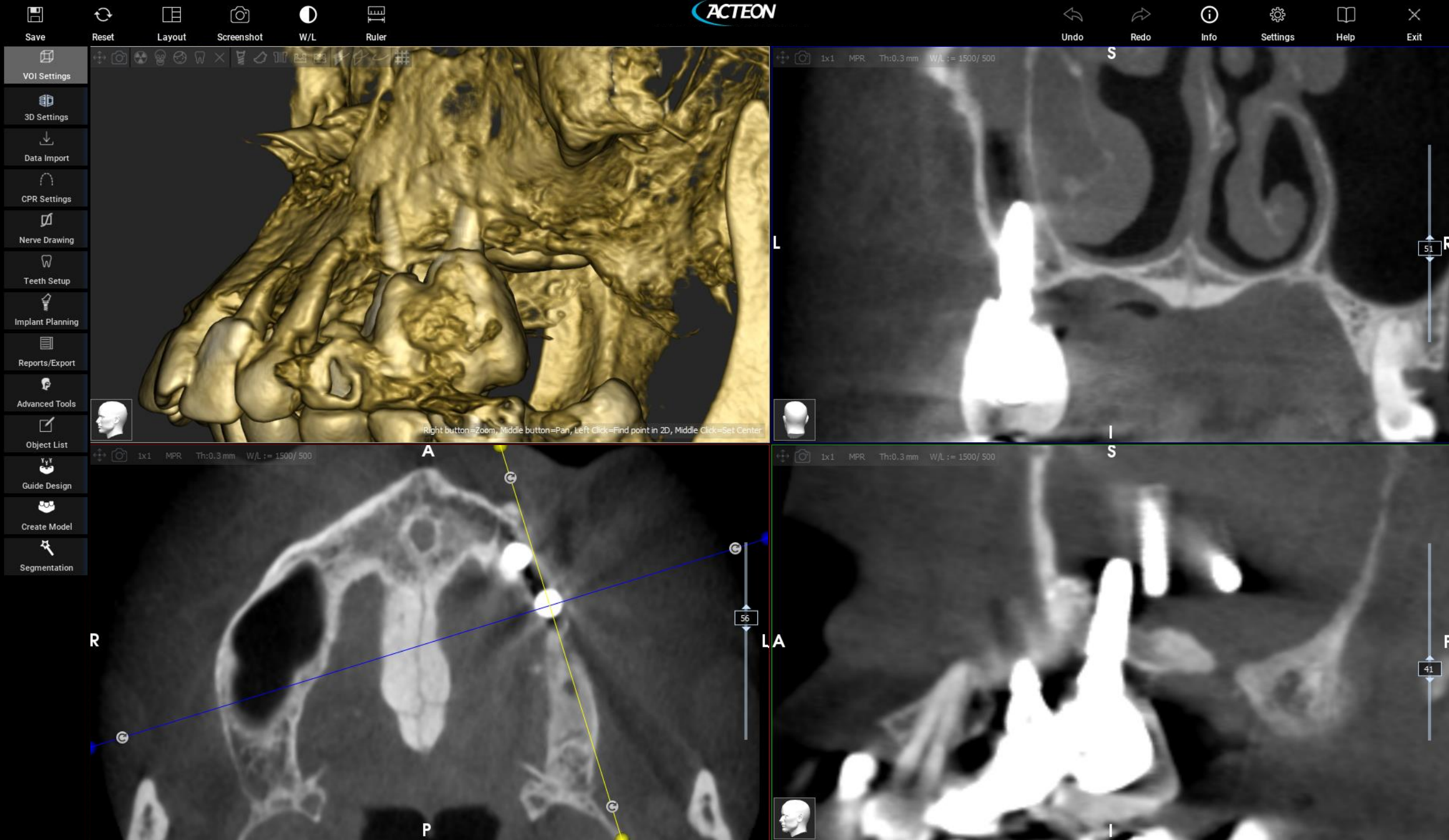
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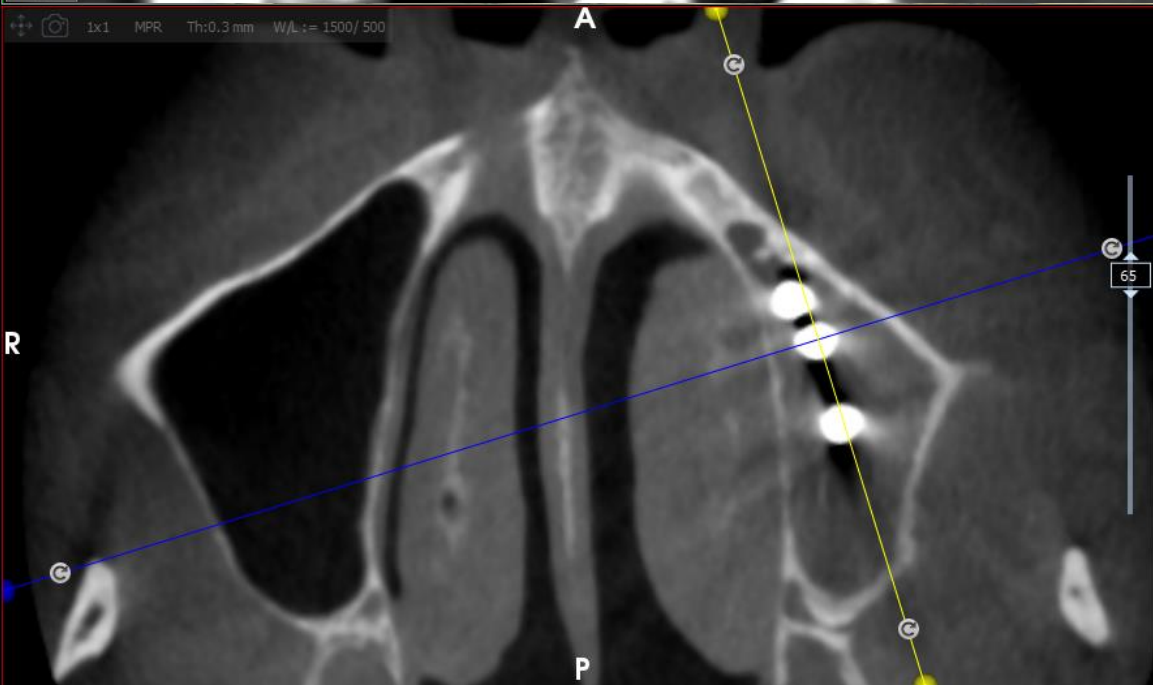
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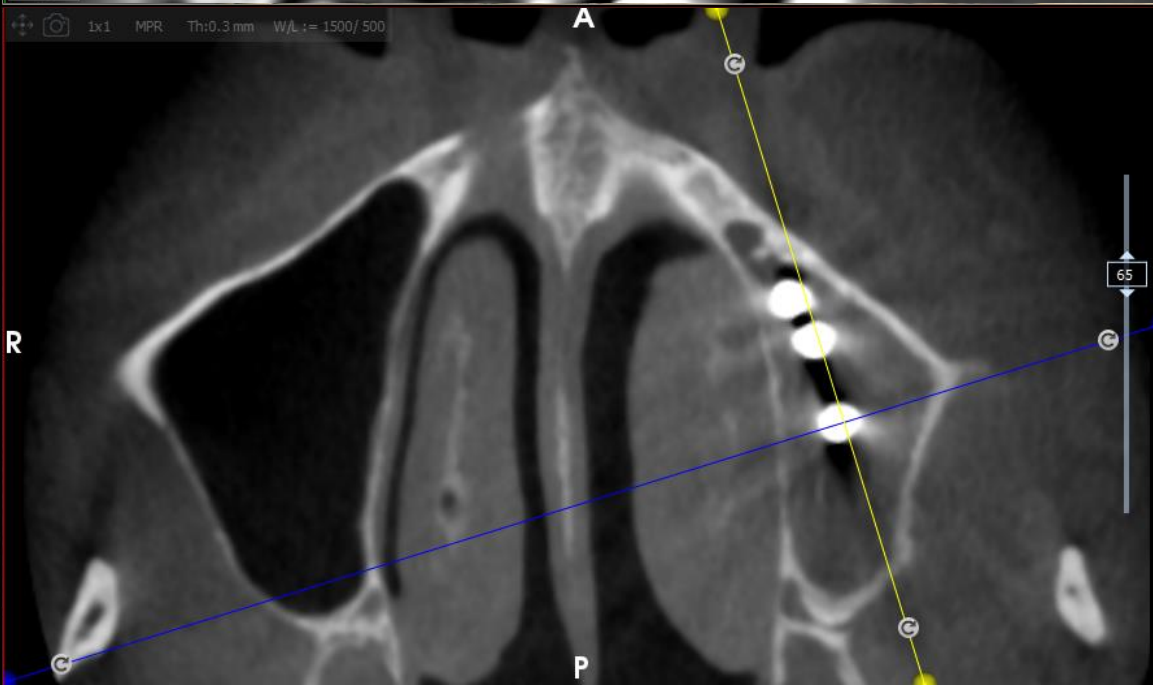
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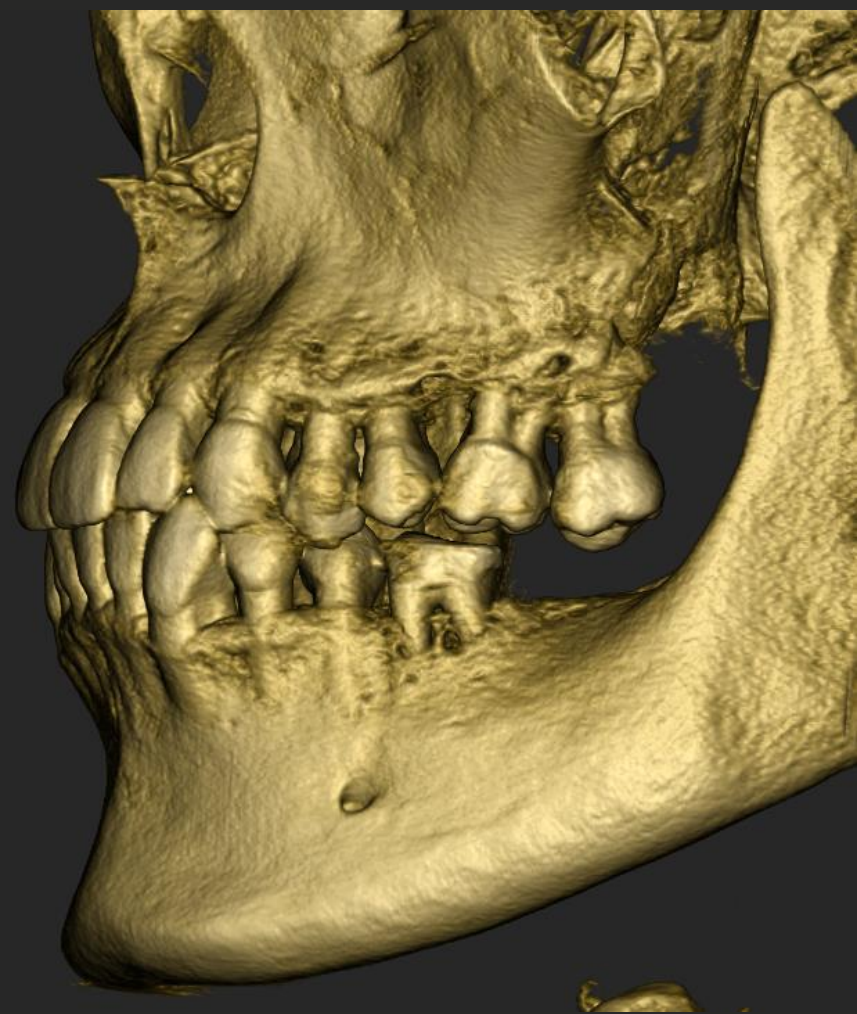


