



# Semmelweis Egyetem Fogorvostudományi Kar Fogászati és Szájsebészeti Oktató Intézet

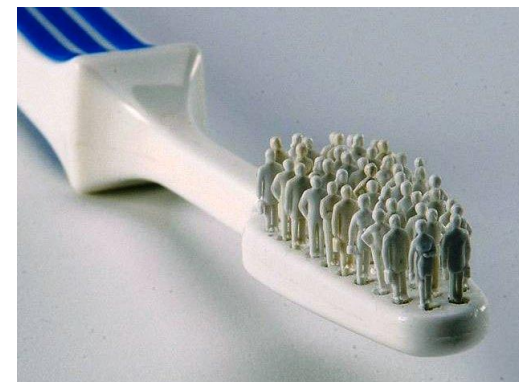
igazgató: Dr. Kivovics Péter egyetemi docens

<http://semmelweis-egyetem.hu/fszoi/>

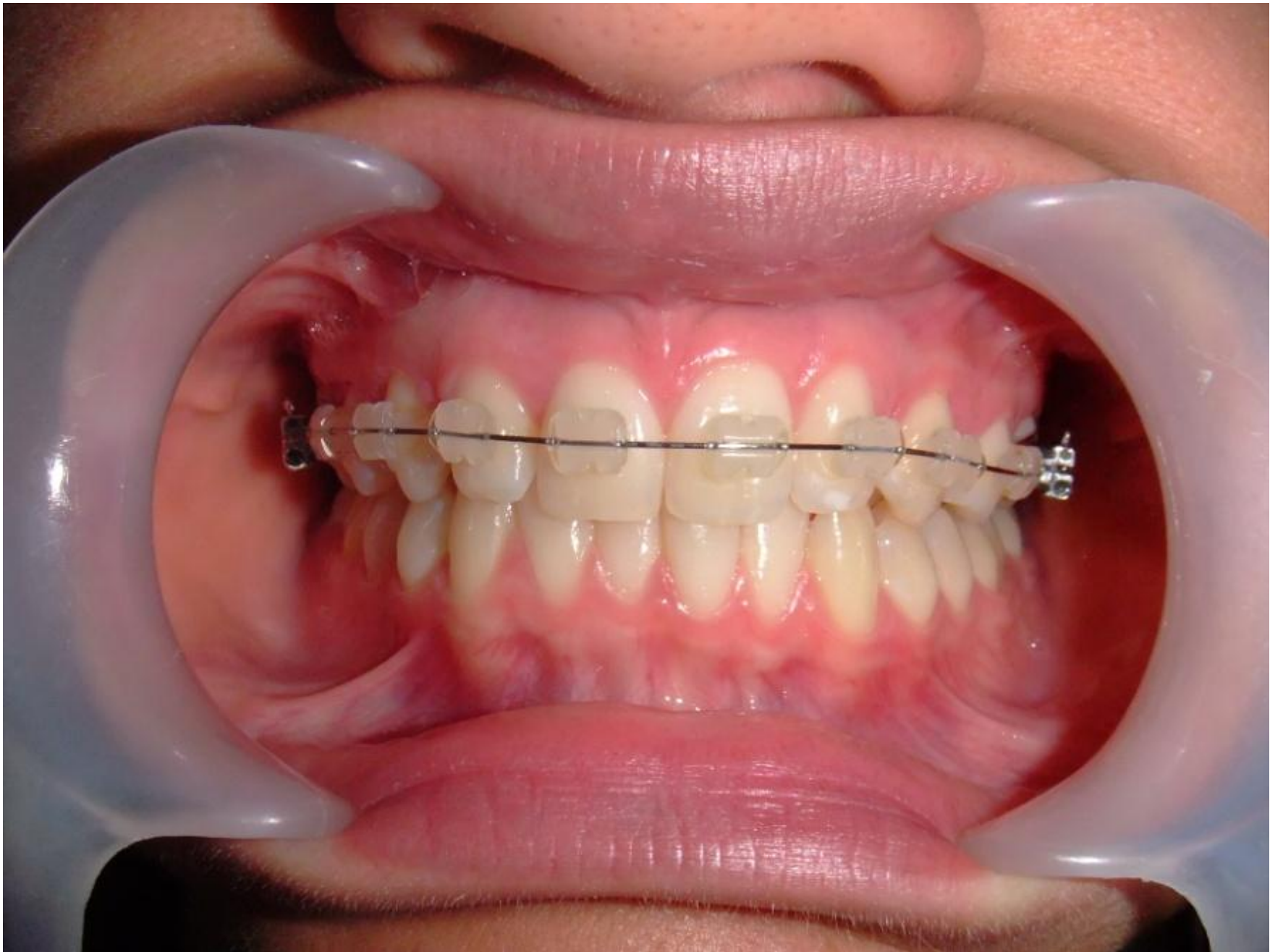
<https://www.facebook.com/fszoi>

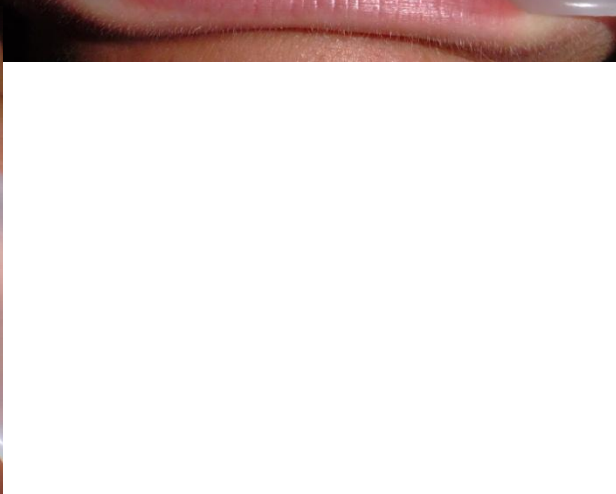
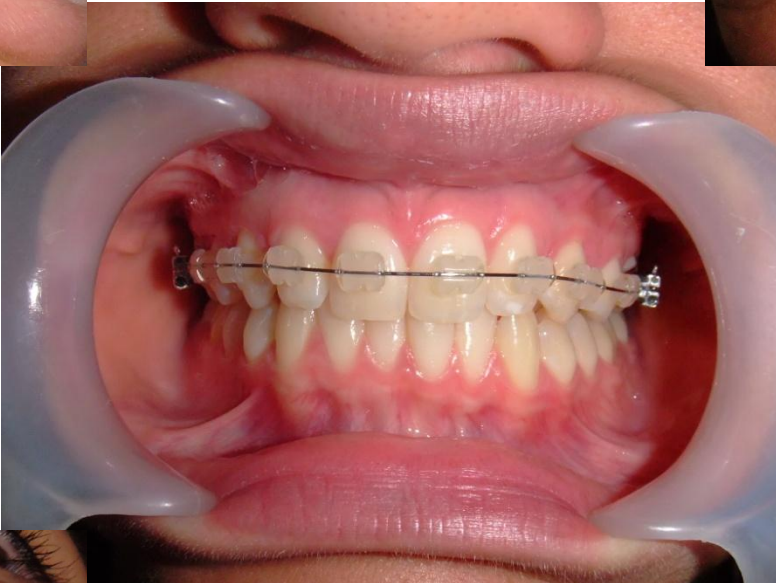
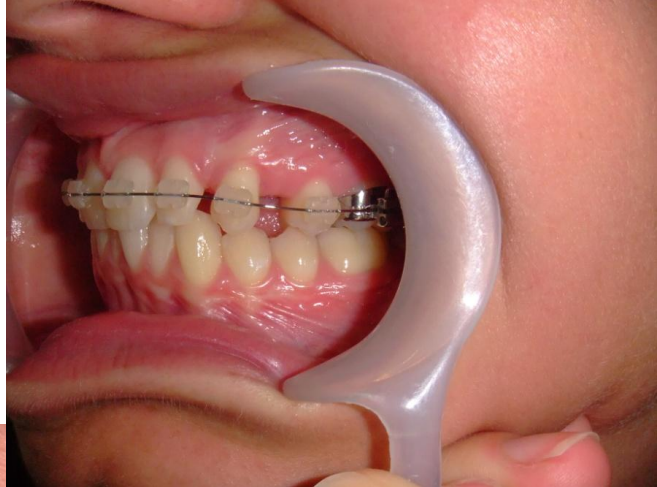


## A cone beam CT használata a fogszabályozásban



**Dr. Horváth János**  
osztályvezető főorvos  
Fogszabályozási Osztály





**Volume**

Volume [icon]

---

**General**

**View**

[Navigation icons: pan, rotate, zoom, etc.]

---

**Measure**

[Measurement icons: ruler, protractor, etc.]

---

**Segmentation**

[Segmentation icons: selection, etc.]

