

IGRT' DE YAŞANAN SORUNLAR VE ÇÖZÜMLERİ

EZGİ BÜYÜKTAŞ

IGRT

✓DRR' ların tedavi öncesi veya sırasında alınan görüntülerle eşleştirilerek kontrol edilmesidir.

✓ Amacı;

- ✓Tedavi kalitesini 
- ✓Normal doku toksisitesini 
- ✓ Tümör kontrolünü 

IGRT

Nezaman uygulanır?

- Tedavi öncesi
- Tedavi sırasında
- Tedavi sonrasında



TEDAVİ ÖNCESİ

- ✓ Her tedavi öncesinde MV, kV, CBCT gibi görüntüleme yöntemleri uygulanarak yapılan IGRT
- ✓ **Amacı; tedavi alanın doğruluğunu kontrol etmek**

TEDAVİ SIRASI

✓Tedavi esnasında tümör hareketini kontrol etmek için uygulanan IGRT şeklidir.

✓**Amacı; hareketli tedavi alanlarının tedavi boyunca kontrolünü sağlamaktır.**



TEDAVİ SONRASI

- ✓ Tedavinin bitiminde hastaya uygulanan IGRT şeklidir.
- ✓ **Amacı; yüksek doz RT uygulanan hareketli tümörlerin tedavi sonrasında kalite kontrolü için uygulanır.**

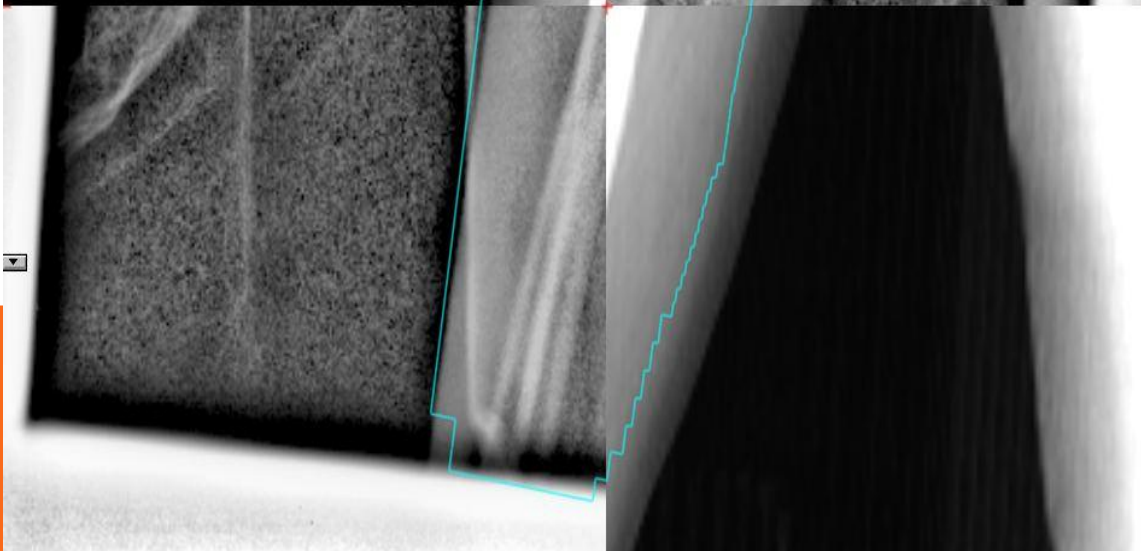
IGRT TEKNİKLERİ

- MV
 - kV
 - CBCT
 - Trigger
 - Breath-hold
- 

MV IGRT

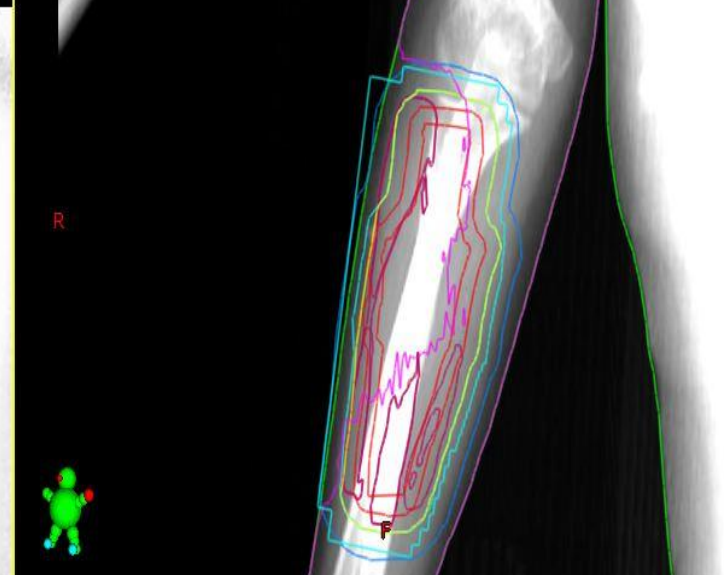
- ✓ Yumuşak doku görüntülemesi
 - ✓ Meme CA
 - ✓ Kemik met.
 - ✓ Yumuşak doku
- 