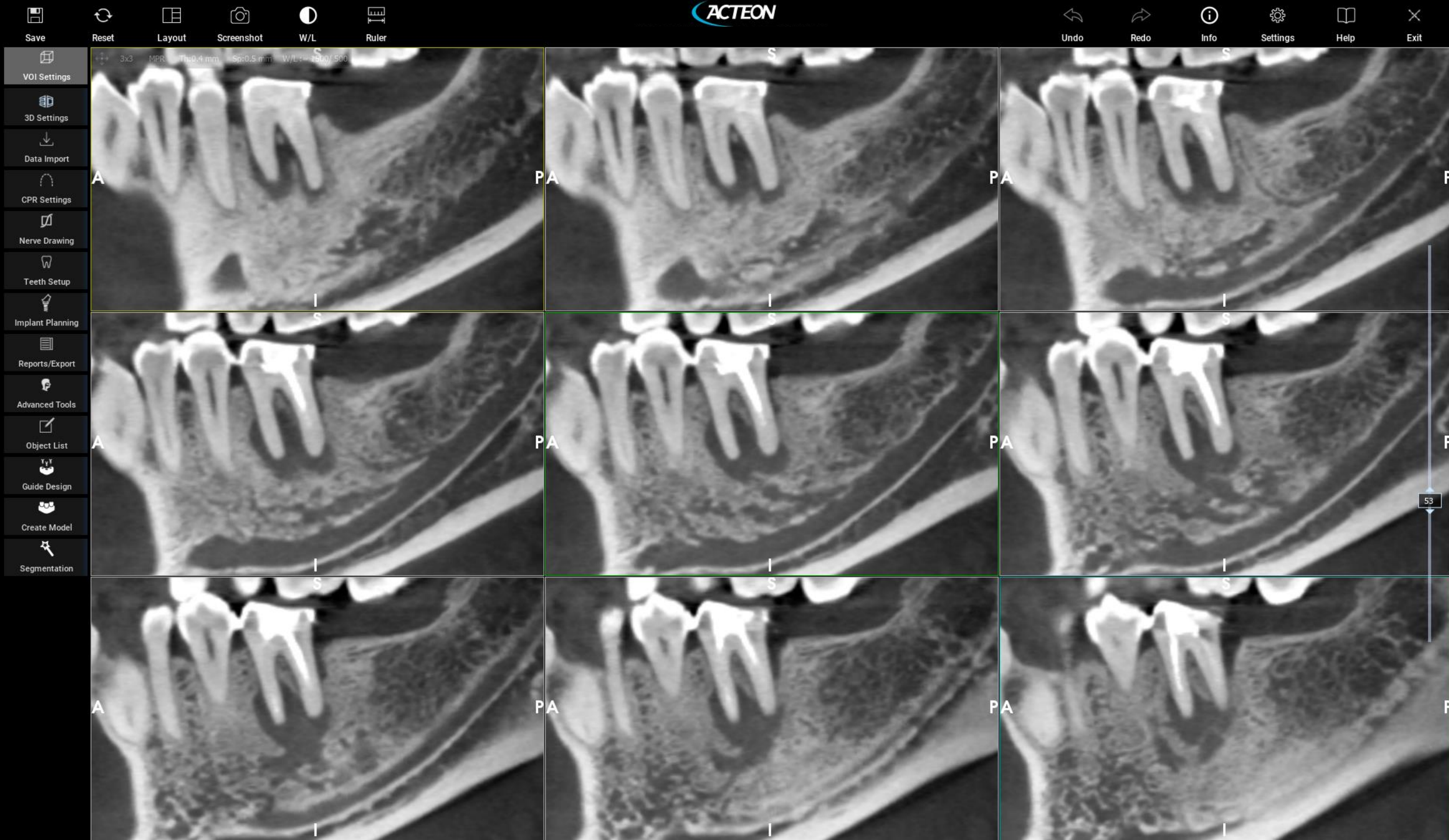
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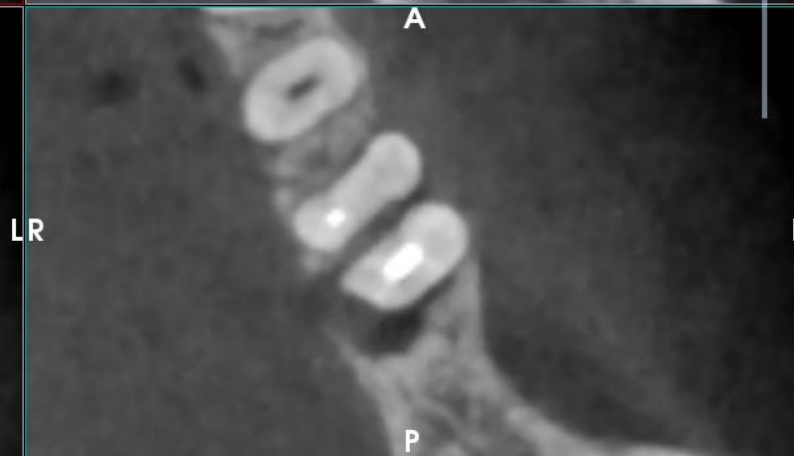
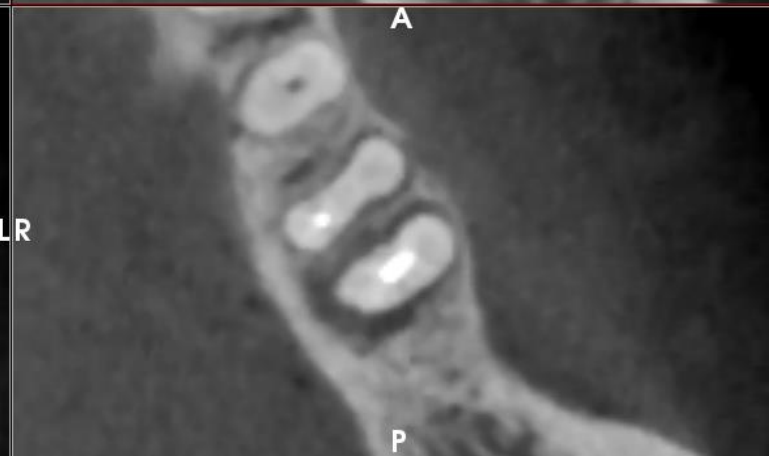
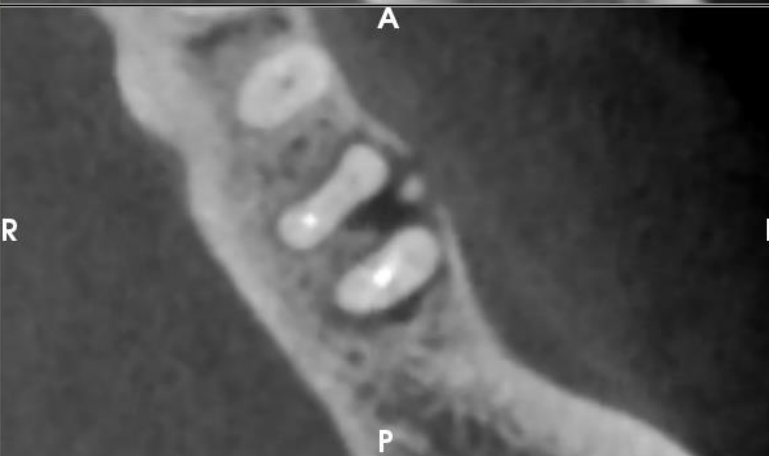
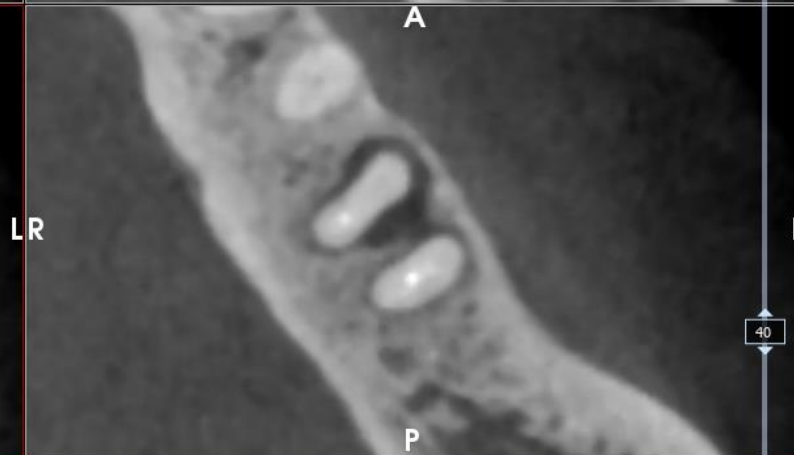
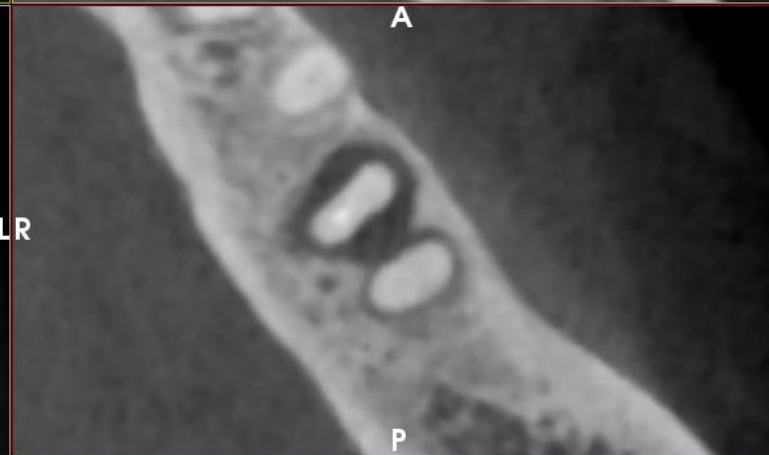
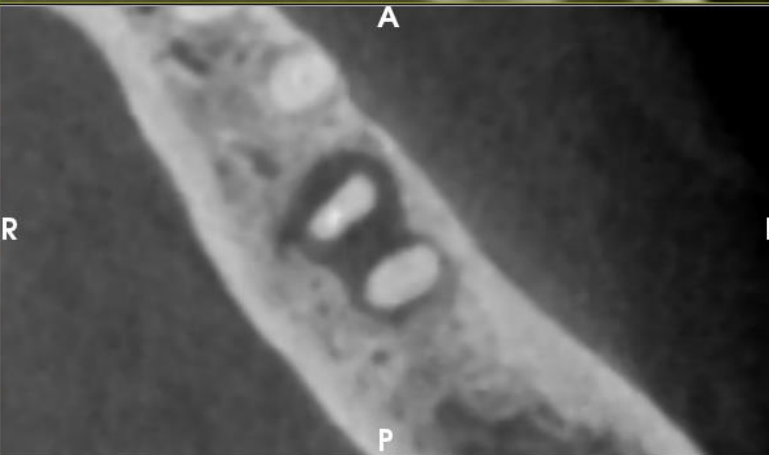
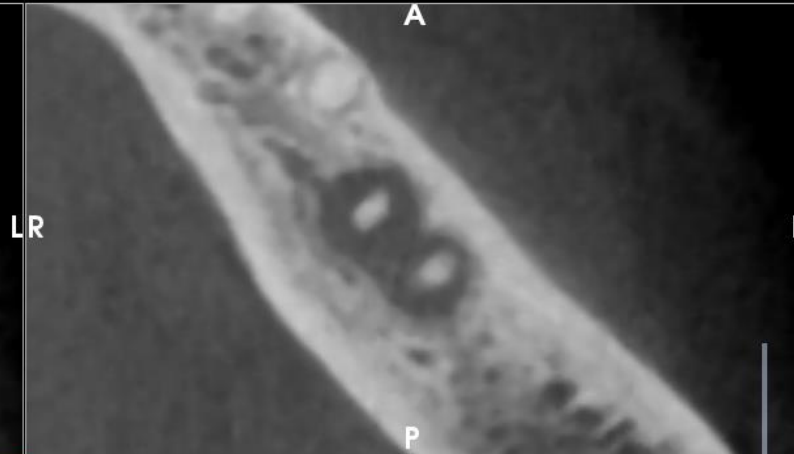
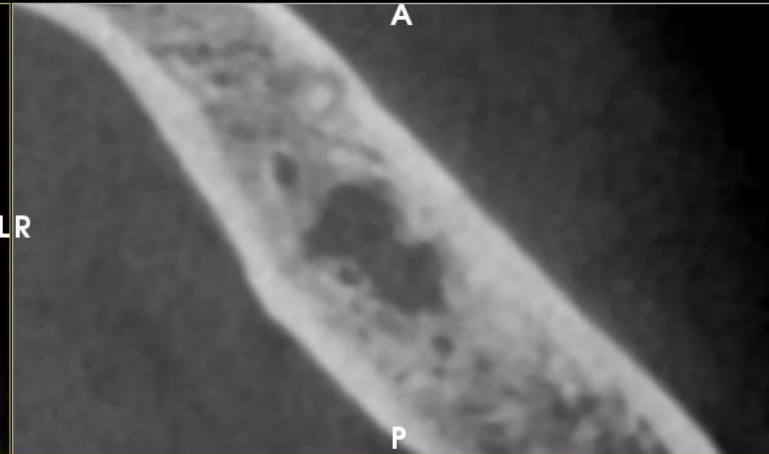
Guide Design



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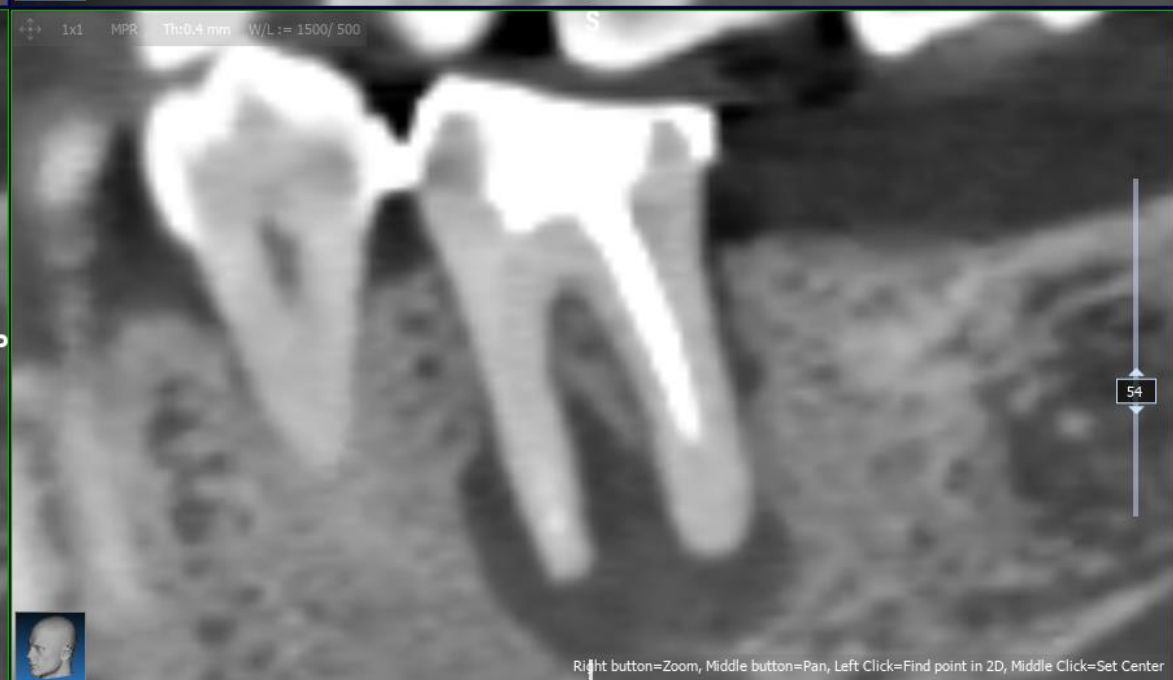