---

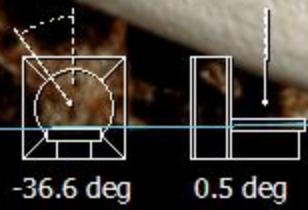
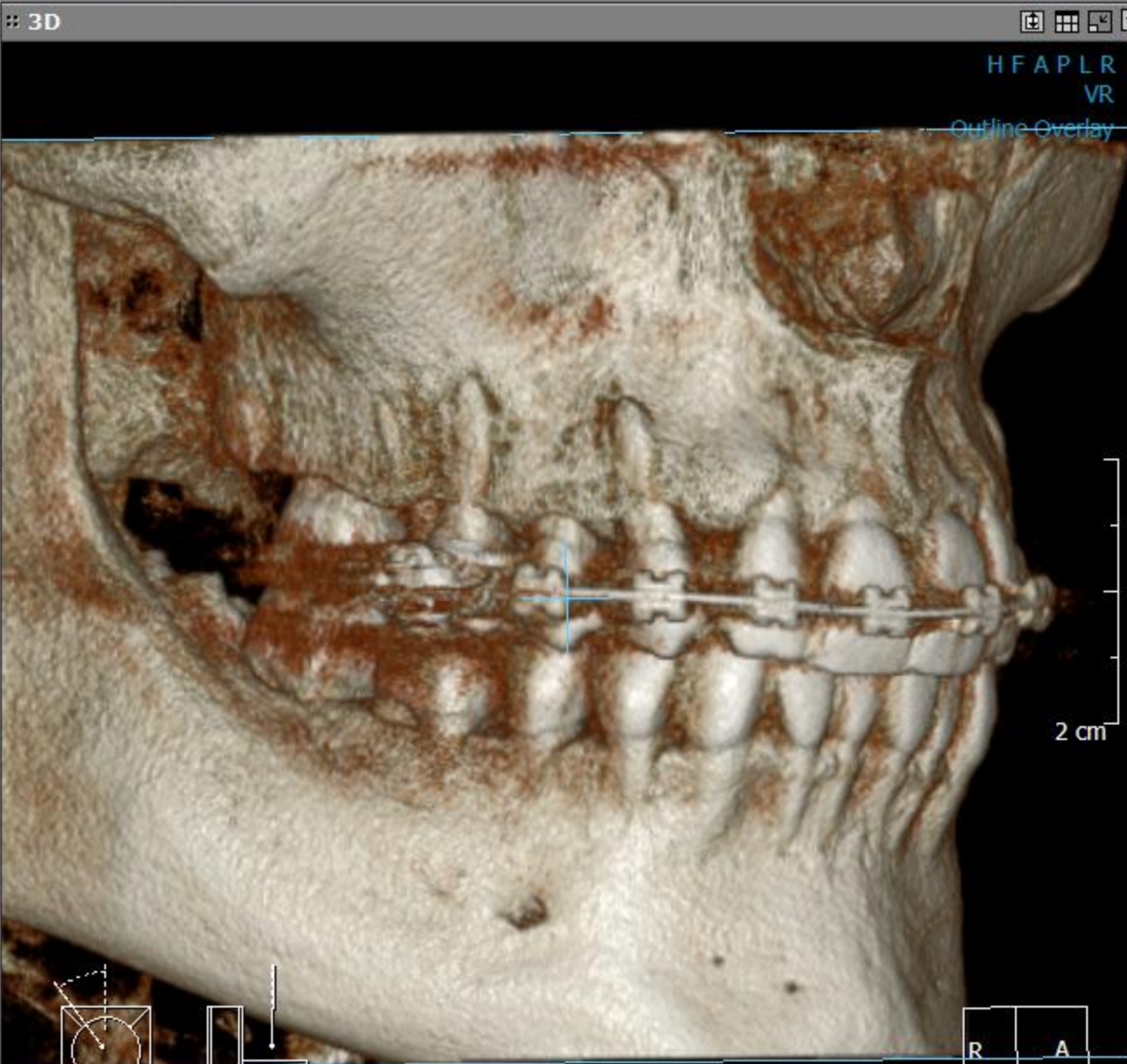
**Task**

MPR [dropdown]

Curve [dropdown]

3D Zoom [dropdown]

Settings [dropdown]



**Coronal**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

5.3 [mA]  
89 [KVp]  
CT

---

**Sagittal**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

5.3 [mA]  
89 [KVp]  
CT

---

**Axial**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

5.3 [mA]  
89 [KVp]  
CT

**Volume**

Volume [icon]

---

**General**

**View**

[Navigation icons: pan, rotate, zoom, etc.]

---

**Measure**

[Measurement icons: ruler, protractor, etc.]

---

**Segmentation**

[Segmentation icons: selection, etc.]

---

**Task**

MPR [dropdown]

Curve [dropdown]

3D Zoom [dropdown]

Settings [dropdown]



**Coronal**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

5.3 [mA]  
89 [kVp]  
CT

---

**Sagittal**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

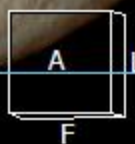
5.3 [mA]  
89 [kVp]  
CT

---

**Axial**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

5.3 [mA]  
89 [kVp]  
CT



**Volume**

Volume [icon]

---

**General**

**View**

[Navigation icons: pan, rotate, zoom, etc.]

---

**Measure**

[Measurement icons: ruler, protractor, etc.]

---

**Segmentation**

[Segmentation icons: selection, etc.]

---

**Task**

MPR [dropdown]

Curve [dropdown]

3D Zoom [dropdown]

Settings [dropdown]

---

**Tool Options**



**Coronal**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

5.3 [mA]  
89 [KVp]  
CT

---

**Sagittal**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

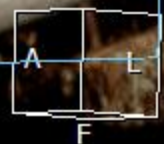
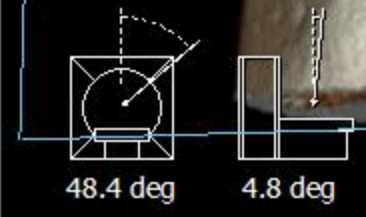
5.3 [mA]  
89 [KVp]  
CT

---

**Axial**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999

5.3 [mA]  
89 [KVp]  
CT



**Volume**

Volume

---

**General**

**View**

Navigation icons: Pan, Rotate, Zoom, Hide, Show, ABC, Copy

---

**Measure**

Measurement icons: Ruler, Circle, Arc, Area, Volume, Angle, Length, Width, Height, Mass, Density, Moment, Inertia, Centroid, Surface, Perimeter, Area, Volume, Mass, Density, Moment, Inertia, Centroid

---

**Segmentation**

Segmentation icons: Mask, Select, Deselect, Copy, Paste, Undo, Redo, Refresh

---

**Task**

MPR

Curve

3D Zoom

Settings

---

**Tool Options**

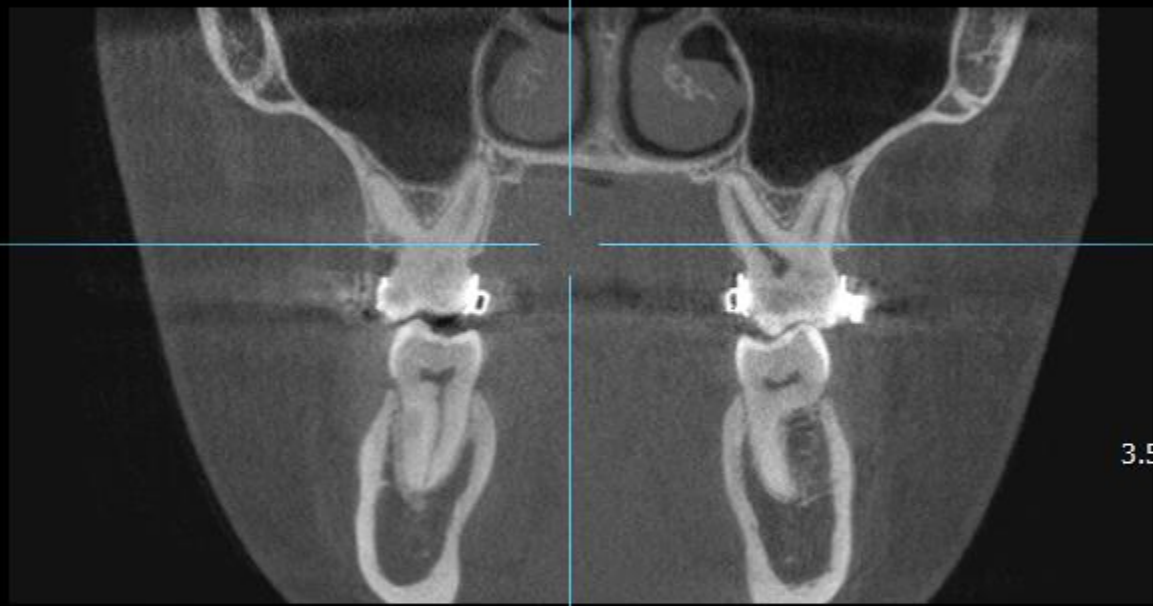
Rotation

**Coronal**

ID: 024056

[F] 19

Series: 999



5.3 [mA]  
89 [kVp]  
CT

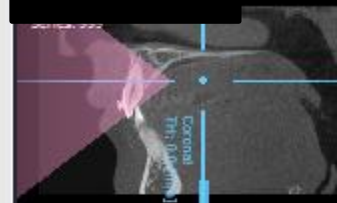
MPR  
TH: 0 [mm]



**Fine Tuning**

**Sagittal**

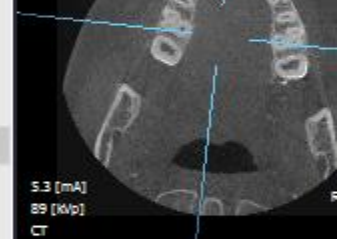
ID: 024056  
Nikolett Szammer (F) 19



5.3 [mA]  
89 [kVp]  
CT

**Axial**

Series: 999



5.3 [mA]  
89 [kVp]  
CT

**3D**



48.4 deg 4.8 deg

**Volume**

Volume

---

**General**

**View**

[Navigation icons: pan, rotate, zoom, etc.]

---

**Measure**

[Measurement icons: ruler, protractor, etc.]

---

**Segmentation**

[Segmentation icons: selection, deletion, etc.]