Field edge: Planned



0 %

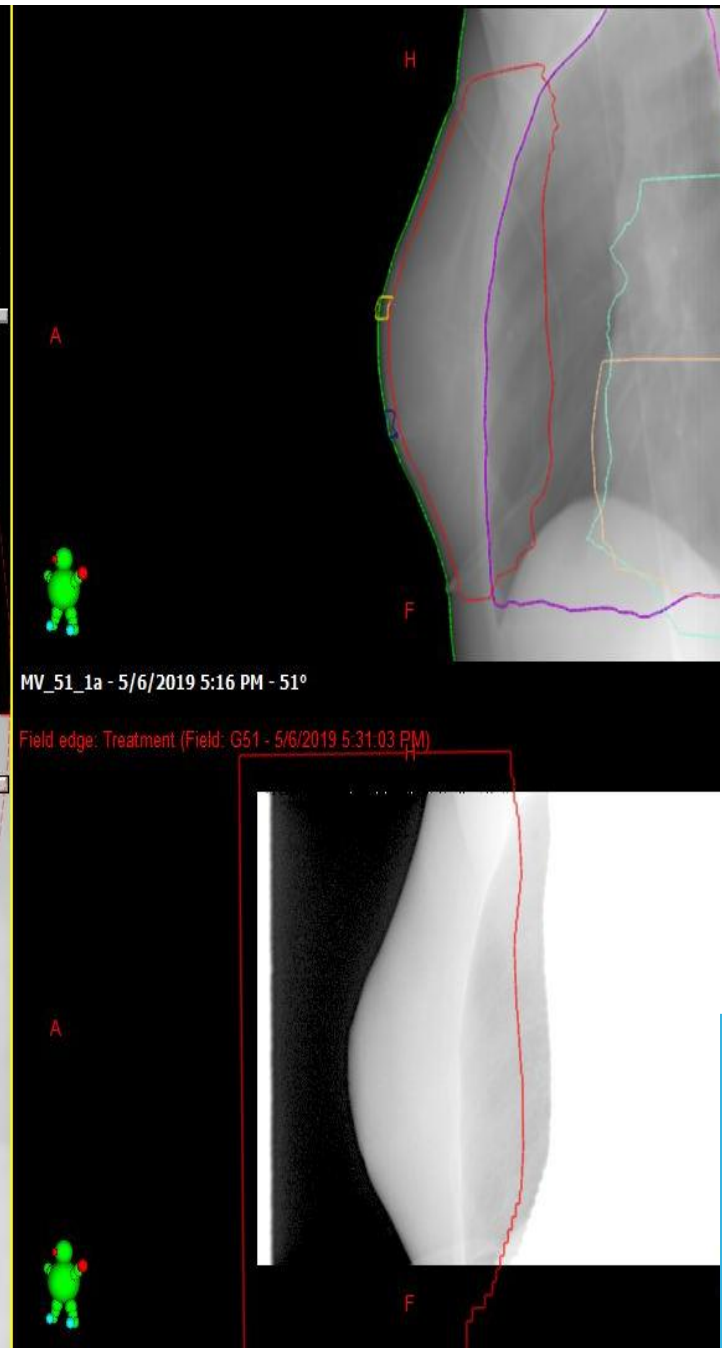
Field edge: Planned



MV_40_3a - 1/11/2019 11:55 AM - 40°

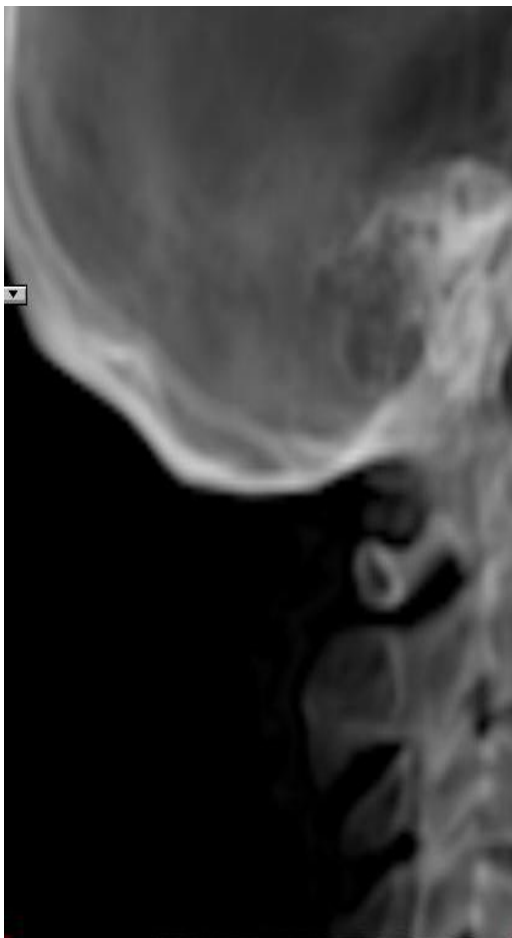


Field edge: Treatment (Field: G51 - 5/6/2019 5:31:03 PM)



KV IGRT

- ✓ Kemik doku görüntülemesi
- ✓ Akciğer ca
- ✓ Baş-boyun ca
- ✓ Jinekoloji
- ✓ 2D- 2D
- ✓ 2D- 3D



kV_270_13a - 2/7/2019 8:57 AM - 270°



edge: Planned



ction - LR - 270°

□ kv_270_1a - 1/22/2019 4:36 PM - 270°

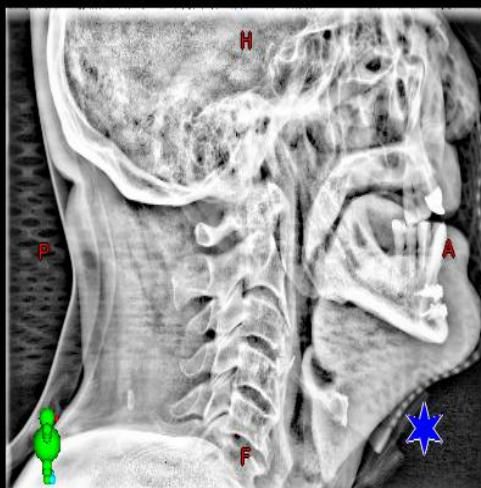
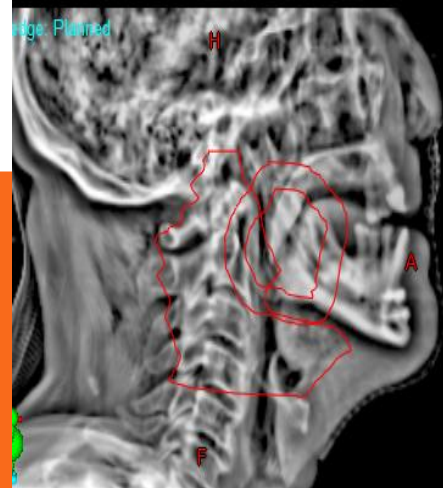
Field edge: Planned



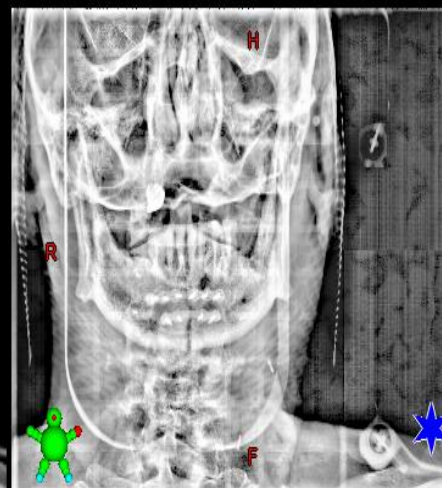
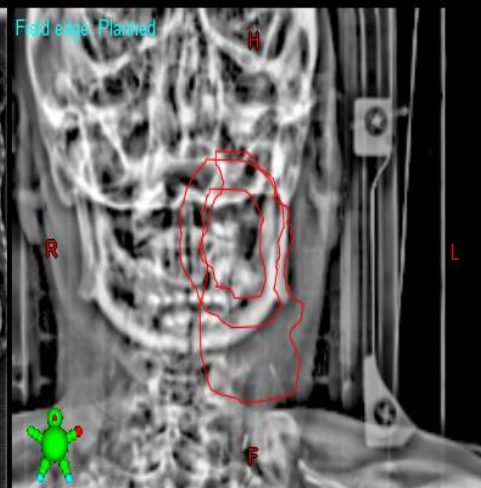
□ Projection - AP - 0°