Segmentation



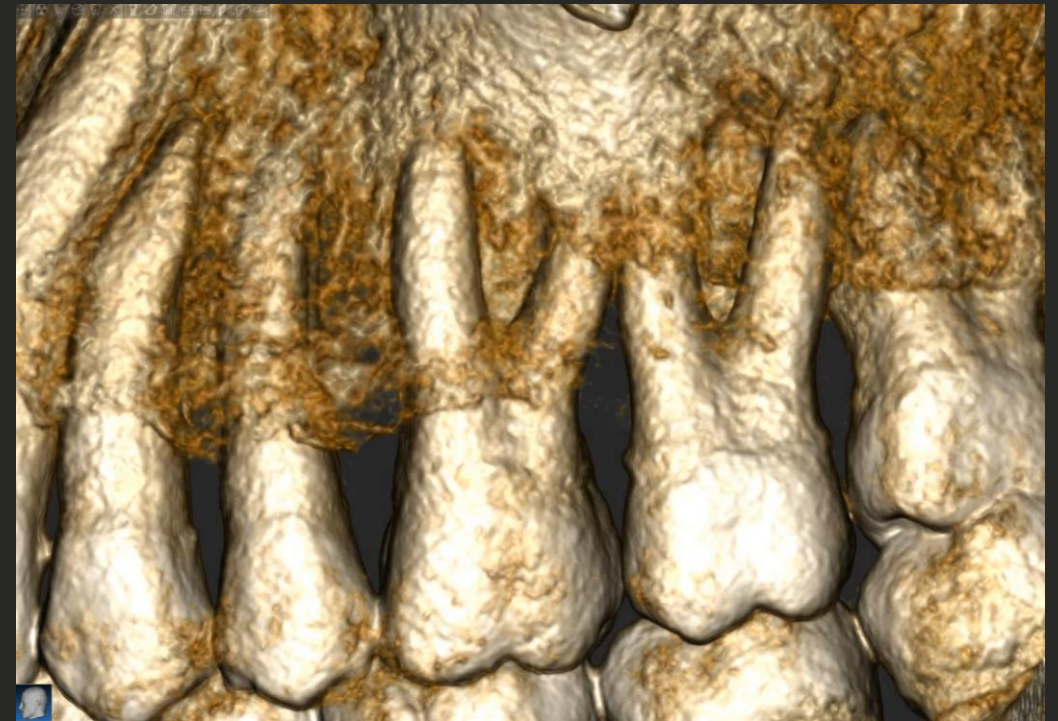
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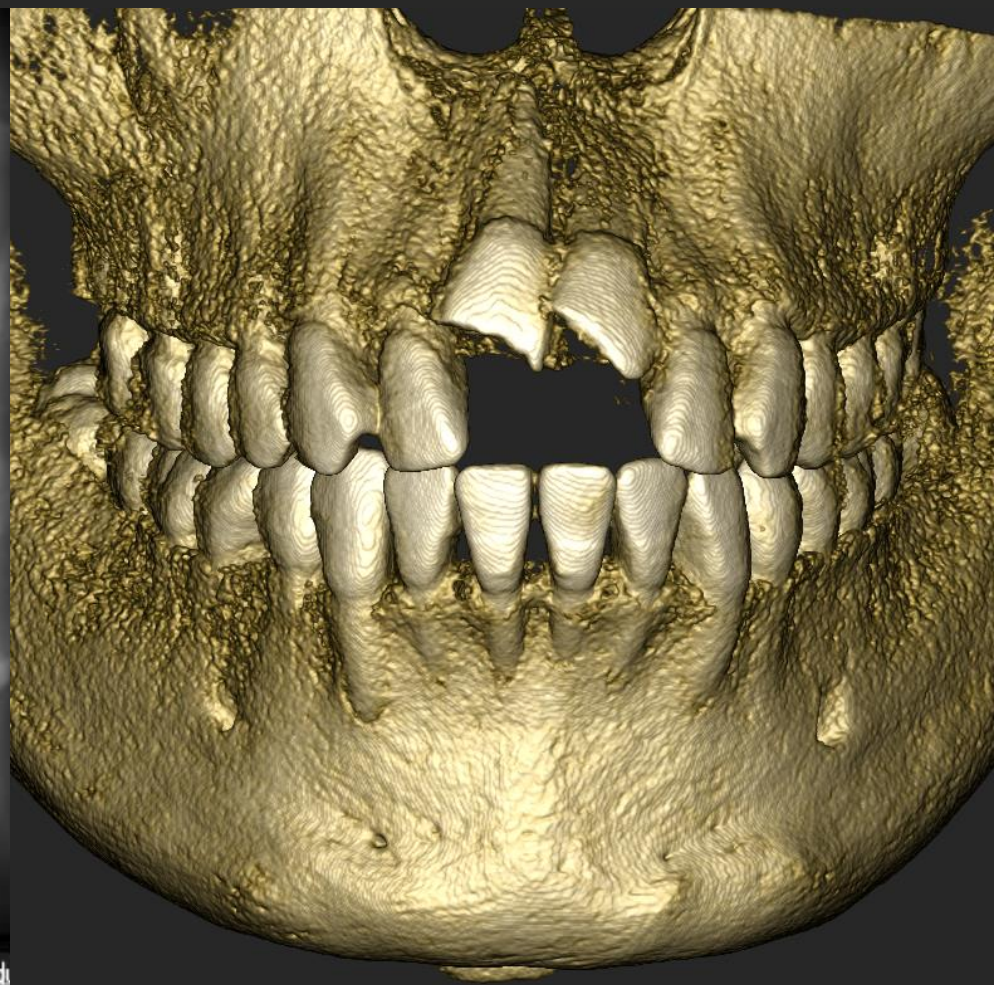
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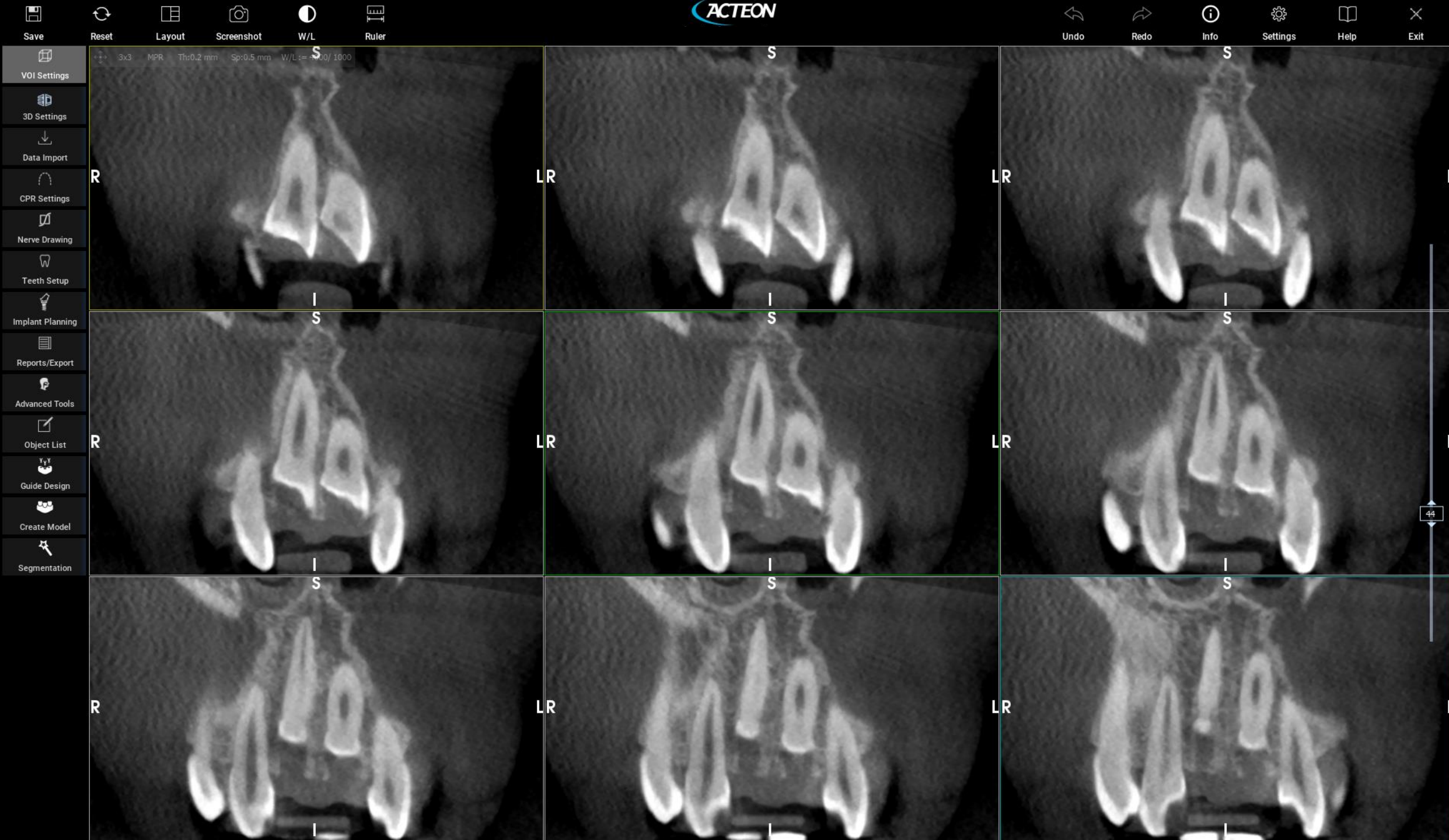


DENTAL TRAUMA

- Traumatic dental emergencies include tooth fractures, luxation, and avulsions that can be caused by direct or indirect impact to the tooth or surrounding structures
- Traumatic dental emergencies are most often caused by falls, sports injuries, traffic accidents, or physical violence
- If a traumatic dental injury is not treated properly, the injury site becomes a site for bacterial invasion, and the patient may develop an infectious dental emergency









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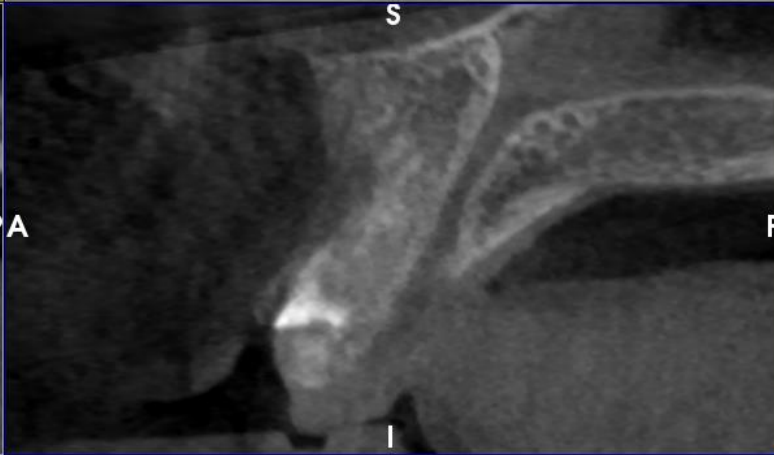