---

**Task**

MPR

Curve

3D Zoom

Settings

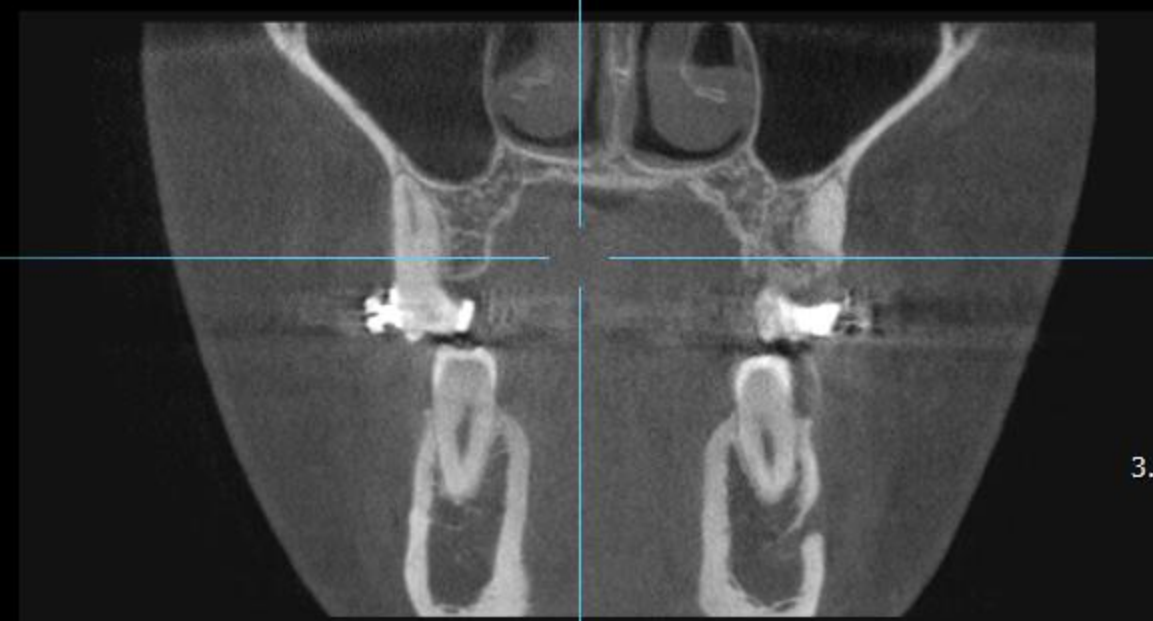
---

**Tool Options**

**Coronal**

ID: 024056  
 | \_\_\_\_\_ ] 19  
 20110622  
 Series: 999

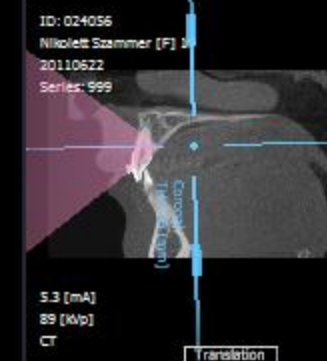
MPR  
 TH: 0 [mm]



5.3 [mA]  
 89 [kVp]  
 CT

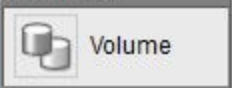


**Sagittal**





Volume



General

View



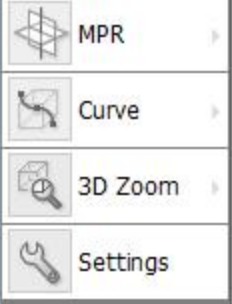
Measure



Segmentation



Task



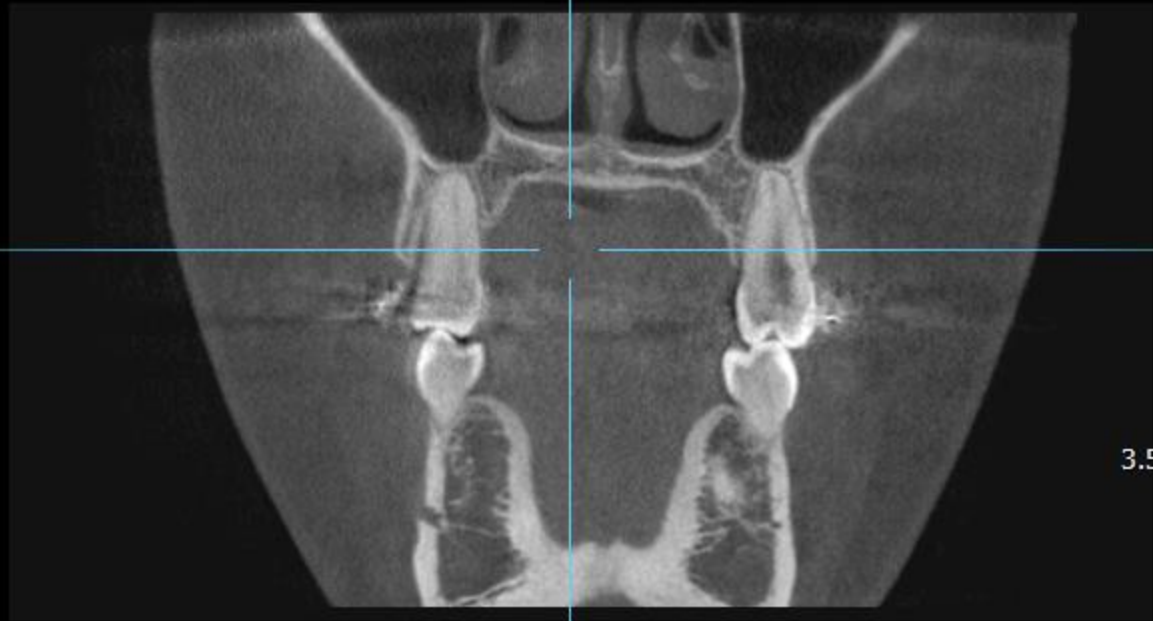
Tool Options

Coronal

ID: 024056  
20110622  
Series: 999

F 19

MPR  
TH: 0 [mm]



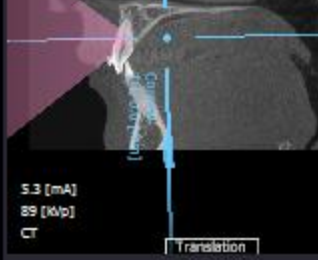
3.5 cm

5.3 [mA]  
89 [kVp]  
CT



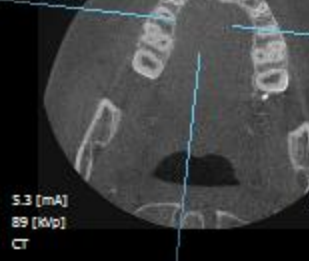
Sagittal

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999



Axial

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999



3D



48.4 deg 4.8 deg

**Volume**

Volume [icon]

---

**General**

**View**

[Navigation icons: pan, rotate, zoom, etc.]

---

**Measure**

[Measurement icons: ruler, protractor, etc.]

---

**Segmentation**

[Segmentation icons: selection, deletion, etc.]

---

**Task**

MPR [dropdown]

Curve [dropdown]

3D Zoom [dropdown]

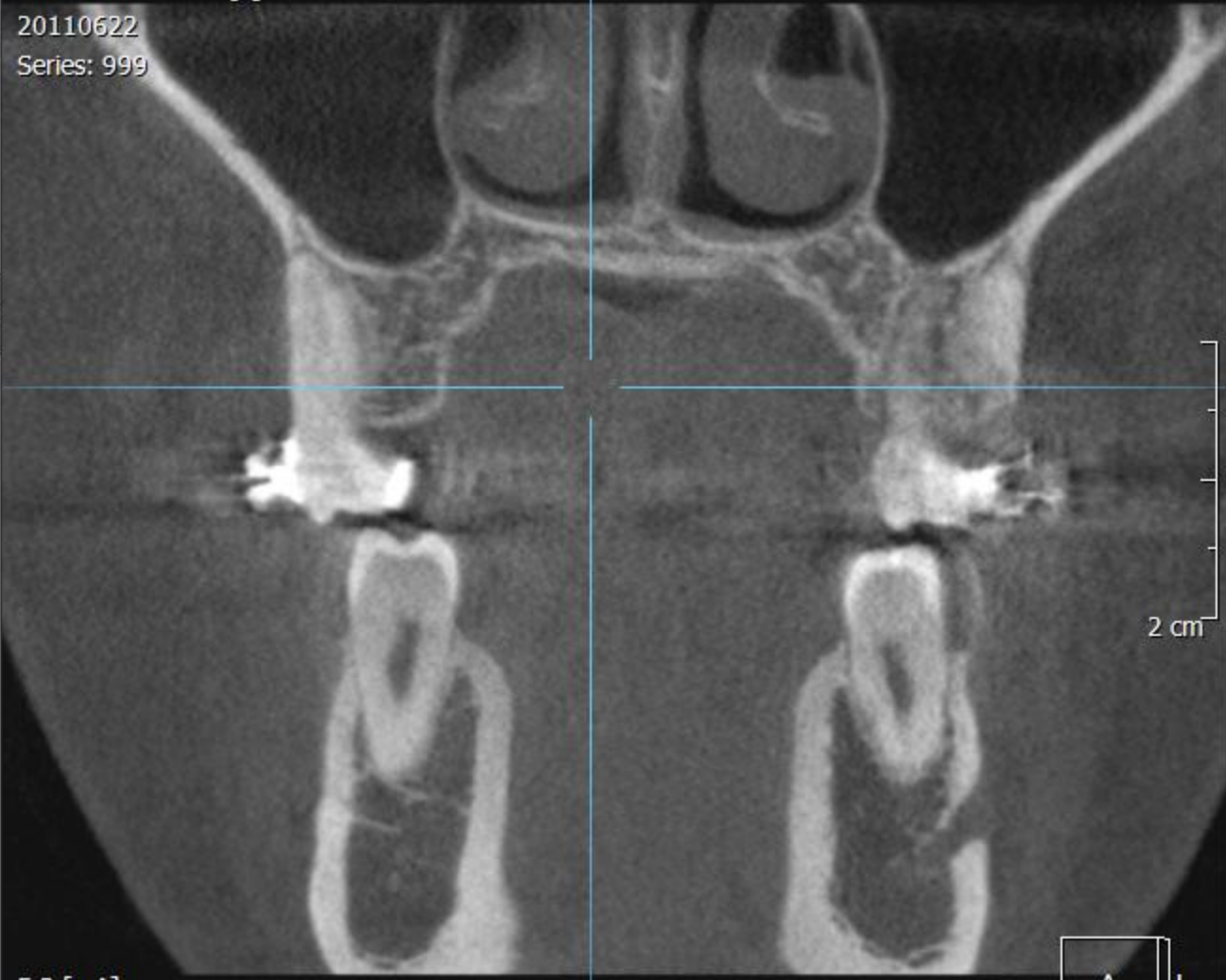
Settings [dropdown]

---

**Tool Options**

**Coronal**

ID: 024056  
20110622  
Series: 999



5.3 [mA]  
89 [kVp]  
CT

MPR  
TH: 0 [mm]

**Sagittal**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999



**Axial**

ID: 024056  
Nikolett Szammer [F] 19  
20110622  
Series: 999



**3D**



48.4 Deg 4.8 Deg

**Volume**

Volume [icon]

---

**General**

**View**

[Navigation icons: pan, rotate, zoom, etc.]

---

**Measure**

[Measurement icons: ruler, protractor, etc.]