□ kv_0_1a - 1/22/2019 4:36 PM - 0°

edge: Planned



Field edge: Planned



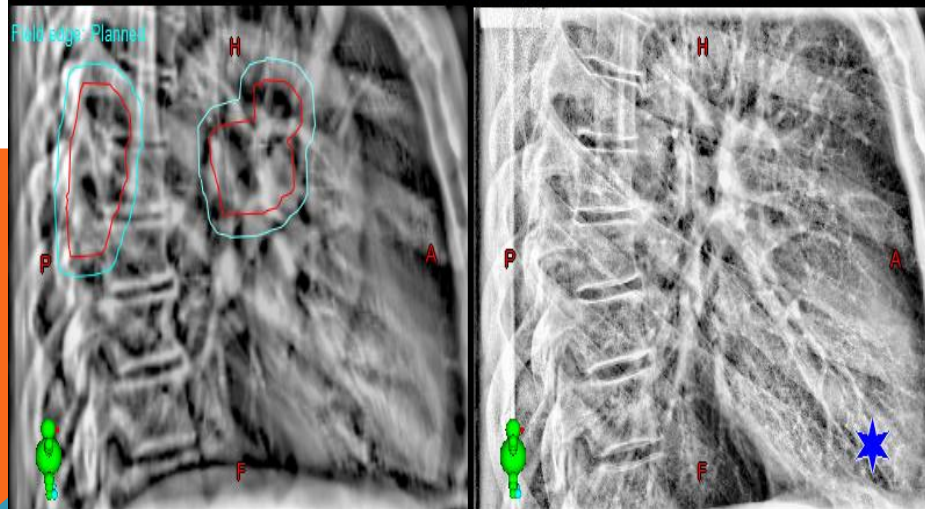
Projection - kV_270_1a - 1/28/2019 9:19 AM - 270°

Field edge: Planned



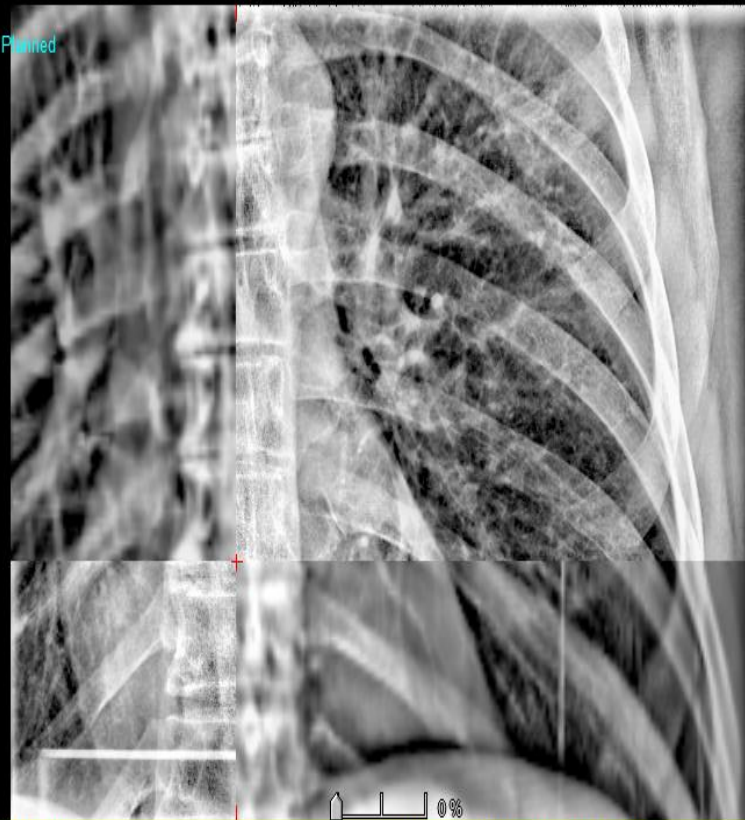
Projection - LR - 270°

□ kV_270_1a - 1/28/2019 9:19 AM - 270°



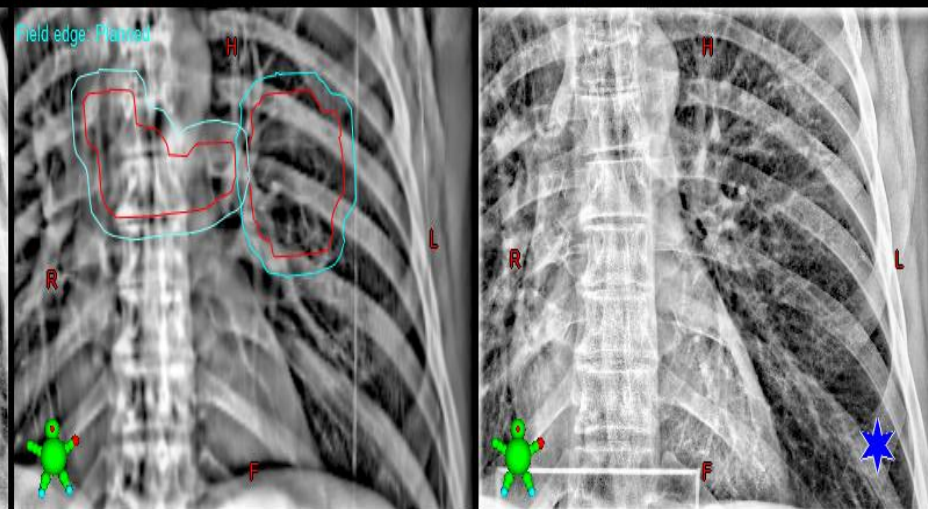
Projection - kV_0_1a - 1/28/2019 9:19 AM - 0°

Field edge: Planned



□ Projection - AP - 0°

□ kV_0_1a - 1/28/2019 9:19 AM - 0°



CBCT IGRT

- ✓ Kesit görüntülerin toplanmasıyla oluşturulan 3D görüntü elde edilmesi
- ✓ Akciğer ca, baş-boyun ca, jinekolojik ca,
- ✓ SRS- SBRT

CBCT IGRT

- ✓ Anatomiye göre seçmek
 - ✓ Half-Full Fan
- ✓ Topogram
- ✓ 6D alan kontrolü

ents

aging [cm] Vrt Lng Lat
aging [cm] Mid

aging [cm] 50.0 0.0 984.0

lter/Blades At plan

quisition Parameters

can ID New Scan

Mode Pelvis Obese

n Type Half

ectory Full

kV 140

mAs 1687.50

CTDIw 3.69 cGy

sistent parameters loaded

ference CT:

CT and structures created.