Create Model



Segmentation

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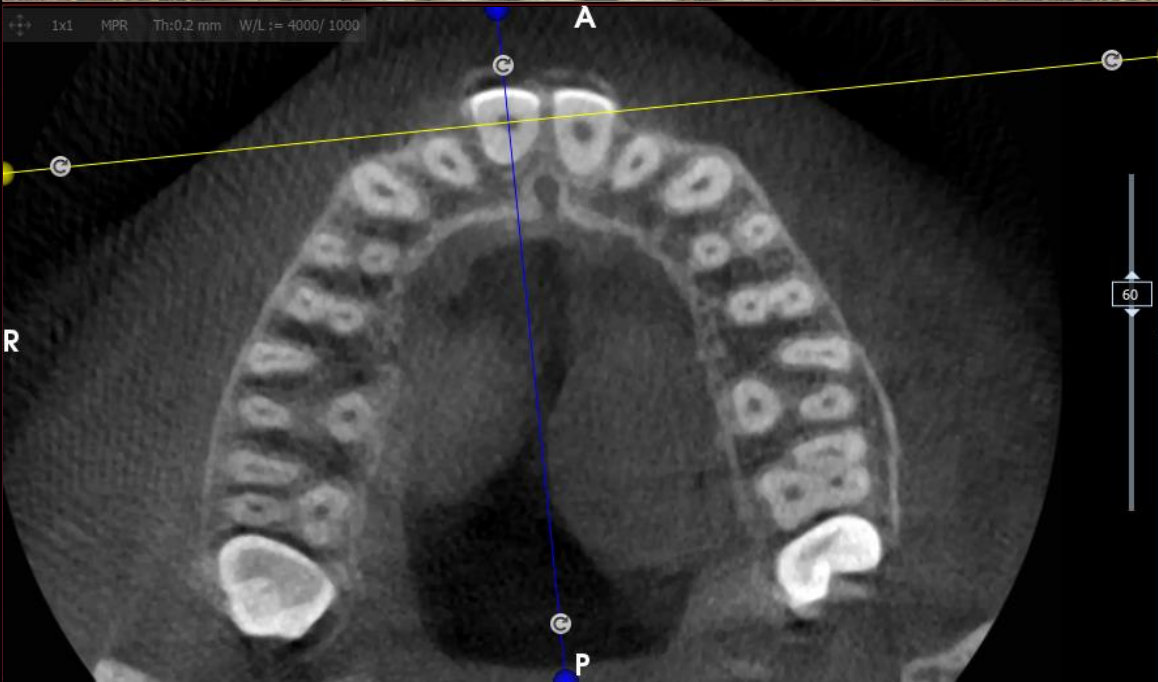
Guide Design



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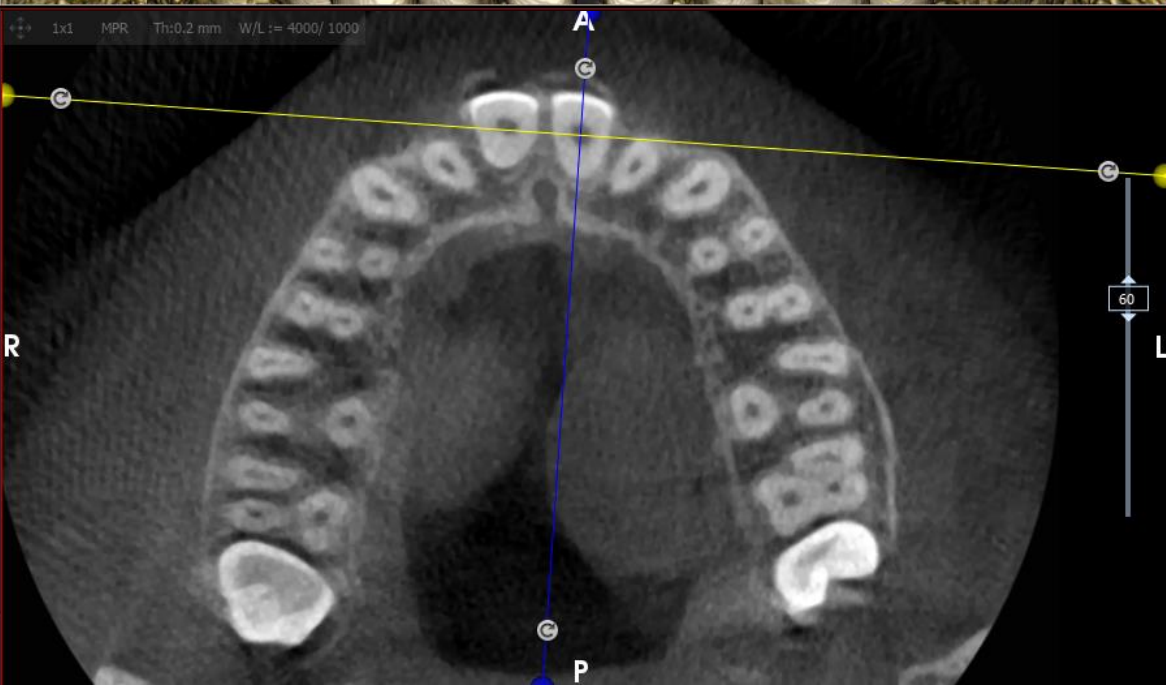
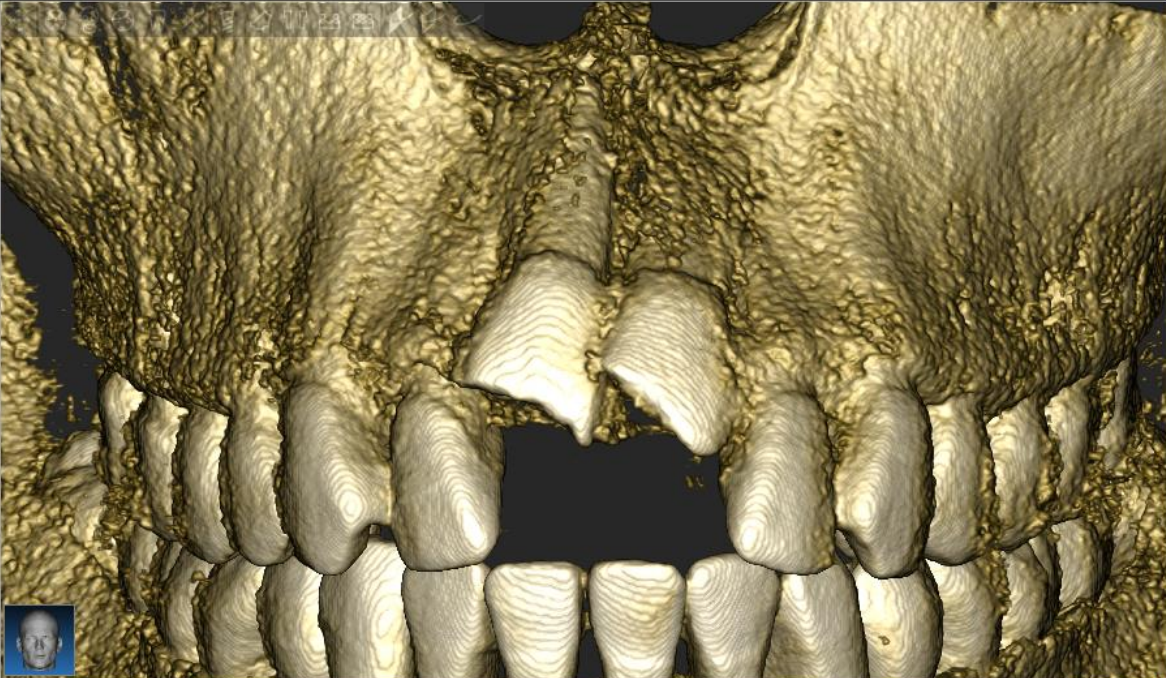


Segmentation



Right button=Zoom, Middle button=Pan, Left Click=Find point in 2D, Middle Click=Set Center

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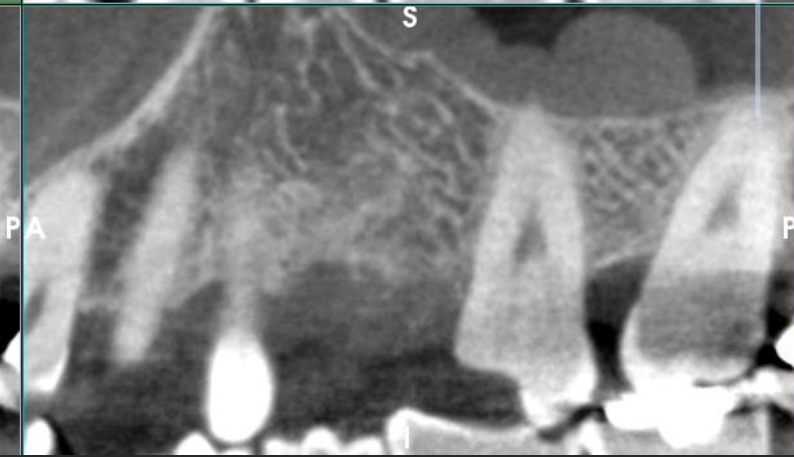
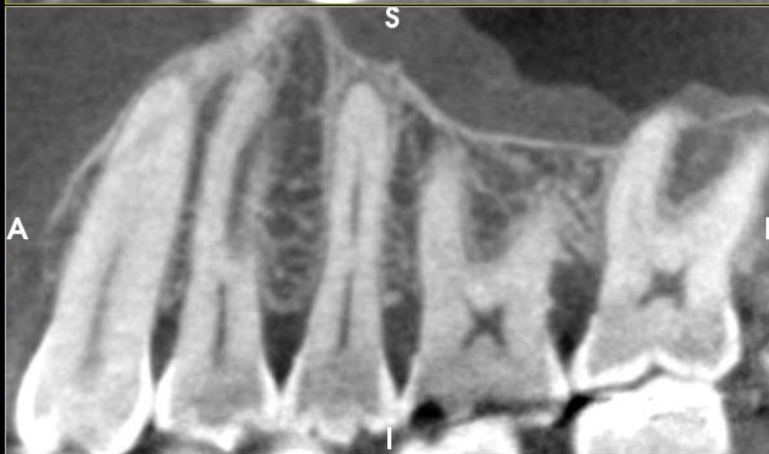
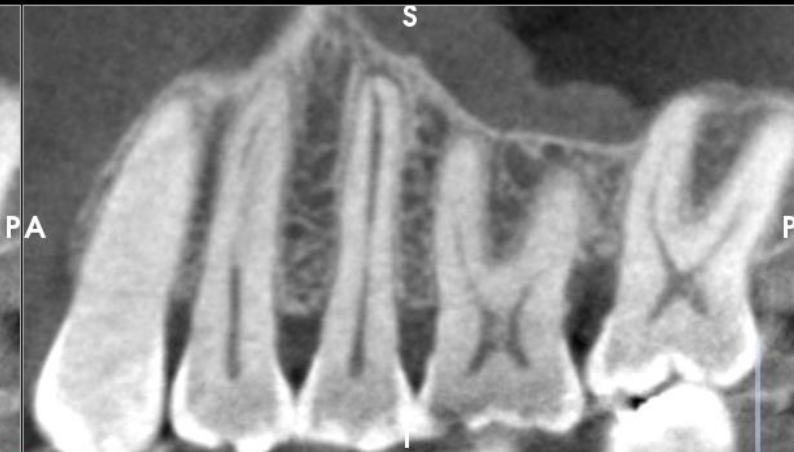
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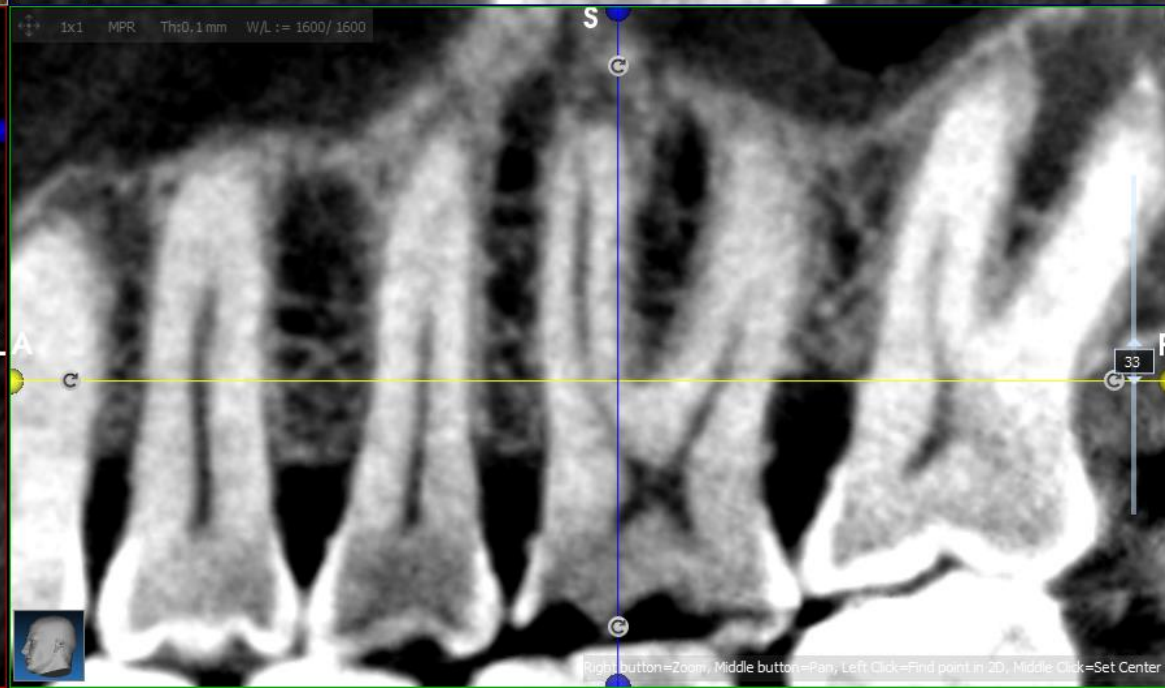
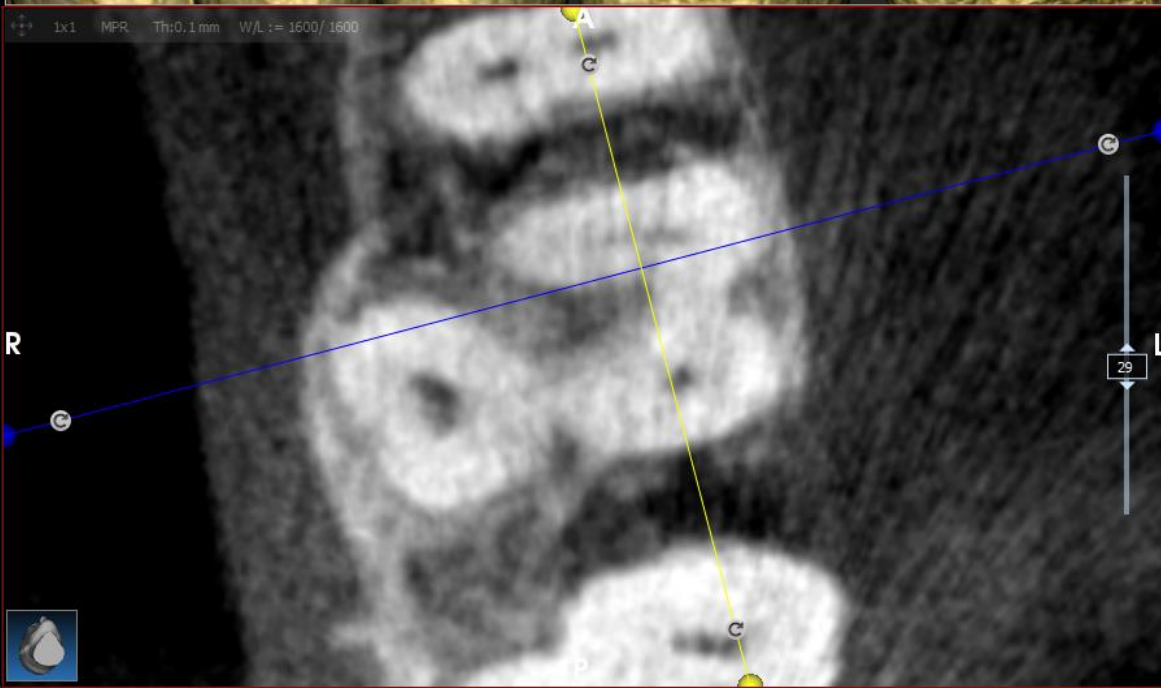
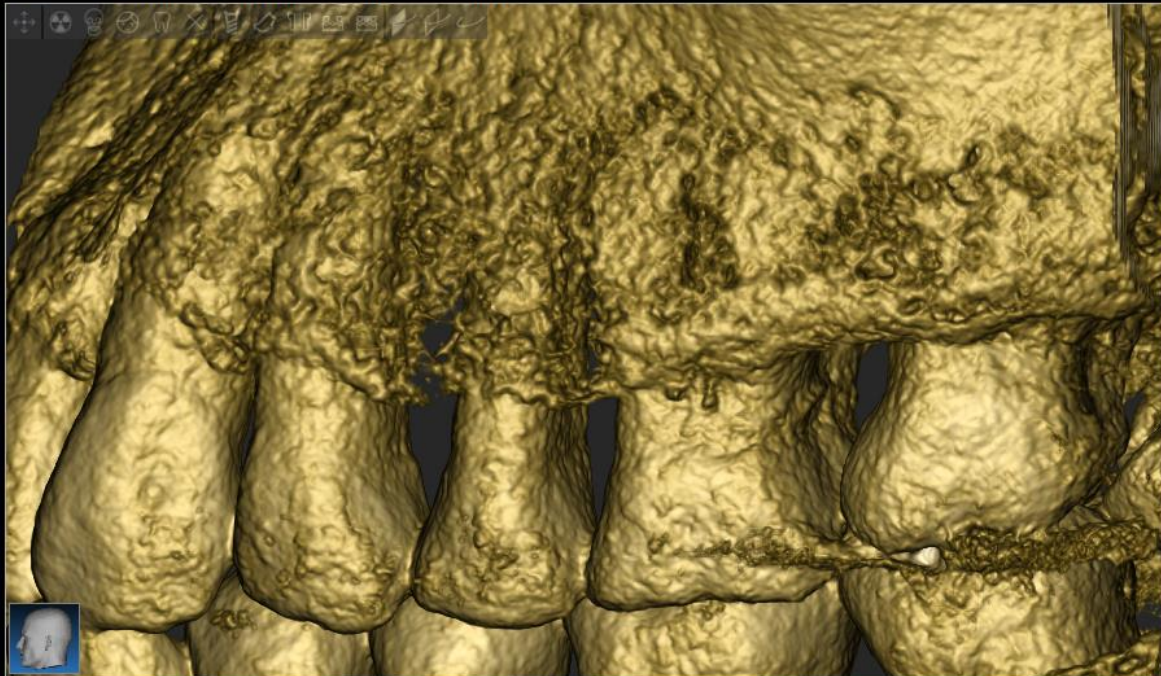