---

**Segmentation**

[Segmentation icons: selection, mask, etc.]

---

**Task**

MPR [dropdown]

Curve [dropdown]

3D Zoom [dropdown]

Settings [dropdown]

---

**Tool Options**

**Coronal**

ID: 024056  
 [redacted] [F] 19  
 20110622  
 Series: 999

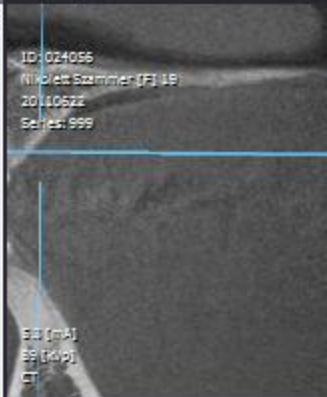


MPR  
 TH: 0 [mm]

5.3 [mA]  
 89 [kVp]  
 CT

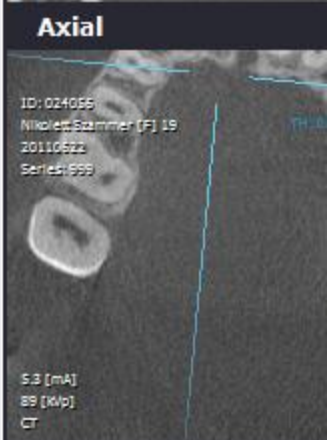
**Sagittal**

ID: 024056  
 Nicolet Stammer [F] 19  
 20110622  
 Series: 999

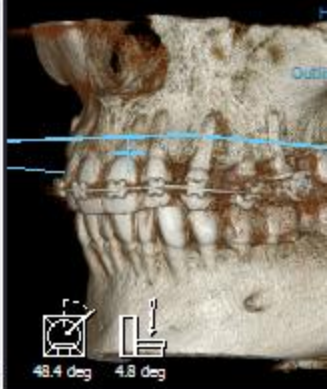


**Axial**

ID: 024056  
 Nicolet Stammer [F] 19  
 20110622  
 Series: 999



**3D**



[Rotation icons]  
 48.4 deg 4.8 deg

**Volume**

Volume [icon]

---

**General**

**View**

[Navigation icons: pan, rotate, zoom, etc.]

---

**Measure**

[Measurement icons: ruler, protractor, etc.]

---

**Segmentation**

[Segmentation icons: selection, deletion, etc.]

---

**Task**

MPR [dropdown]

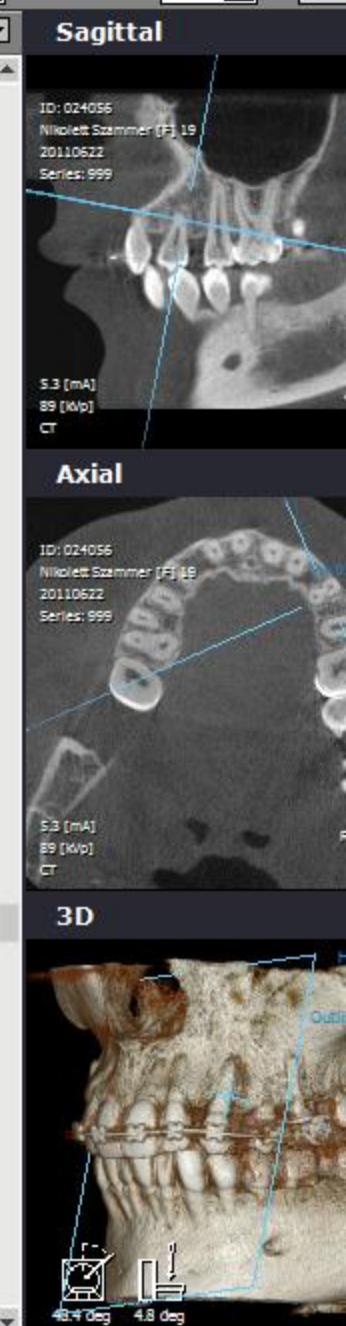
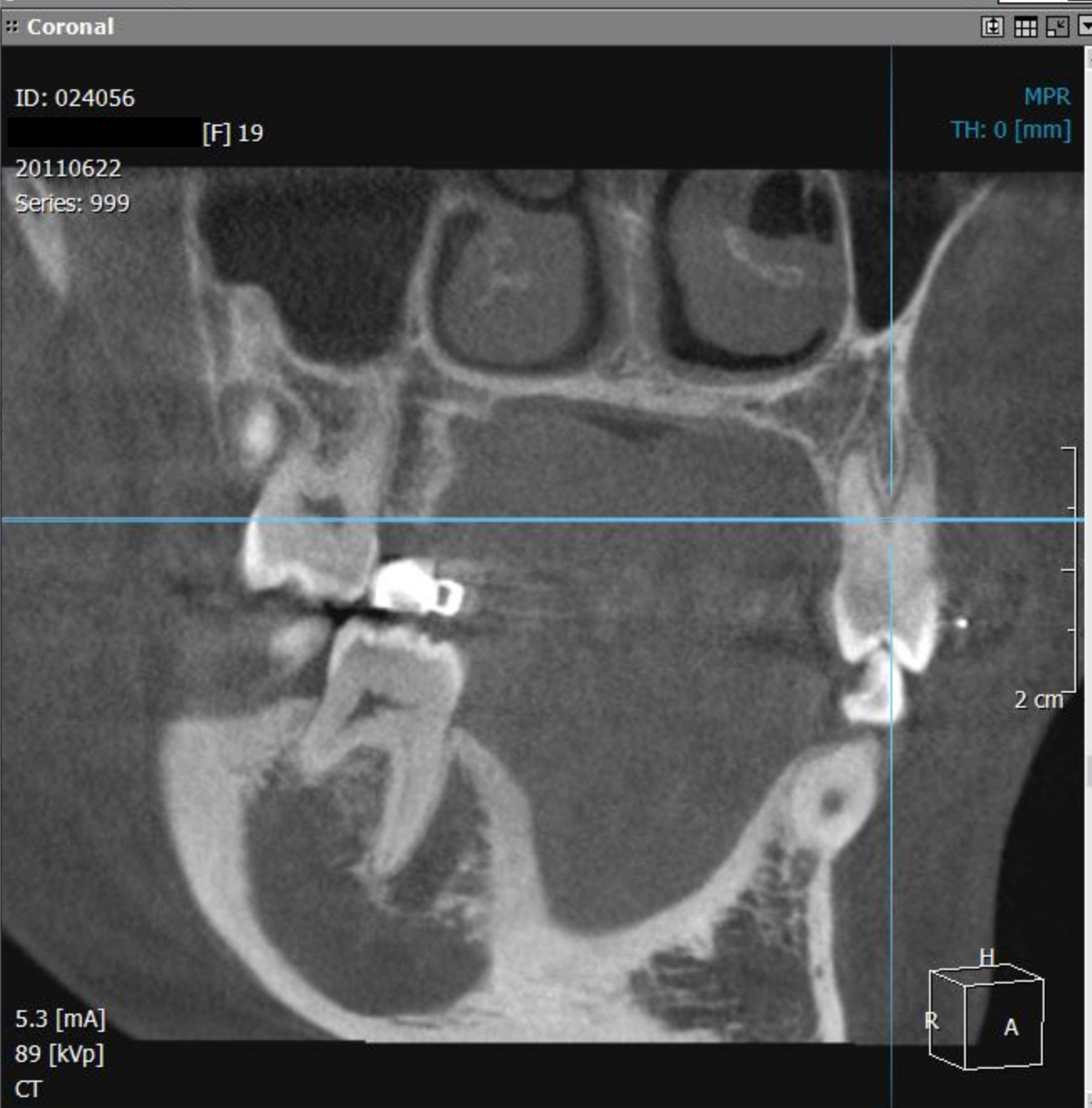
Curve [dropdown]

3D Zoom [dropdown]

Settings [dropdown]

---

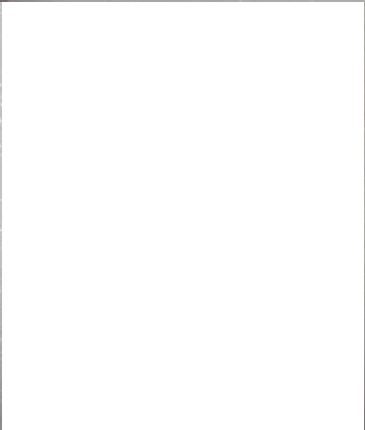
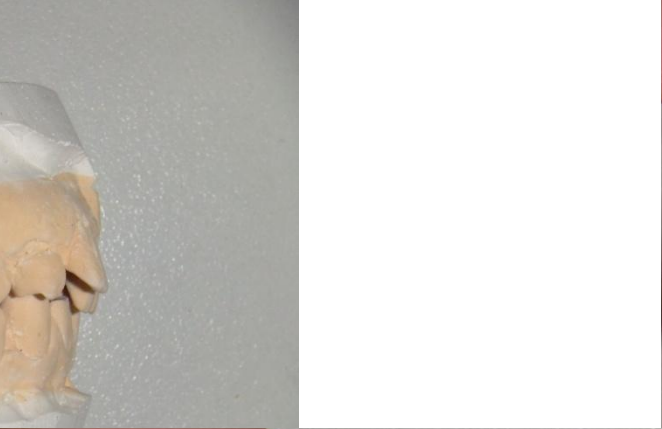
**Tool Options**