Patient Shift

Couch Lng [cm] -3.94

CBCT Couch Position

Couch inside scan zone

Couch Centering

Center Couch

To reduce collision risk couch will center.

Override Center Couch

Couch will not center. Dry run is recommended to ensure clearance.

Undo Couch Movement

Restore Couch

Move couch to setup, or matched, position.

Multi-Scan CBCT

Enable Multi-Scan

kV_Topo_Lat_4a - 5/13/2019 9:57 AM - 90°



Y=10.7 cm



Stop Scan Early

Discard Volume

0

100%

Total kV Dose [mGy] 1.63

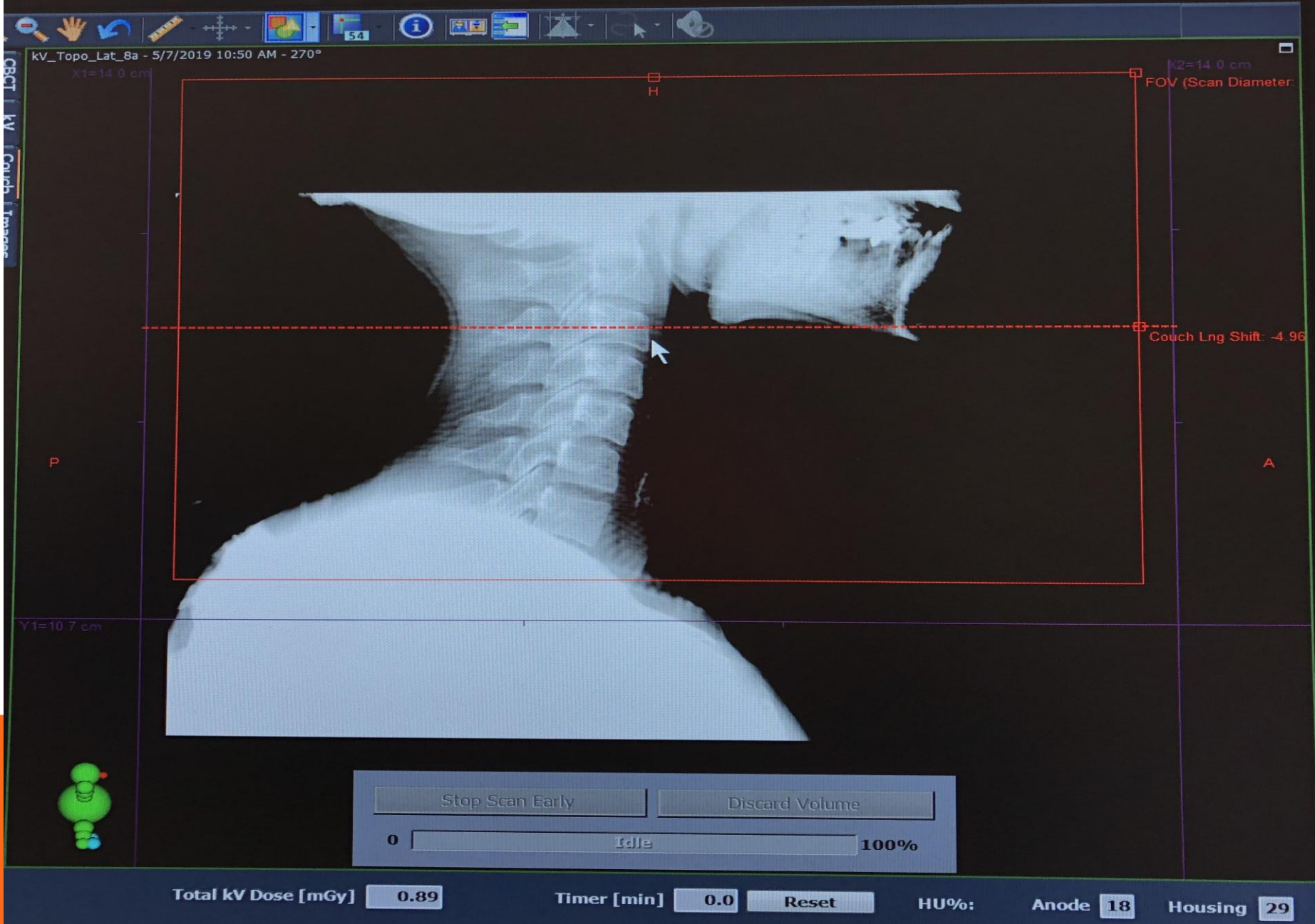
Timer [min] 0.0

Reset

HU%:

Anode 17

Housing 20



kV_Topo_Lat_8a - 5/7/2019 10:50 AM - 270°

X1=14.0 cm

X2=14.0 cm

FOV (Scan Diameter:

Couch Lng Shift: -4.96

Y1=10.7 cm

Stop Scan Early

Discard Volume

0

Idle

100%

Total kV Dose [mGy]

0.89

Timer [min]

0.0

Reset

HU%:

Anode

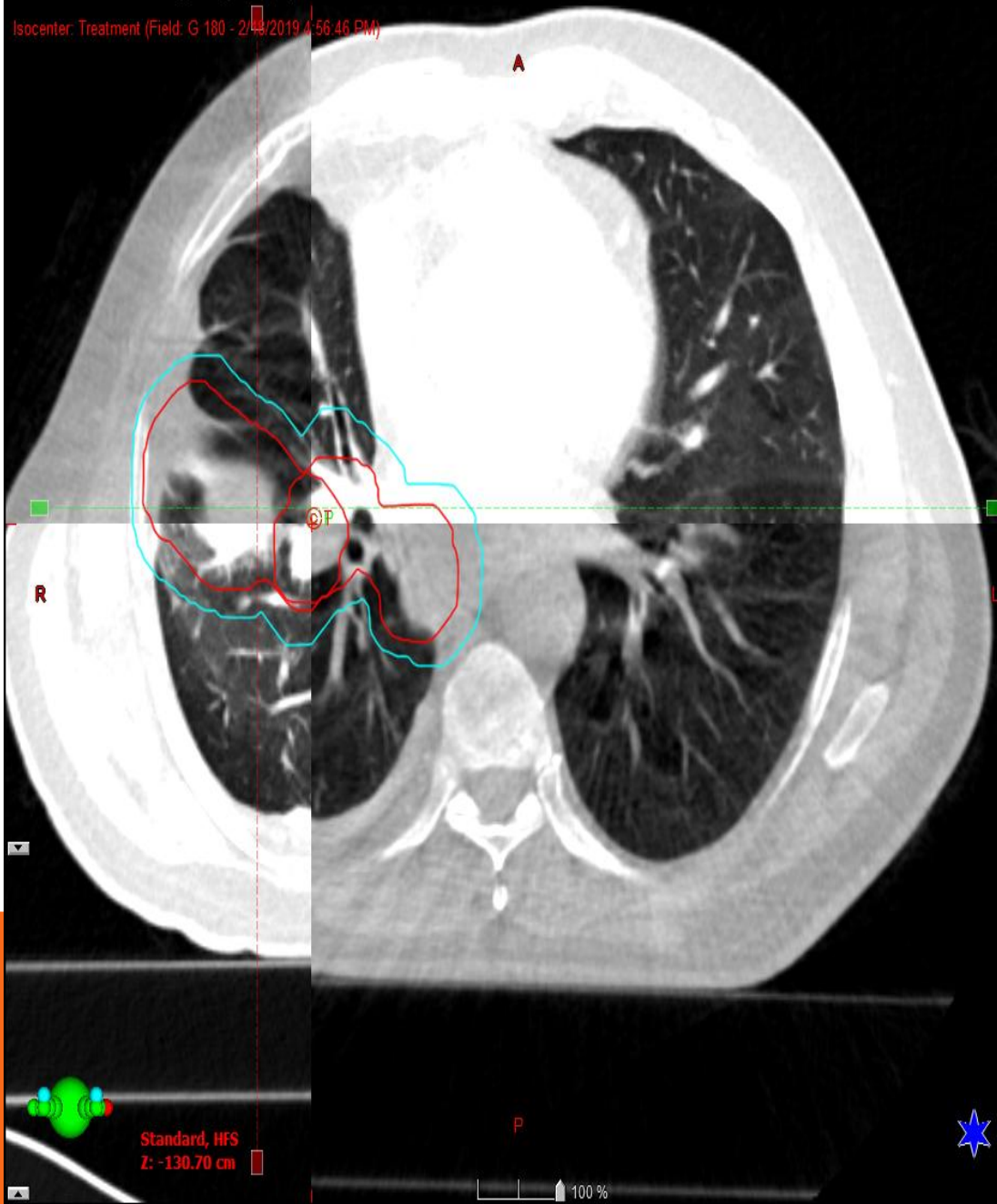
18

Housing

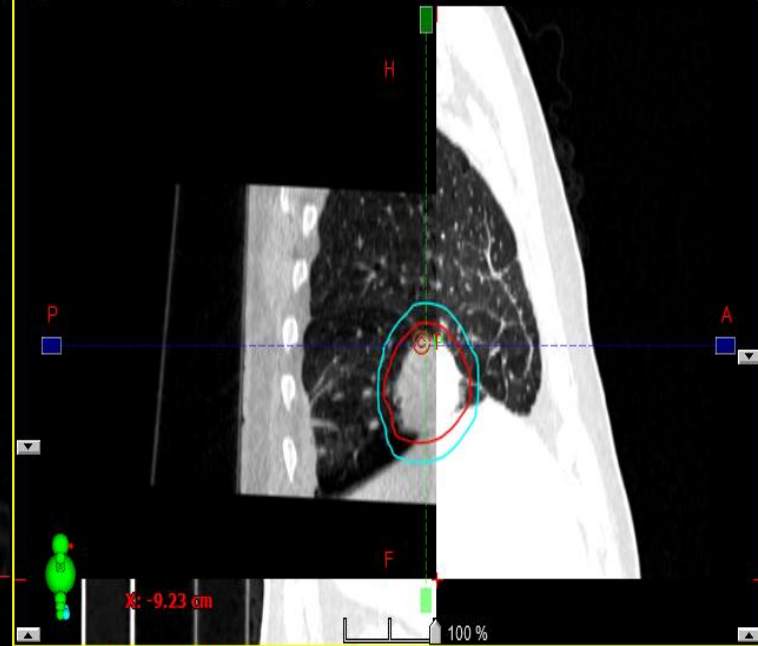
29

Transversal - NEFESLI - kv_CBCT_1a - 2/18/2019 4:52 PM

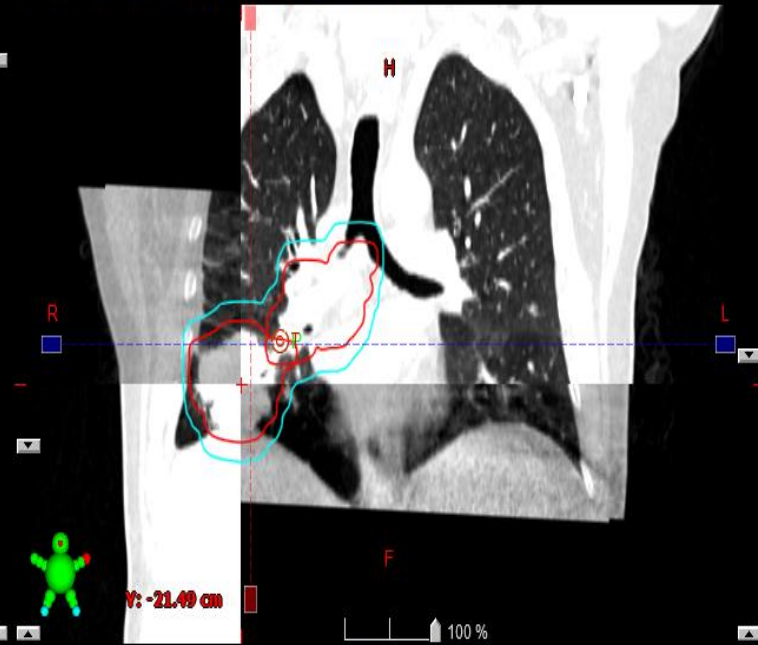
Isocenter: Treatment (Field: G 180 - 2/18/2019 4:56:46 PM)