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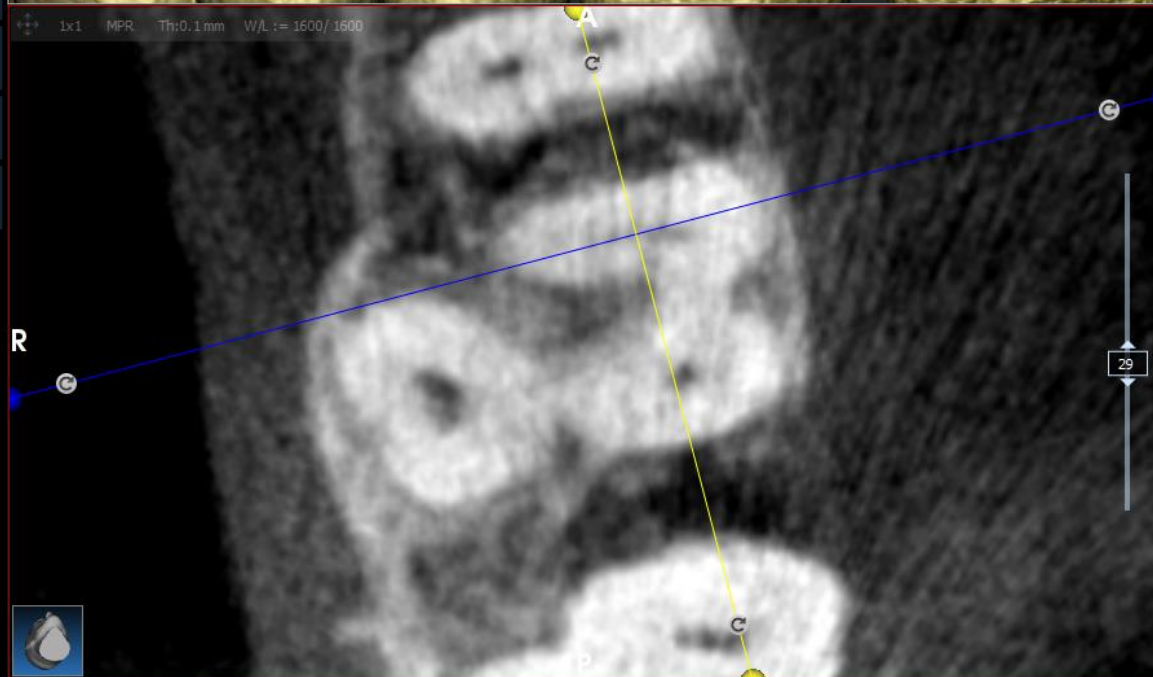
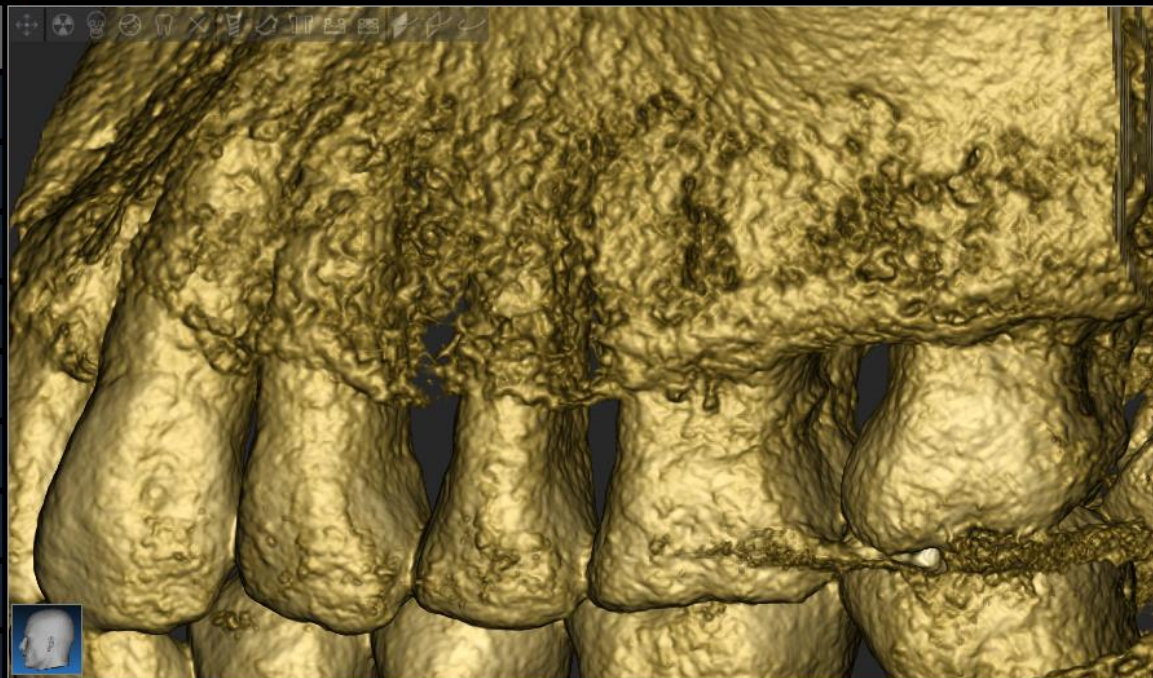
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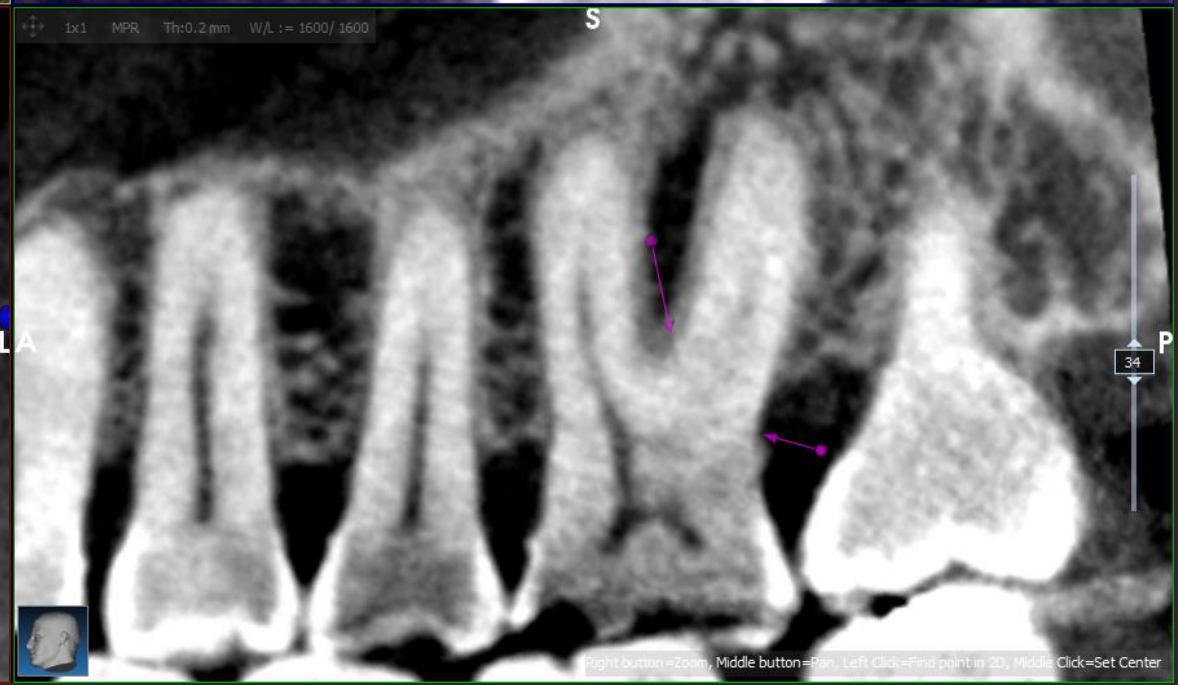
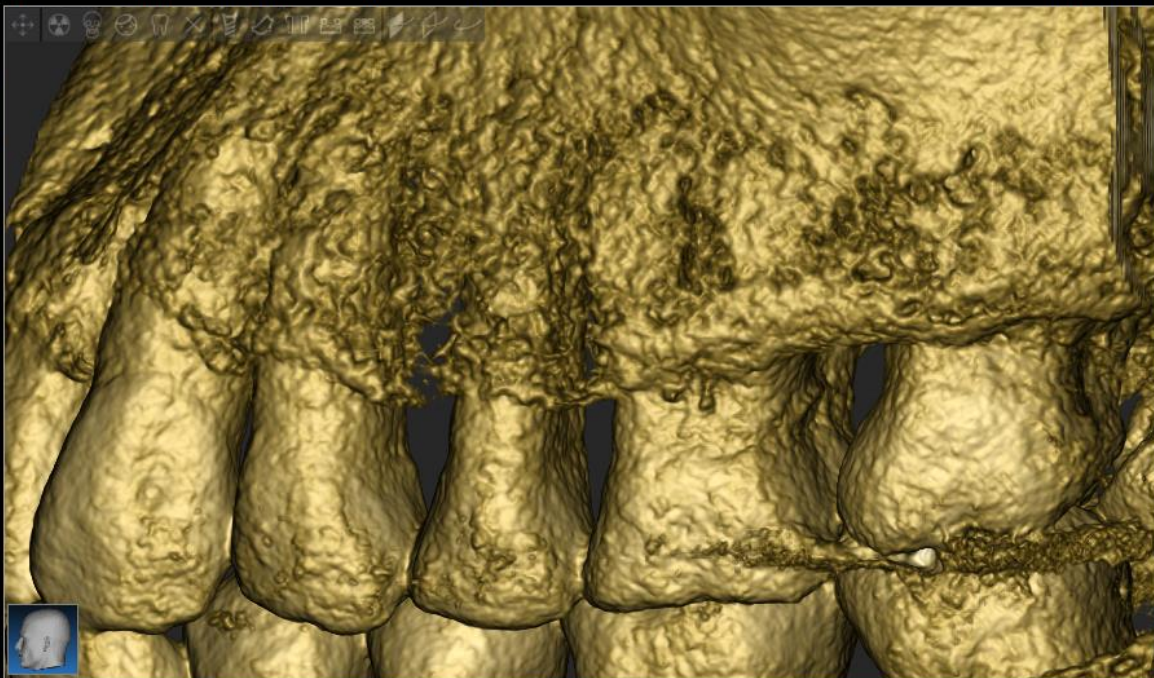
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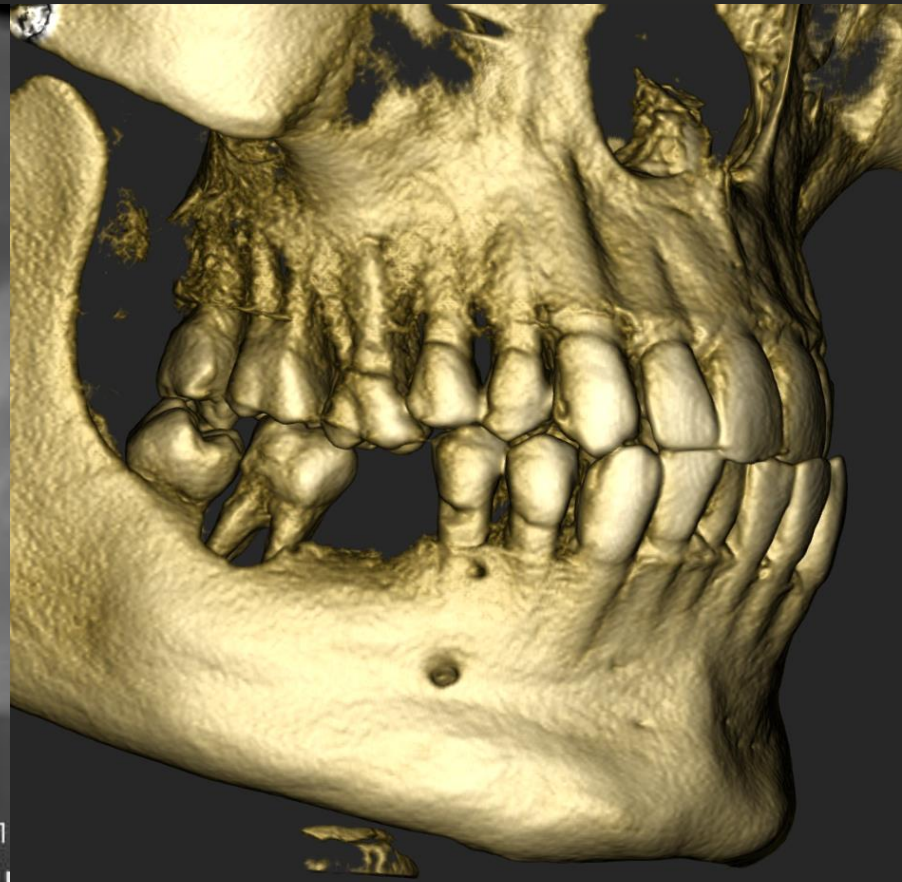
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INFECTIONS