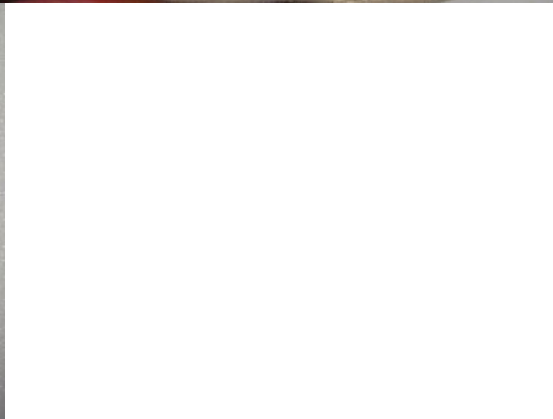
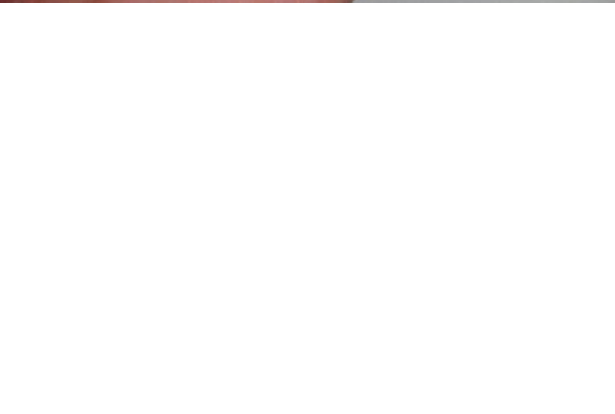
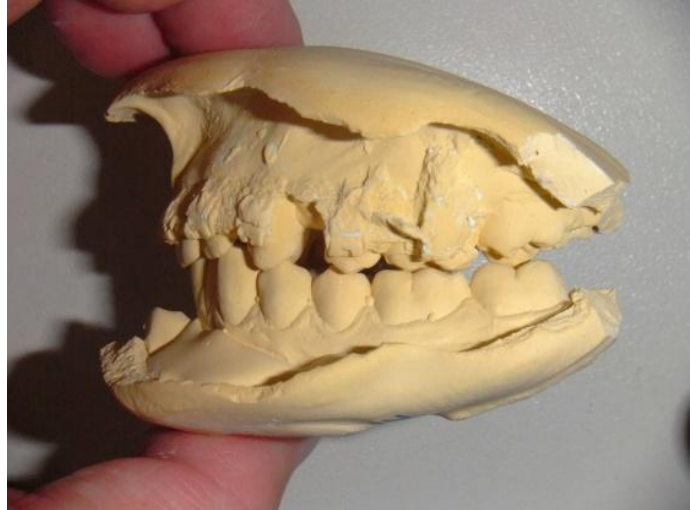












P.H.







































































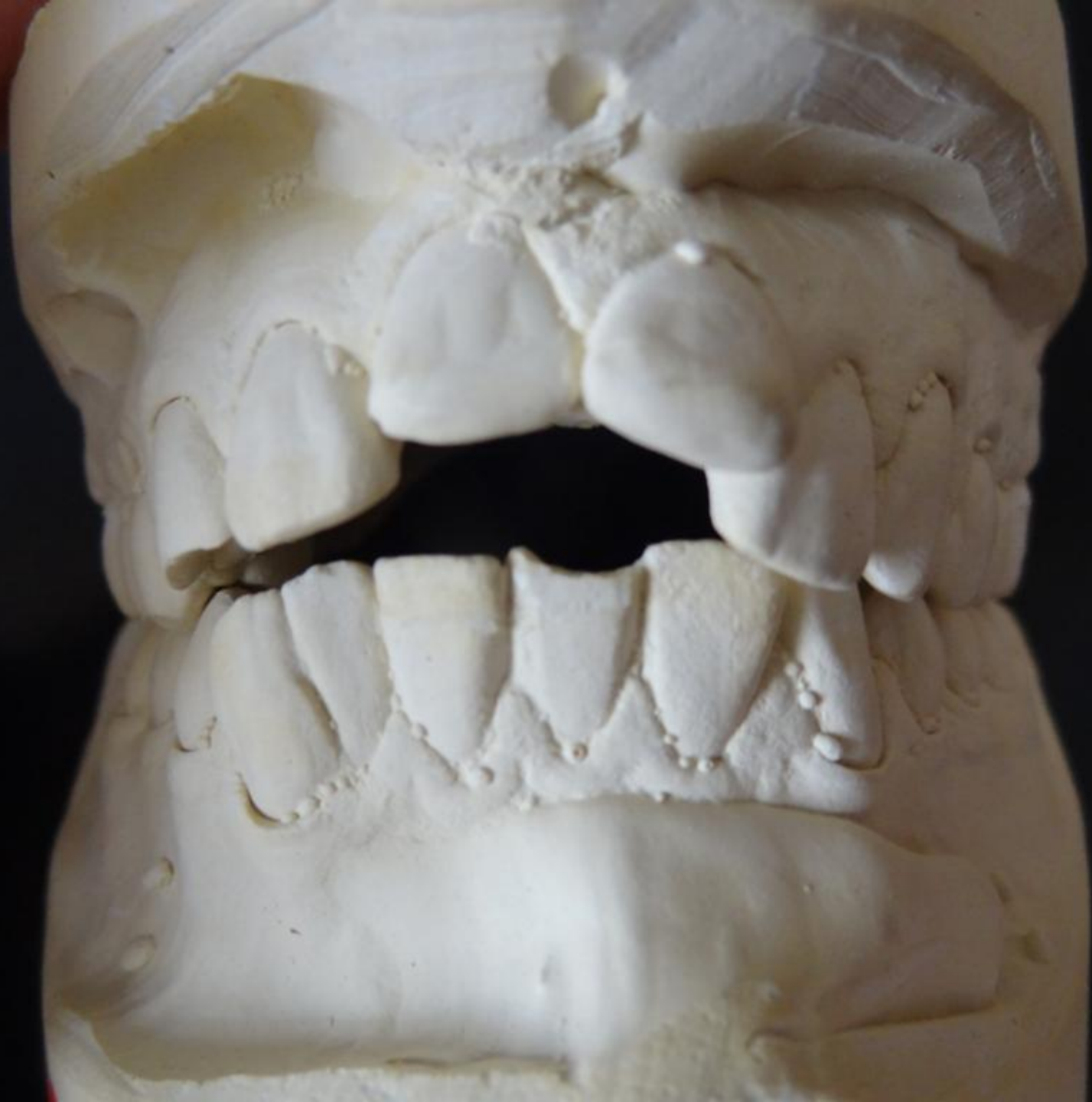








**0.**













File Edit View Measure Annotation Segmentation Simulation Tools Help



MPR OBLIQUE 3DZOOM CURVE Move Cross Section

Sectional



Axial

ID : 194978

20150121

Series : 1

R

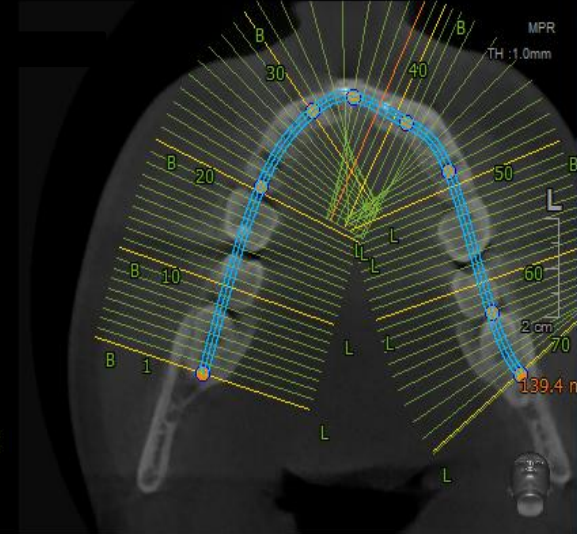
B

13.26 [dGy\*cm<sup>2</sup>]

5.3 [mA]

89 [kVp]

CT



Panoramic

in : 194978

20150121

Series : 1

Idx: 21

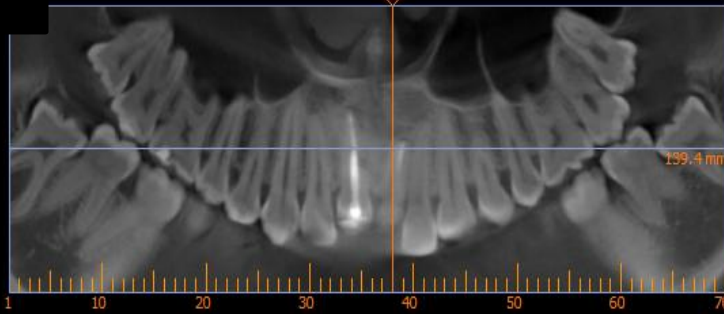
R

13.26 [dGy\*cm<sup>2</sup>]

5.3 [mA]

89 [kVp]

CT



3D

MPR

TH : 2.0mm

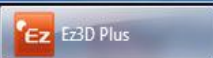
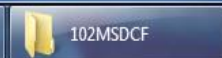
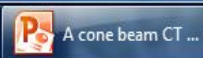
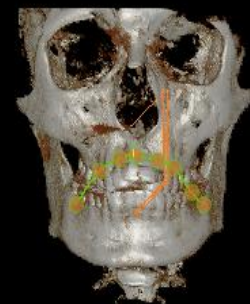
L

16 mm

H F A P L R

VR

Outline Overlay



23:06  
2015.09.10.