Sagittal - NEFESLI - kv_CBCT_1a - 2/18/2019 4:52 PM

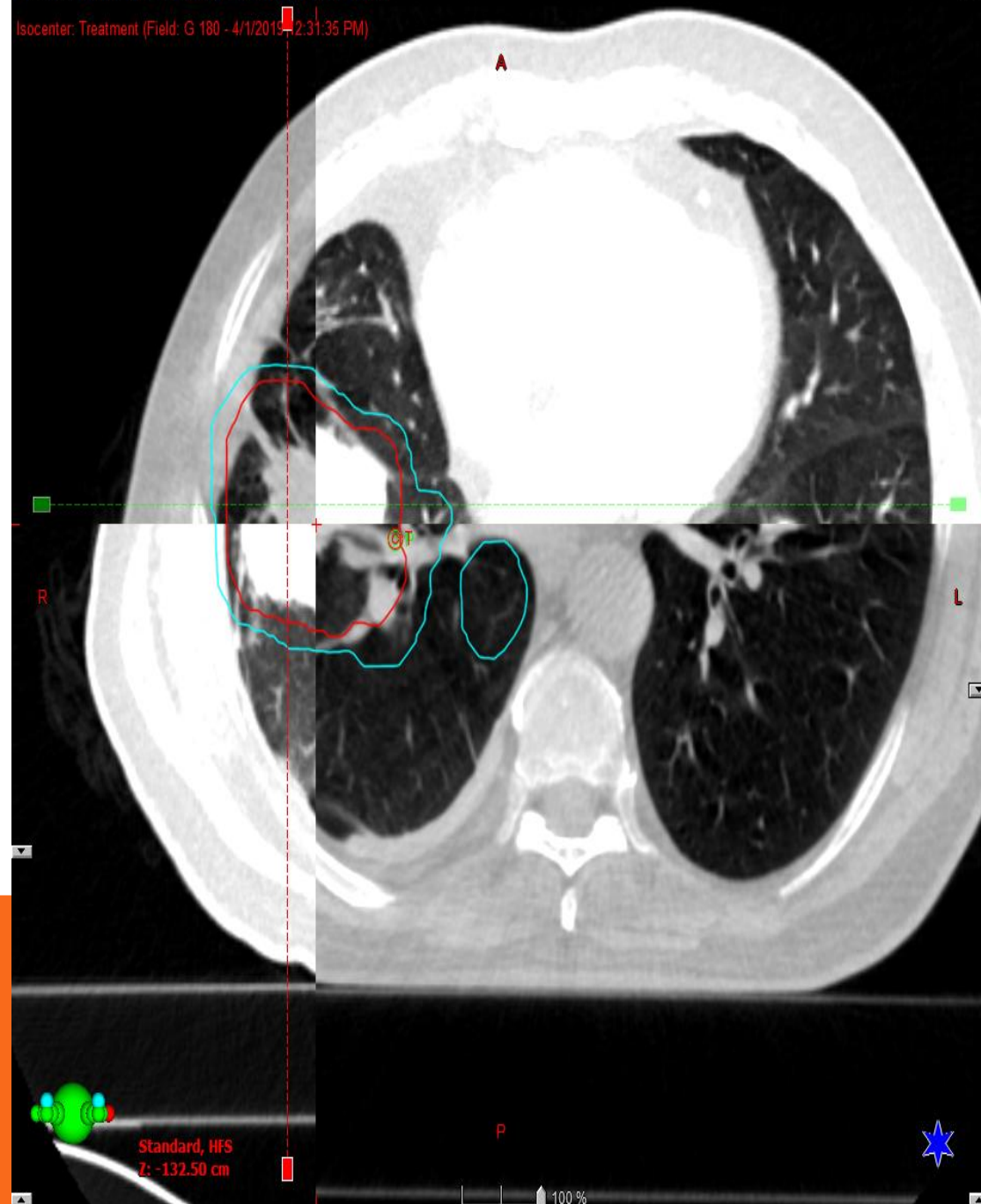


Frontal - NEFESLI - kv_CBCT_1a - 2/18/2019 4:52 PM

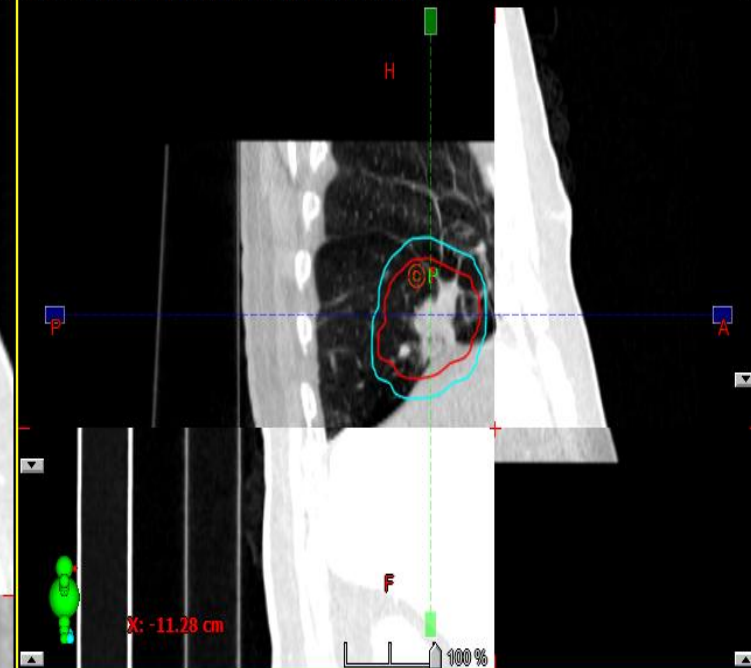


Transversal - NEFESLI - kv_CBCT_30a - 4/1/2019 12:25 PM

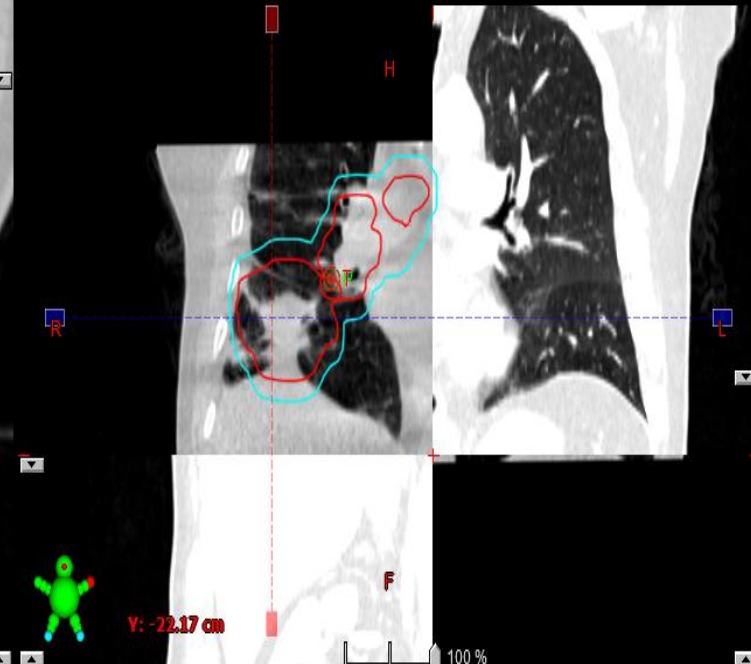
Isocenter: Treatment (Field: G 180 - 4/1/2019 12:31:35 PM)