- Odontogenic infection arises from any part of the tooth or adjacent structures and can directly spread into adjacent bone and soft tissues through superficial and deep neck spaces
- Imaging plays a crucial role in identifying the source of infection and the extent of the disease process, as well as depicting any complications
- Commonly
 - Periapical abscess
 - Pericoronitis
 - Odontogenic sinusitis
 - Osteomyelitis







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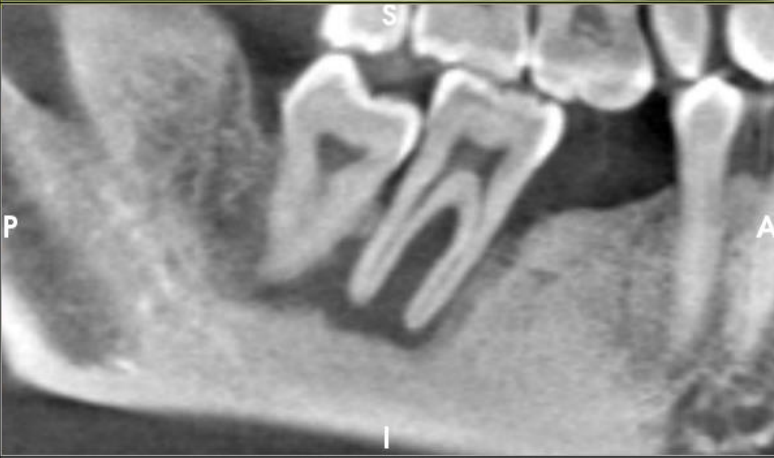
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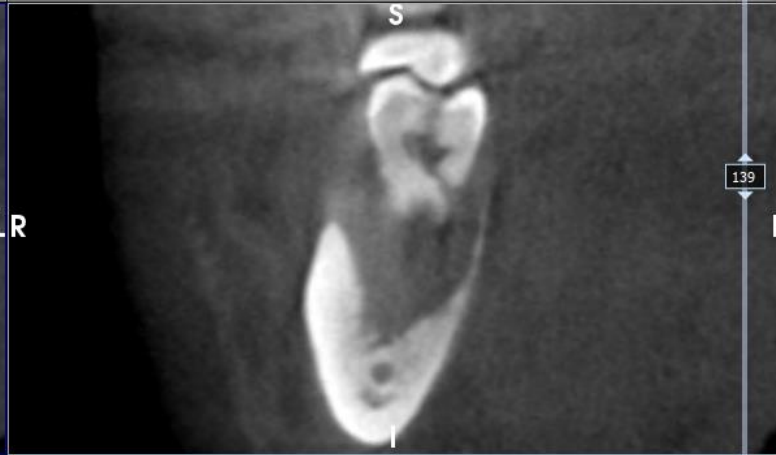
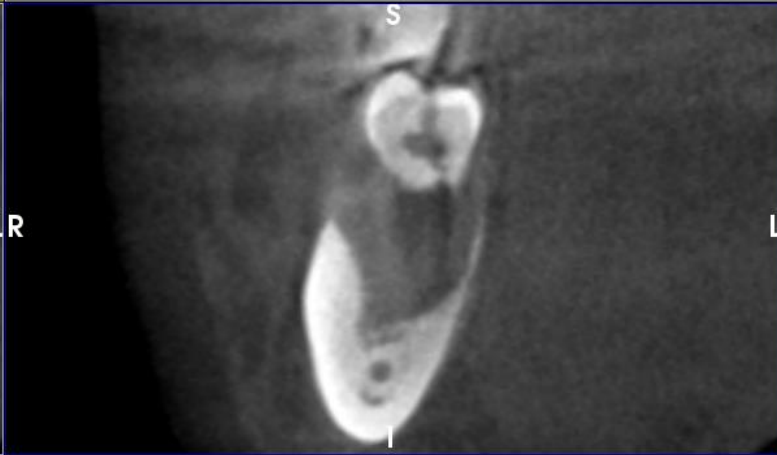
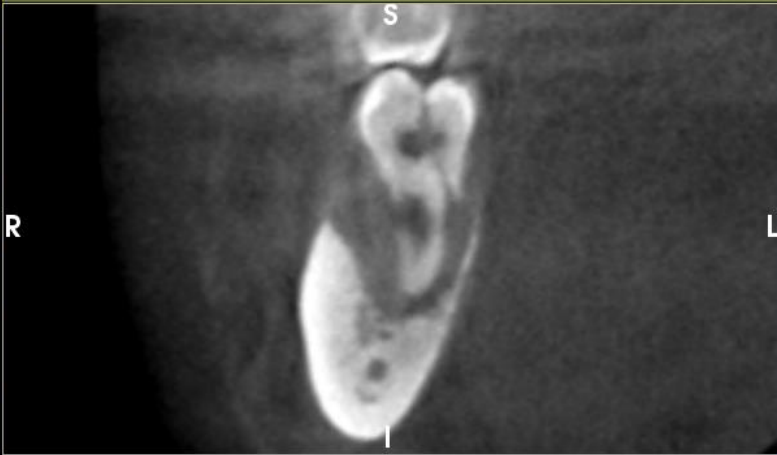
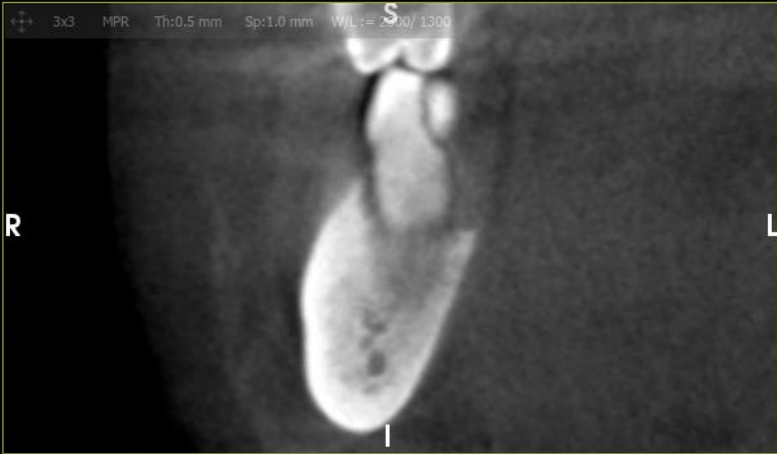