B

10 20 30 40 50 60 70 80 90 100 mm

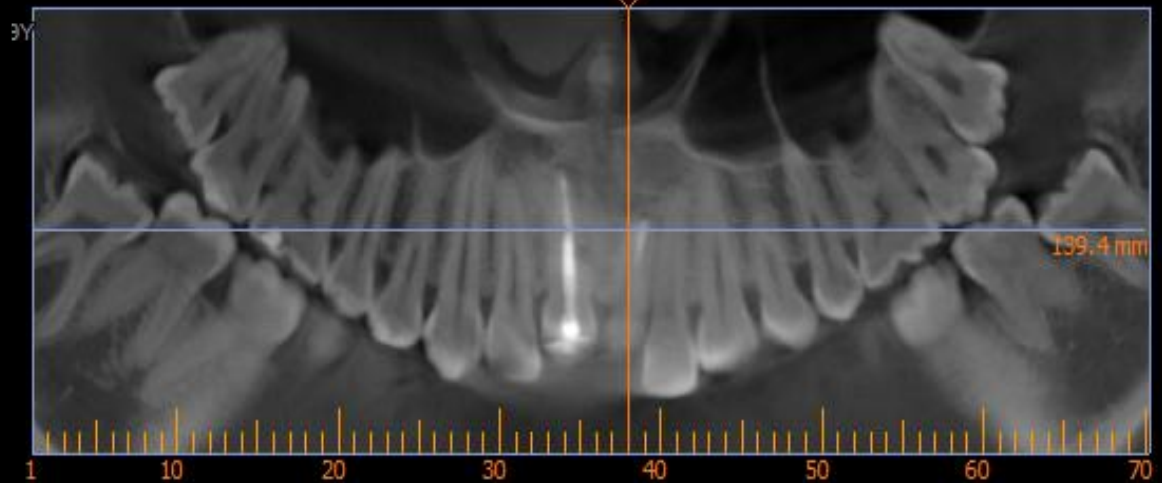
panoramic

194978

50121

es : 1

21



M  
TH : 2.0m

L  
16 m

28 [dGy\*cm^2]

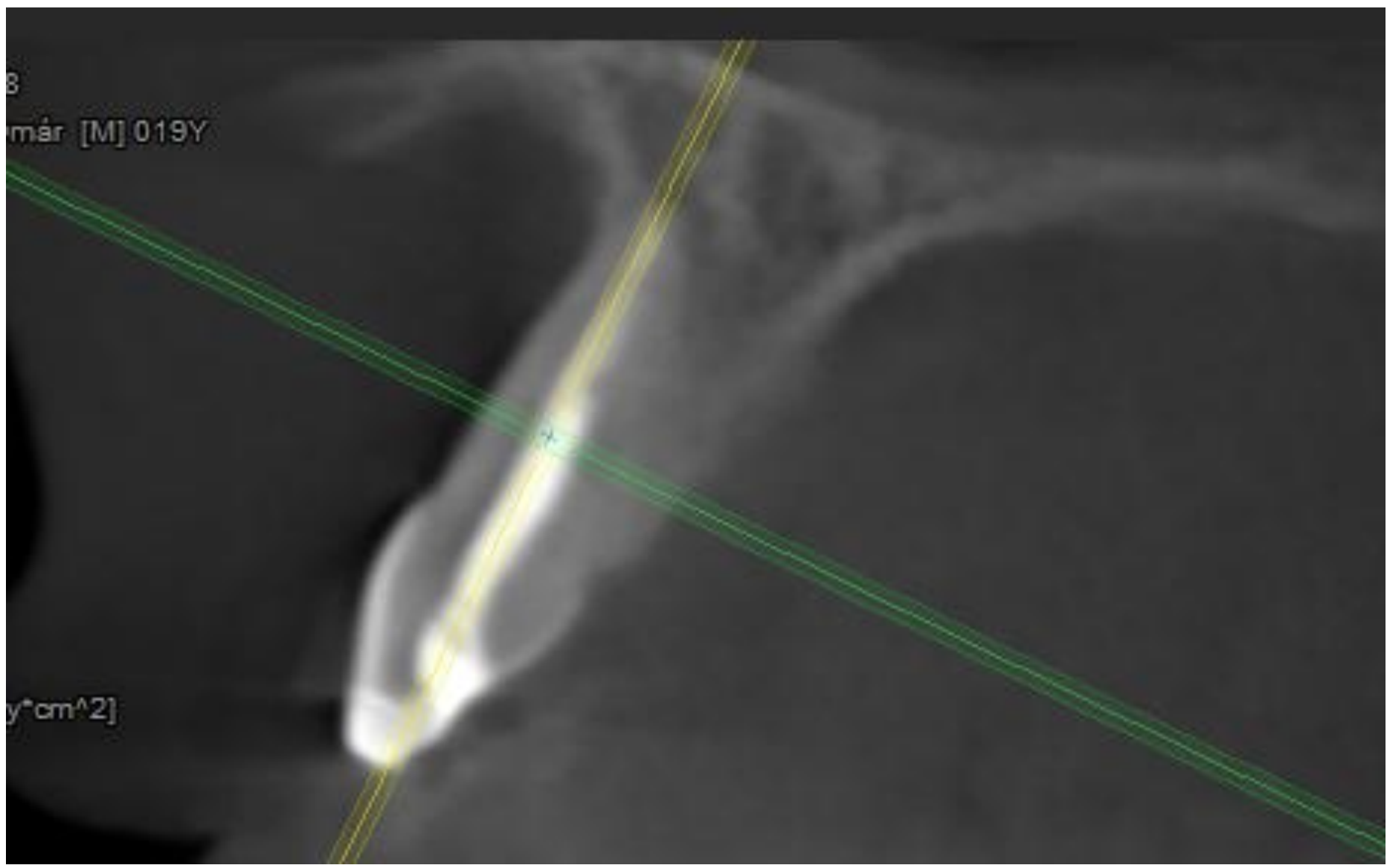
[mA]

kVp]

1 10 20 30 40 50 60 70

3  
már [M] 019Y

y^cm^2]



File Edit View Measure Annotation Segmentation Simulation Tools Help

MPR OBLIQUE 3DZOOM CURVE Moves the image within the pane.

**Coronal**  
ID: 194978  
20150121  
Series: 1  
R  
13.26 [dGy\*cm^2]  
5.3 [mA]  
89 [kVp]  
CT  
15 mm

**Capital**  
ID: 194978  
20150121  
Series: 1  
A  
13.26 [dGy\*cm^2]  
5.3 [mA]  
89 [kVp]  
CT  
15 mm

**Axial**  
ID: 194978  
20150121  
Series: 1  
R  
13.26 [dGy\*cm^2]  
5.3 [mA]  
89 [kVp]  
CT  
15 mm

**3D**  
HF A PL R  
VR  
Outline Overlay

A cone beam CT ... ZoomBrowser EX ... 102MSDCF Ez3D Plus

23:13  
2015.09.10.