Sagittal - NEFESLI - kv_CBCT_30a - 4/1/2019 12:25 PM



Frontal - NEFESLI - kv_CBCT_30a - 4/1/2019 12:25 PM



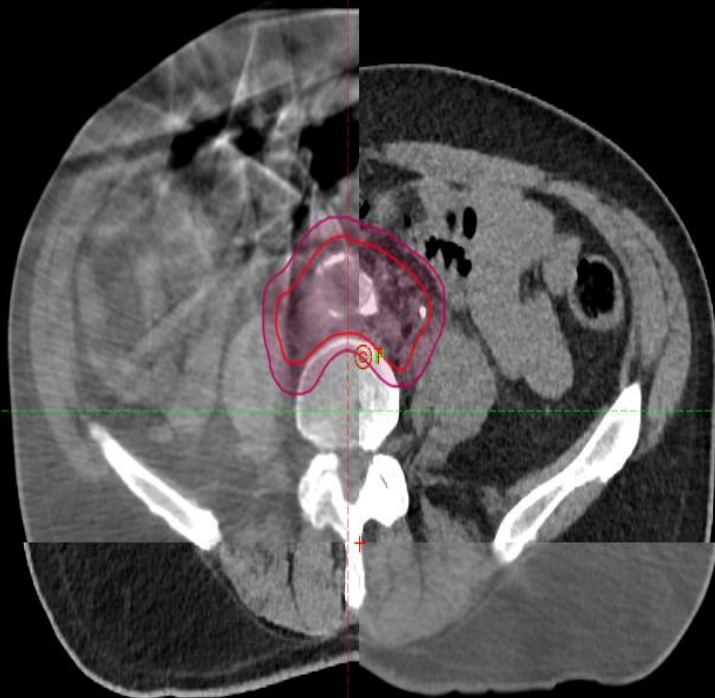
Standard, HFS
Z: -132.50 cm

Y: -22.17 cm

Transversal - PLAN - kv_CBCT_1a - 2/18/2019 9:42 AM

Sagittal - PLAN - kv_CBCT_1a - 2/18/2019 9:42 AM

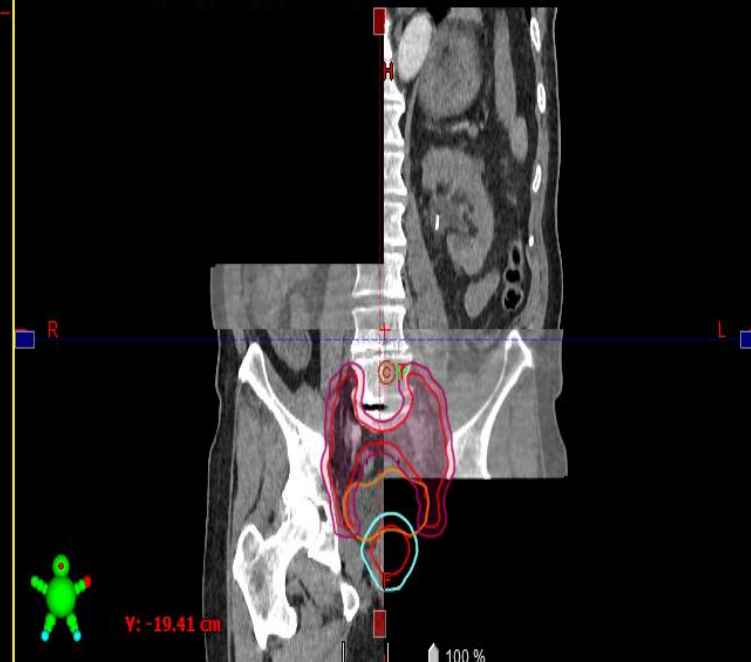
Isocenter: Treatment (Field: G 3 - 2/18/2019 9:51:19 AM)