Create Model



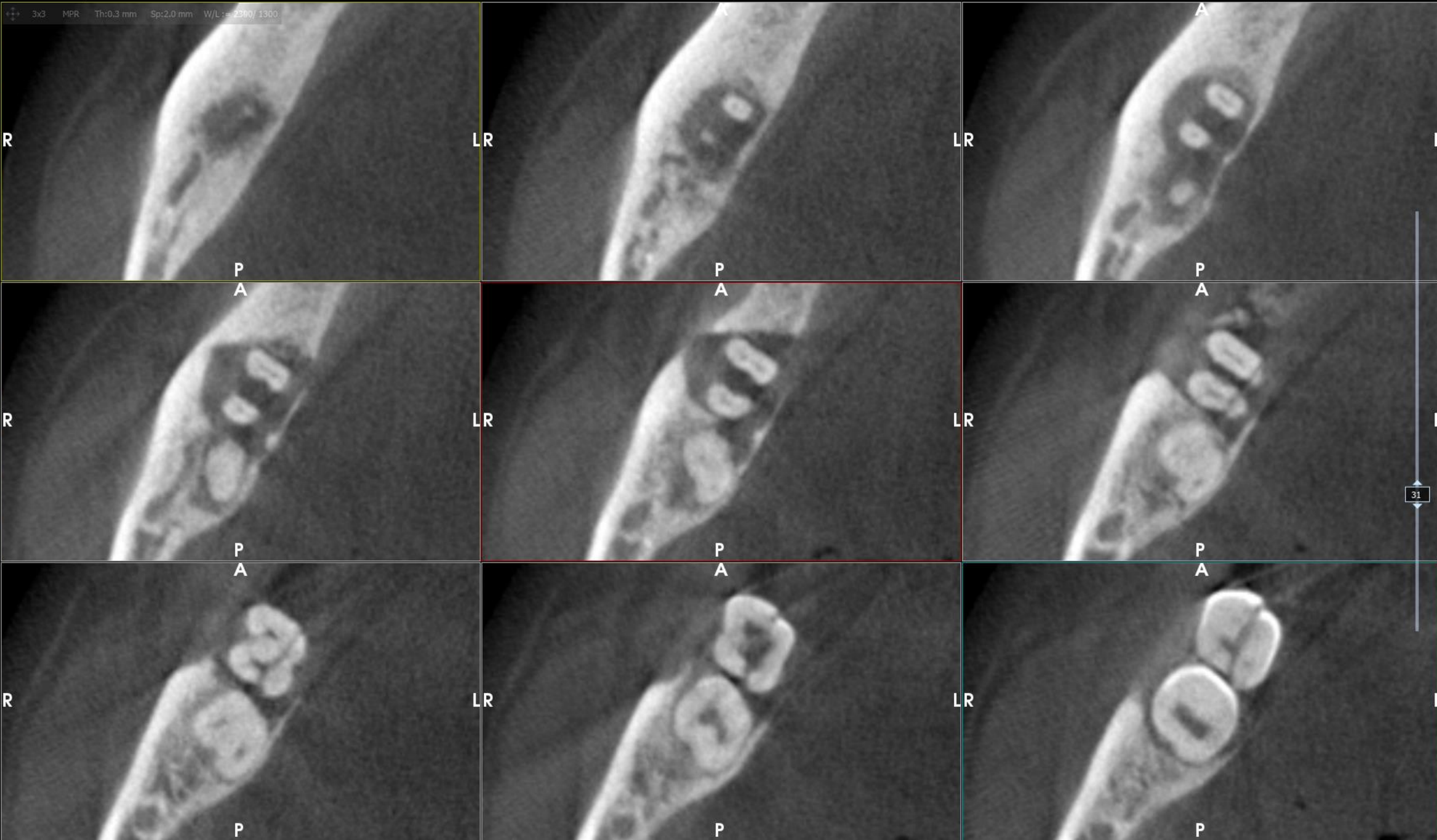
Segmentation

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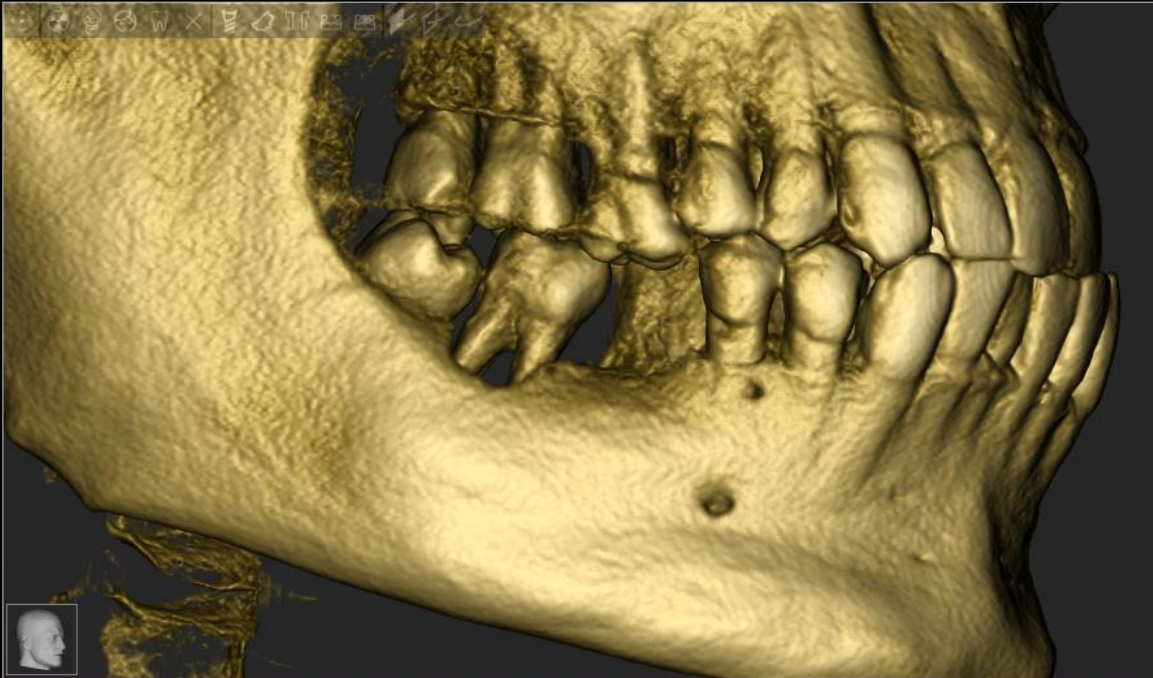


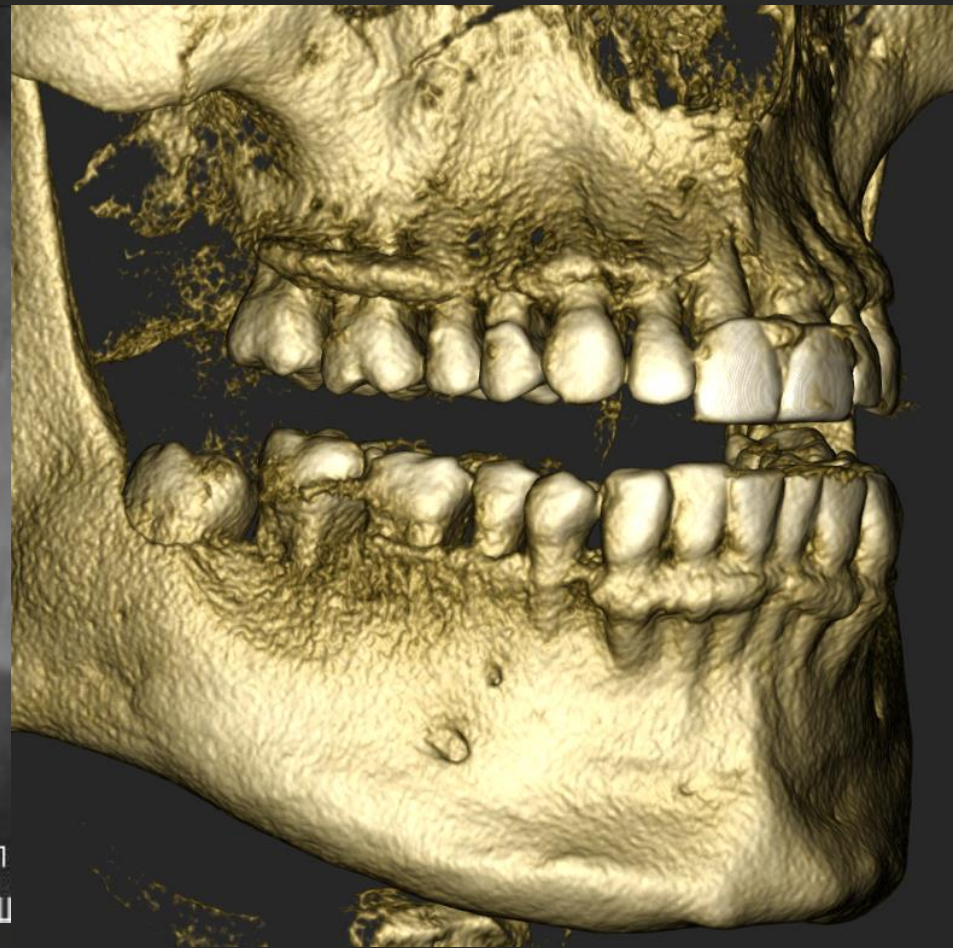
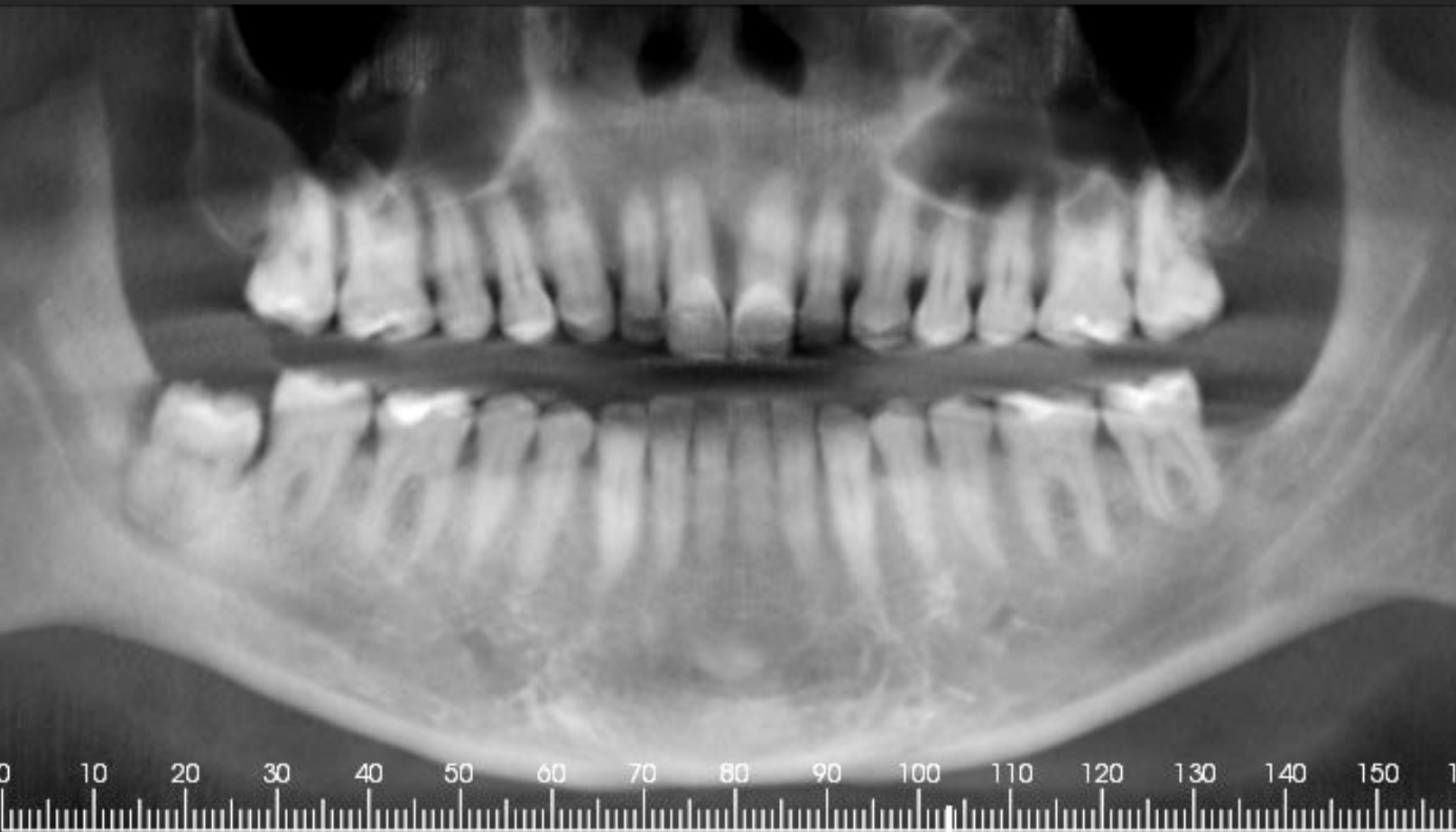
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3x3 MPR Th:0.4 mm Sp:1.0 mm W/L:= 30/1000