BZ



2010.11.30



2010.11.30

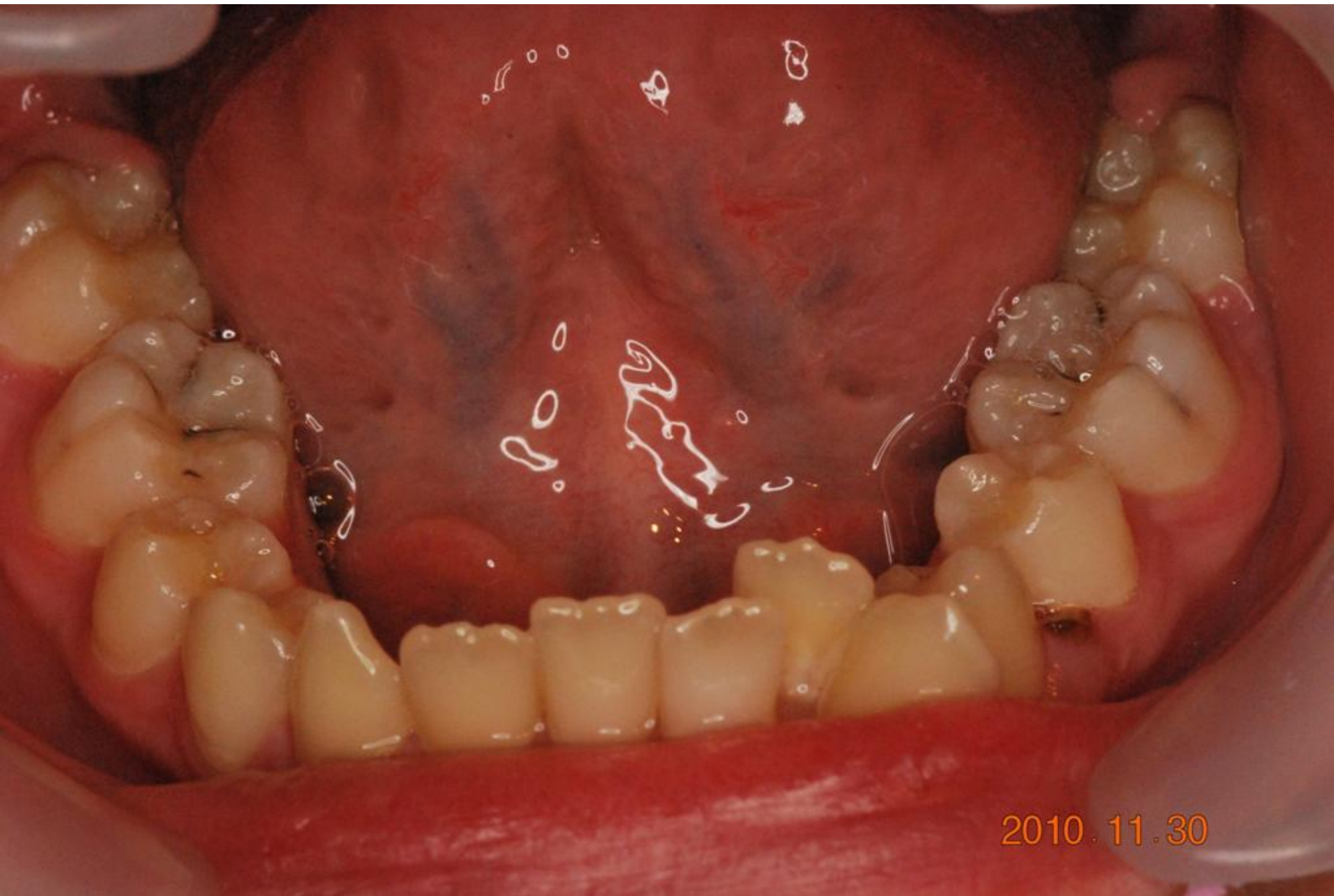


2010.11.30



2010.11.30





2010.11.30



2010.11.30



2010.11.3



2010.12.02



2010.12.02



2010.12.02

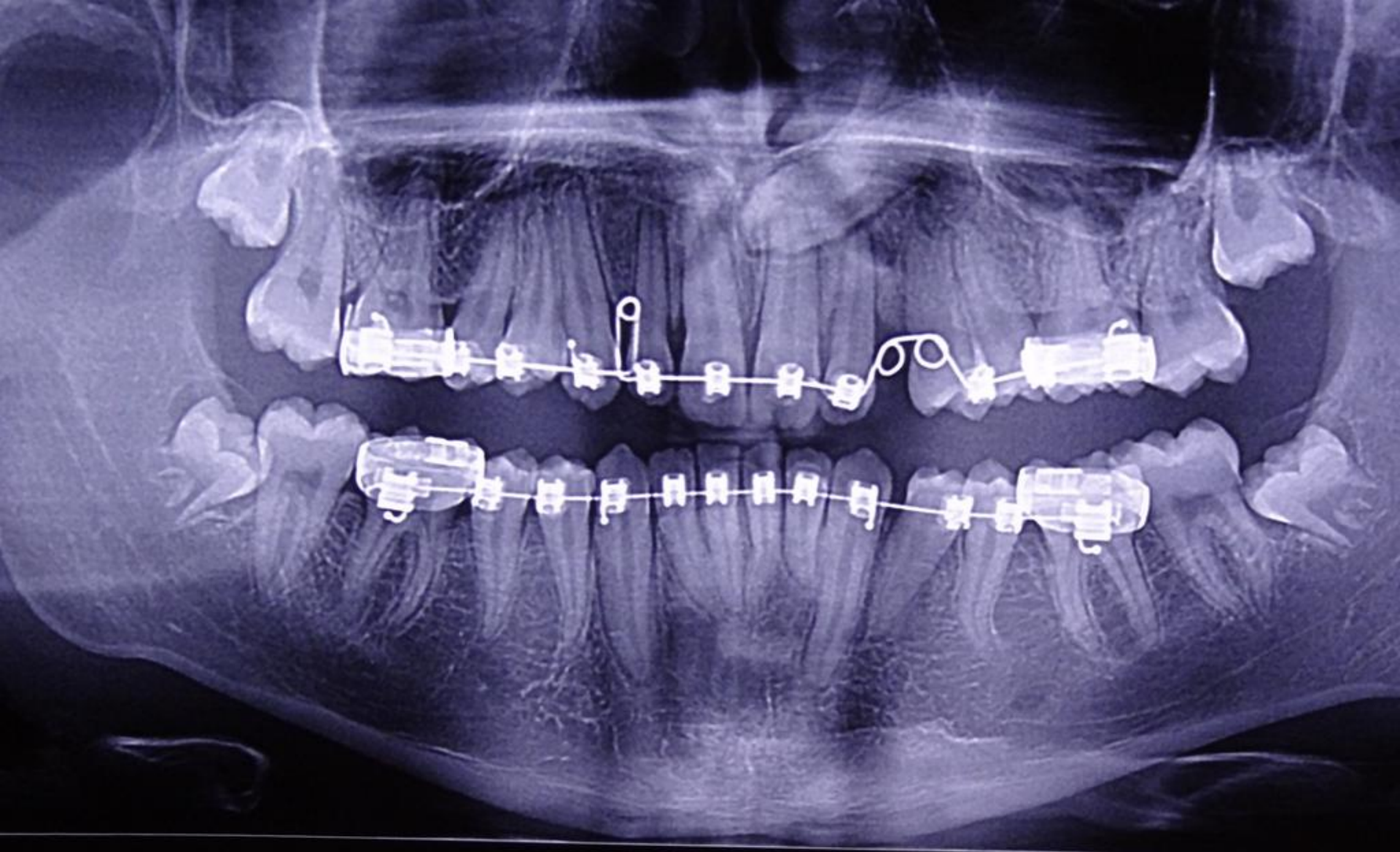


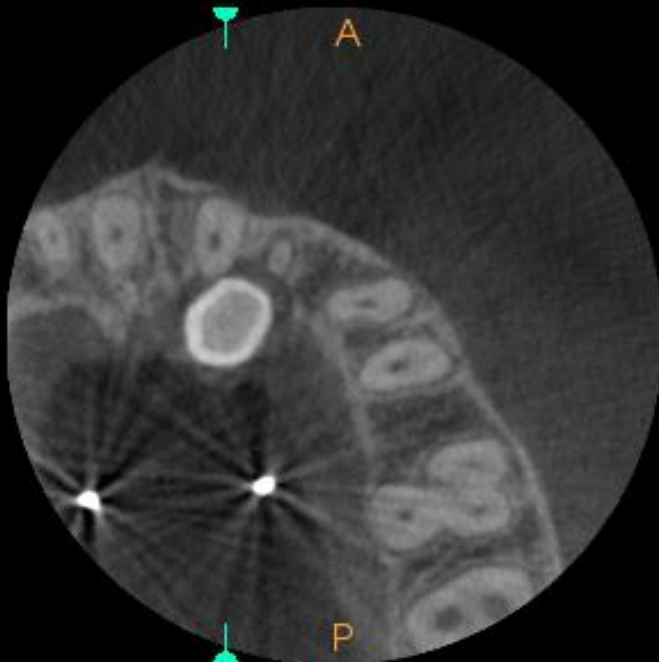
2010.12.02



2010.12.02



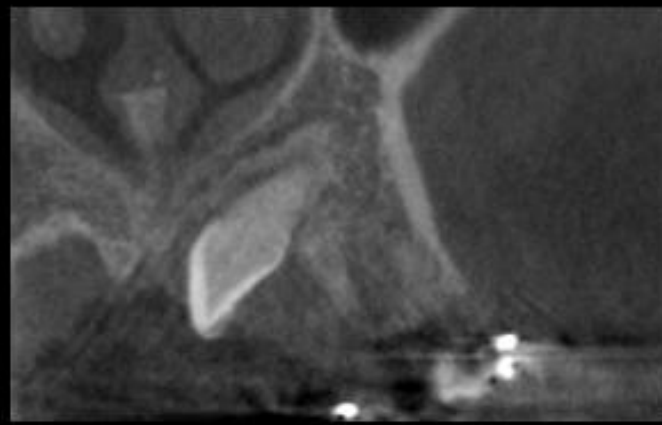




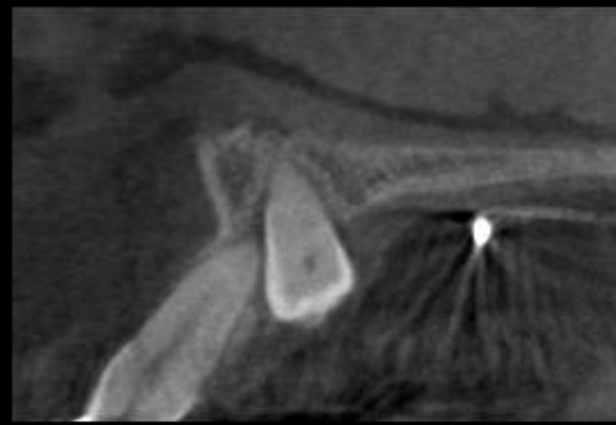
AVG 76μm H

P 16.76 mm

AVG 76μm H



L A



J.L. /Dr. Fekete B./



















File Edit View Measure Annotation Segmentation Simulation Tools Help

MPR OBLIQUE 3DZOOM CURVE Moves the image within the pane.

**Coronal**

ID : 203076

Series : 1

R

10.94 [dGy\*cm<sup>2</sup>]  
4.9 [mA]  
85 [kVp]  
CT

TH: 18.4mm

18 mm

**Sagittal**

20150310

Series : 1

A

10.94 [dGy\*cm<sup>2</sup>]  
4.9 [mA]  
85 [kVp]  
CT

TH: 51.0mm

18 mm

**Axial**

ID : 203076

Series : 1

R

10.94 [dGy\*cm<sup>2</sup>]  
4.9 [mA]  
85 [kVp]  
CT

TH: 13.3mm

18 mm

**3D**

H F A P L R  
VR  
Outline Overlay

Windows taskbar: A cone beam CT..., Bemutat64 - Micr..., ZoomBrowser EX..., ZoomBrowser EX..., 102MSDCF, Ez3D Plus, HU, 0:22, 2015.09.11.

File Edit View Measure Annotation Segmentation Simulation Tools Help

MPR OBLIQUE 3DZOOM CURVE Moves the image within the pane.

Sectional

19 ID: 203076

20150310 Series: 1

R

B

4.9 [mA]  
85 [kVp]  
CT

MPR TH: 30.0mm

4 cm

Panoramic

ID: 203076

Series: 1  
Idx: 21

R

10.94 [dGy\*cm<sup>2</sup>]  
4.9 [mA]  
85 [kVp]  
CT

MPR TH: 2.0mm

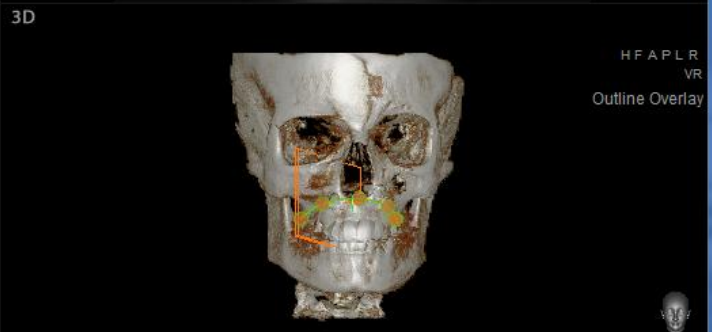
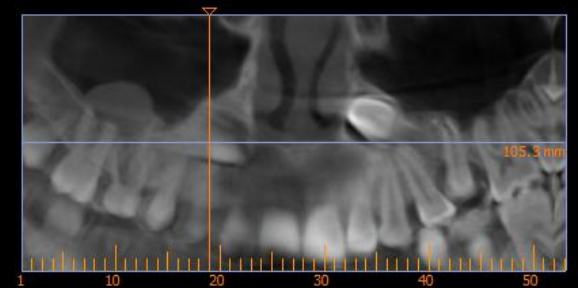
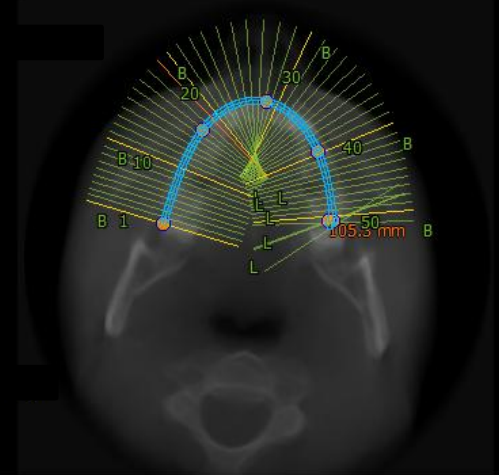
L 16 mm