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Segmentation

3x3 MPR Th:0.4 mm Sp:1.0 mm W/L:= 30/1000

R

LR

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LR

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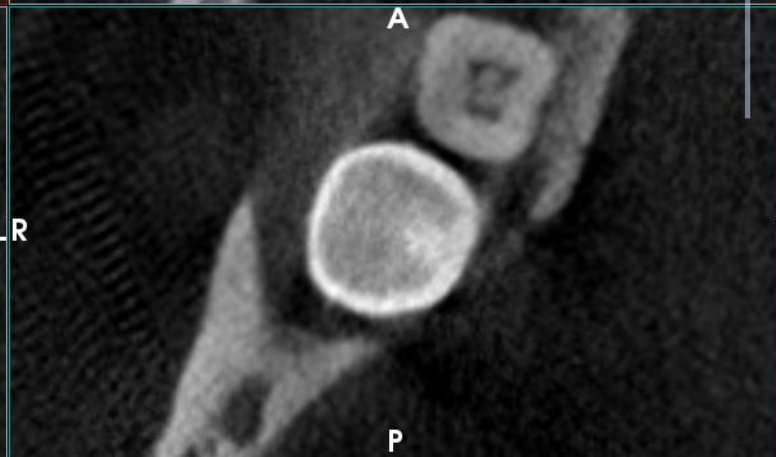
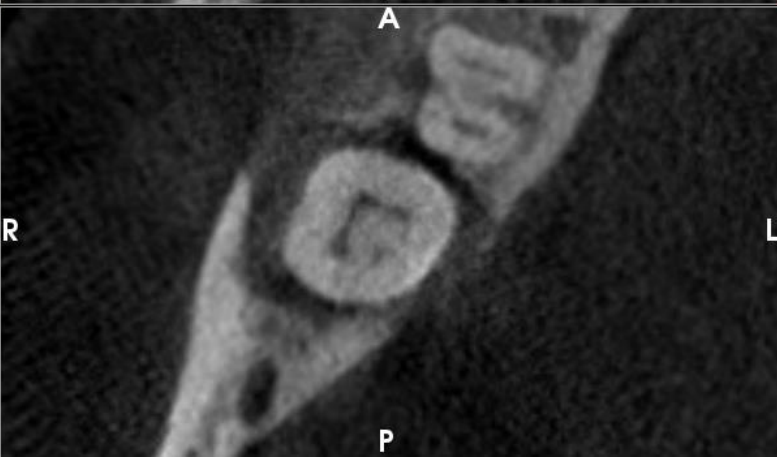
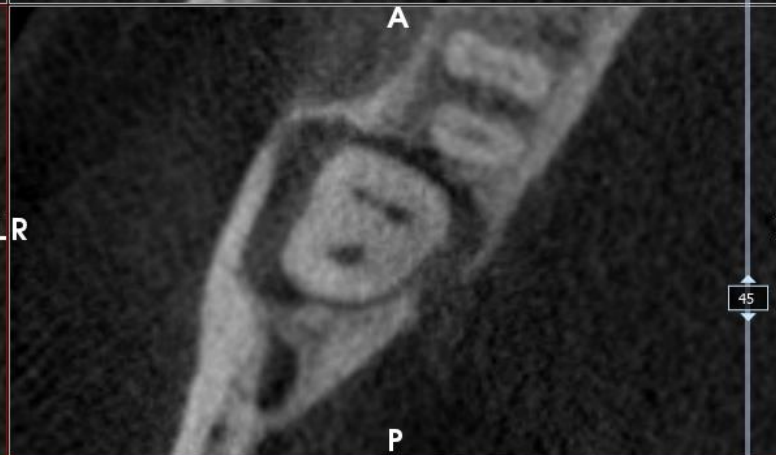
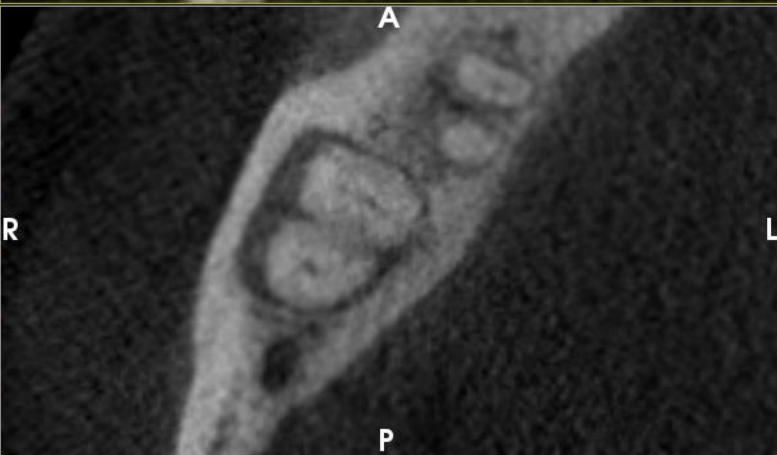
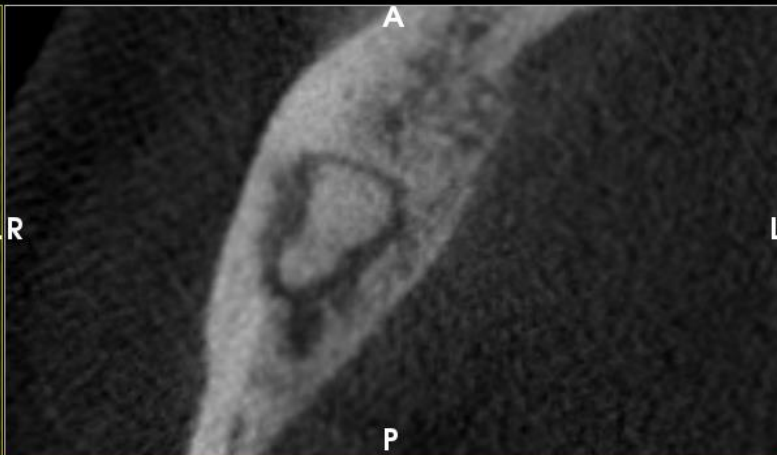
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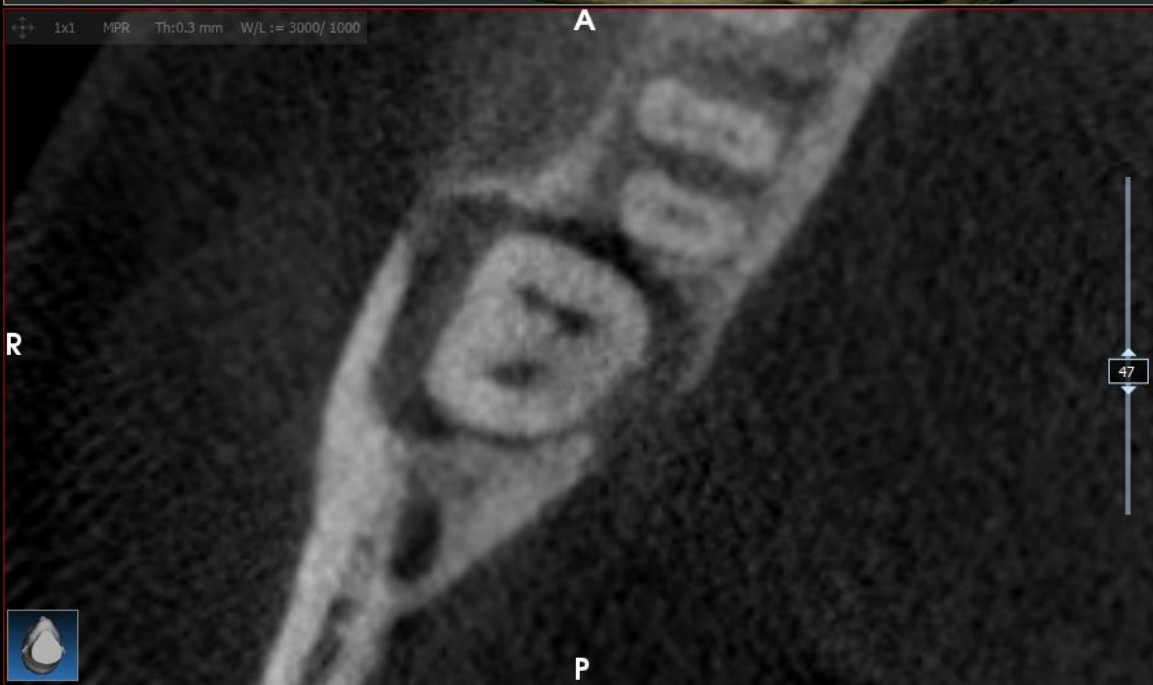
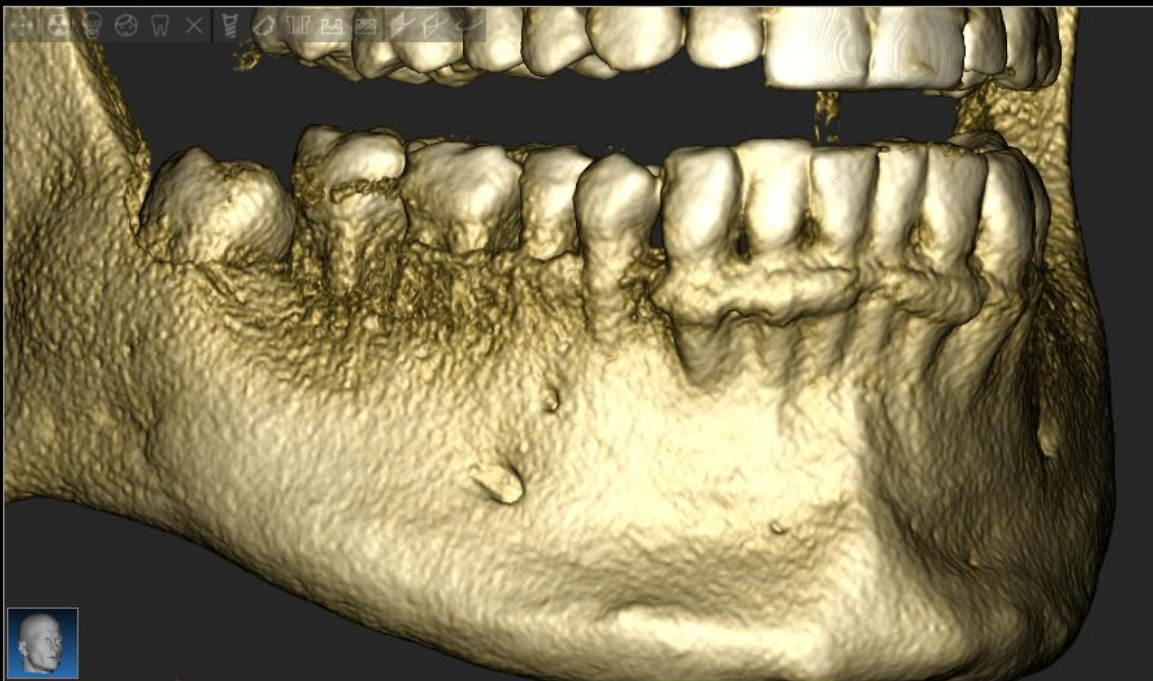


Segmentation



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Layout



Screenshot



W/L



Ruler

ACTEON



Undo



Redo



Info



Settings



Help



Exit



VOI Settings



3D Settings



Data Import



CPR Settings



Nerve Drawing



Teeth Setup



Implant Planning



Reports/Export



Advanced Tools



Object List



Guide Design



Create Model



Segmentation

R

LR

LR

L

3x1 MPR Th:0.4 mm Sp:1.0 mm W/L:= 300/1000

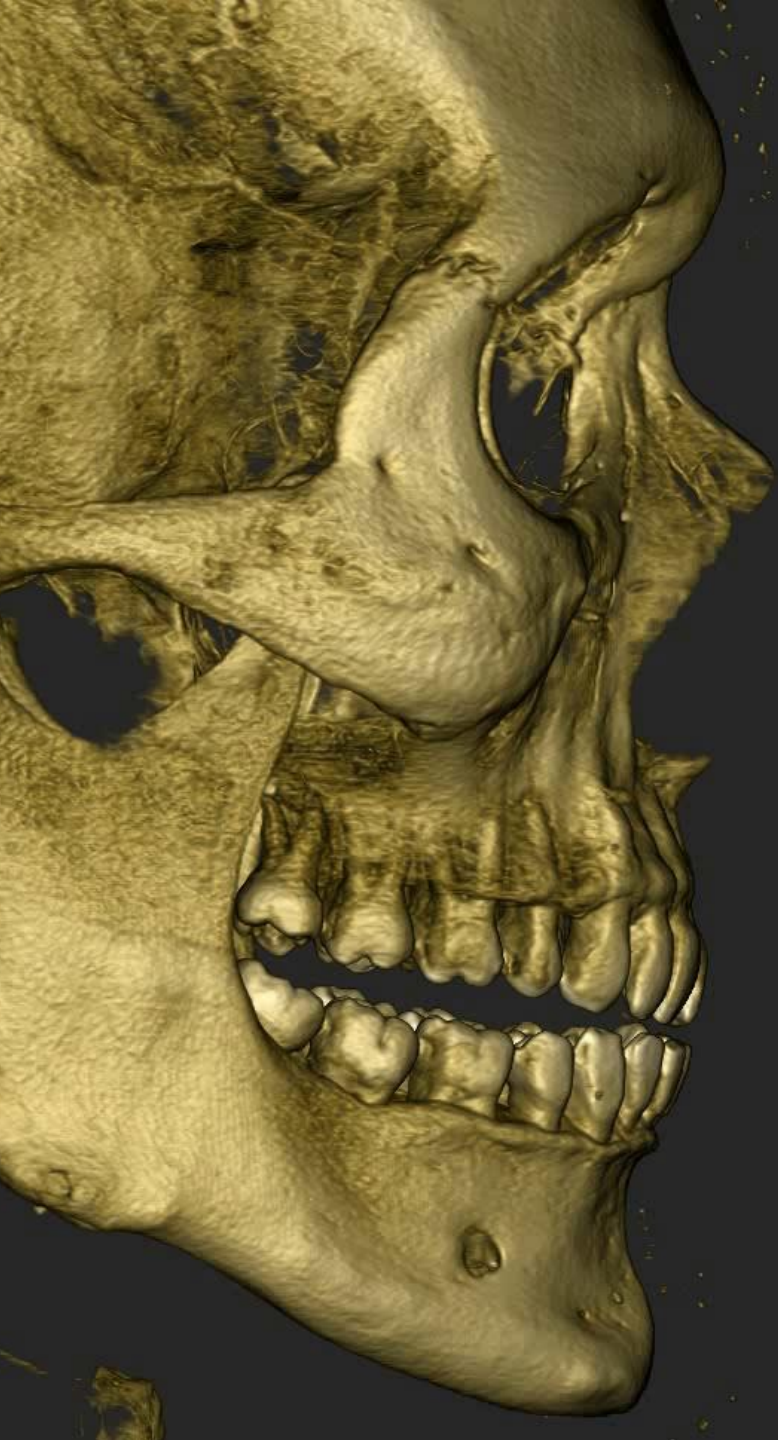
S

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Messages For Consideration

- The high prevalence of dental trauma, infectious diseases, and complications of dental procedures, often require interpretation of dental images in daily emergency practice
- Teeth can be a source or extension of pathological processes and should not be overlooked by the radiologist when performing emergency imaging
- Radiologists can use their knowledge of key dental imaging findings in emergency radiology to add great value to image interpretation



Terima Kasih