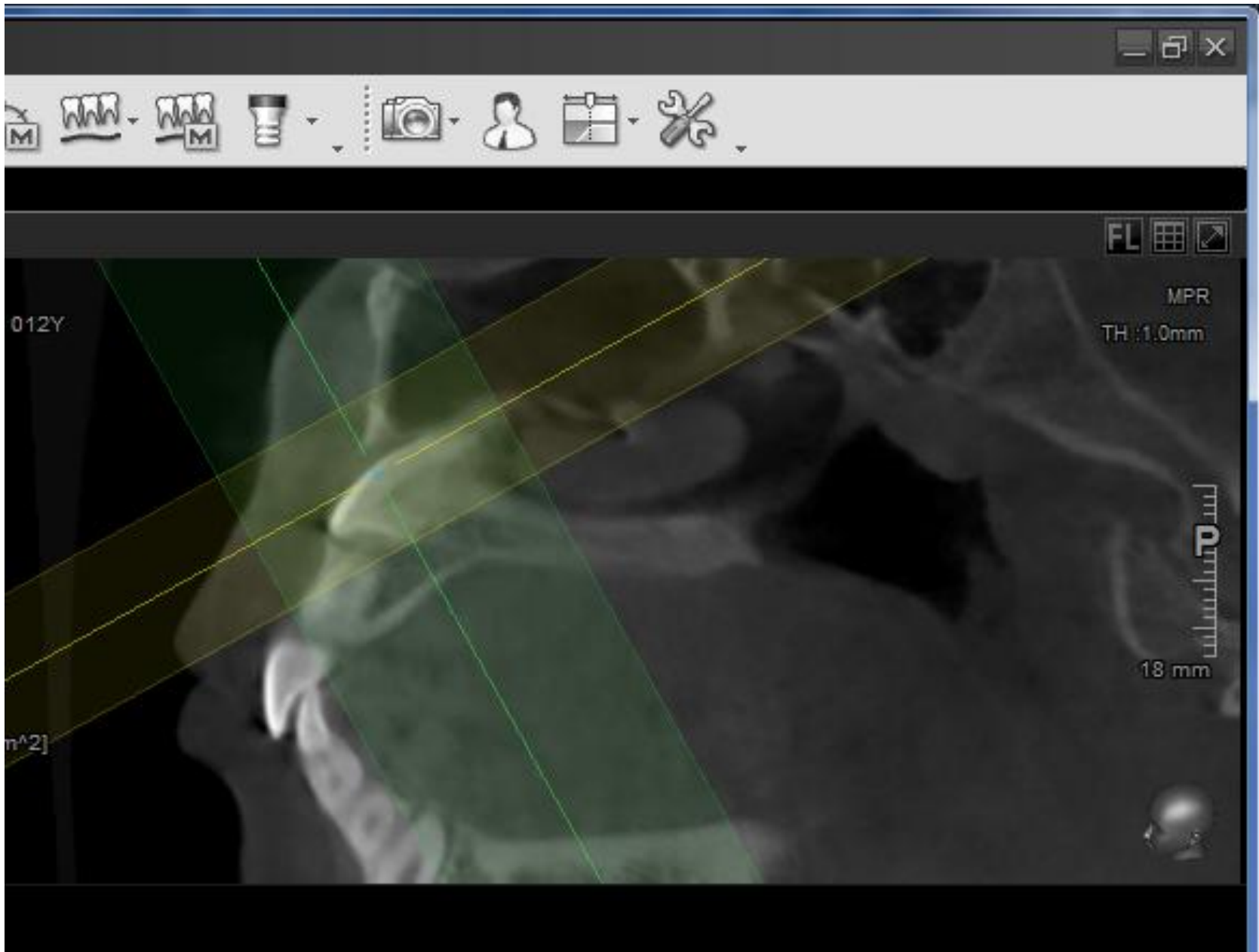
185.3 mm

3D

HF A PL R  
VR  
Outline Overlay

Windows Taskbar: A cone beam CT..., Bemutat64 - Micr..., ZoomBrowser EX..., ZoomBrowser EX..., 102MSDCF, Ez3D Plus, HU, 0:27 2015.09.11.





# Az X- sugár diadala...

- 1895. W.C. Röntgen felfedezi a jelenséget
- 1896. rtg. diagnosztikai laboratóriumok
- 1901. fizikai Nobel-díj
- 1931. B. H. Broadbent bevezeti a  
rtg. Kefalometriát

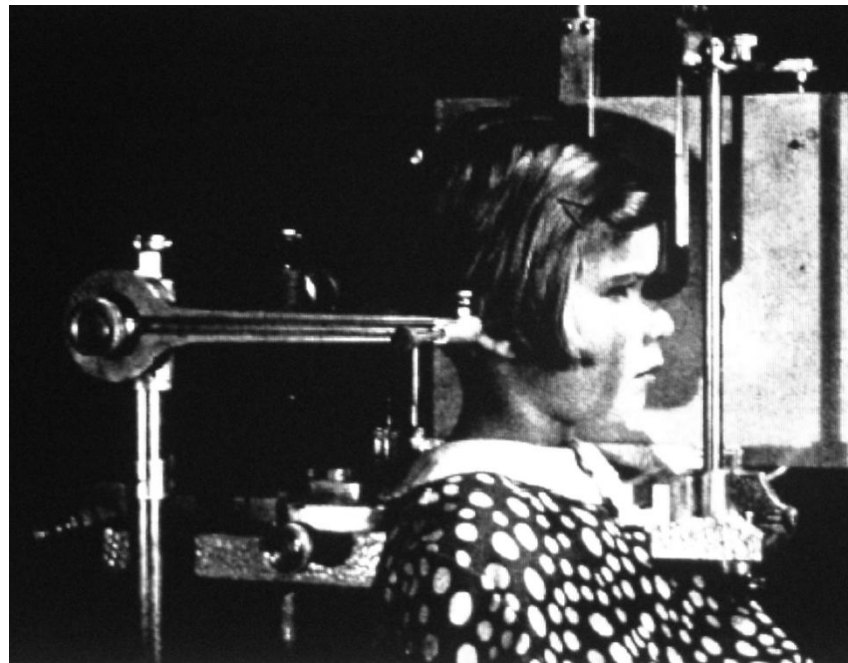
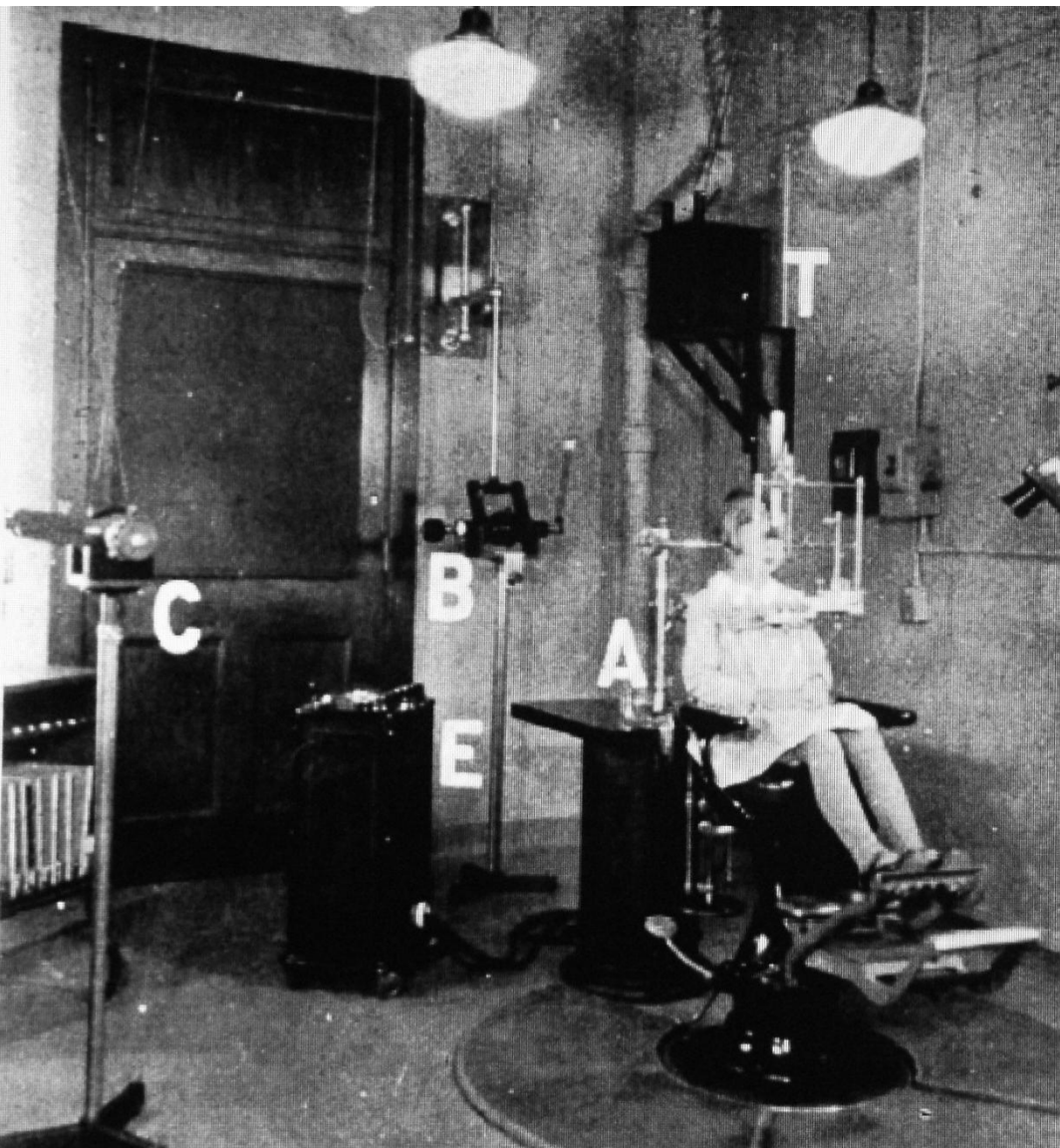
60-as évek vége: panoráma rtg. Bevezetése

80-as évek CT

Századforduló: cone beam CT







**Köszönöm megtisztelő  
Figyelmüket!**