X: -0.83 cm

100 %

Frontal - PLAN - kv_CBCT_1a - 2/18/2019 9:42 AM

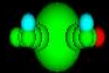


Y: -19.41 cm

100 %

Reference Images

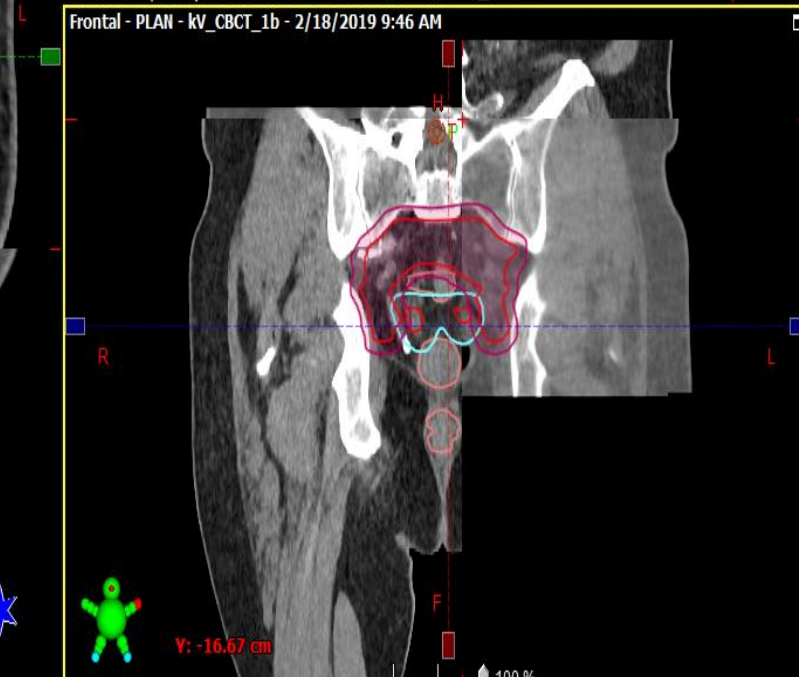
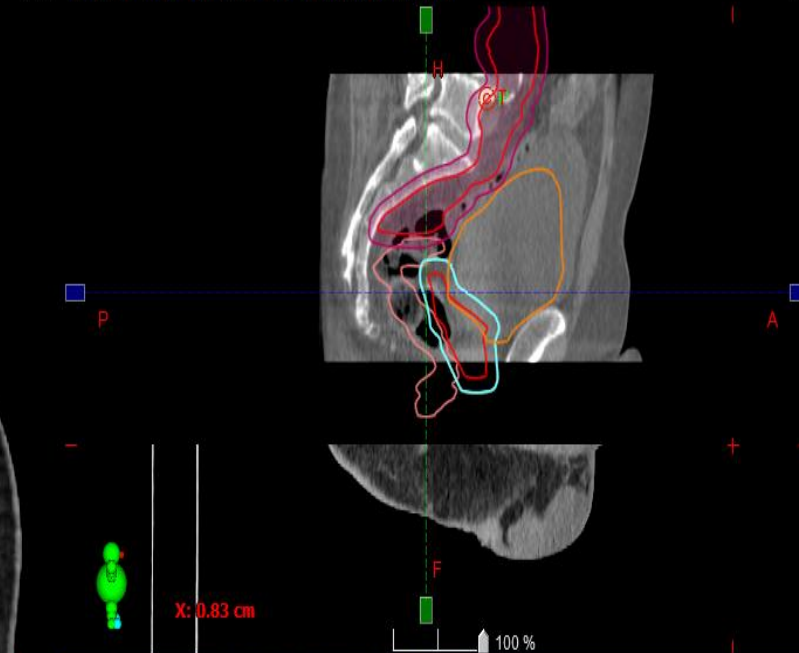
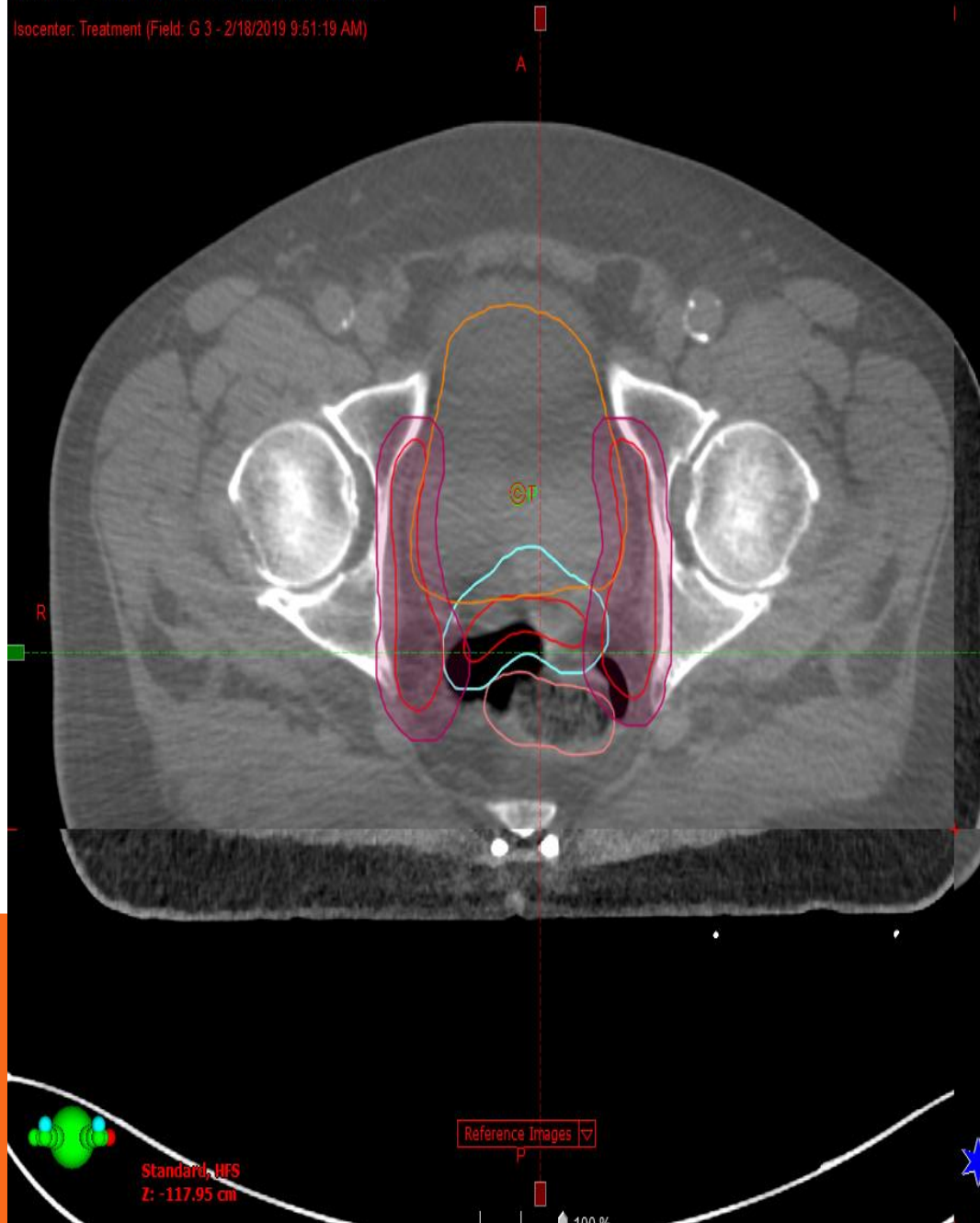
Standard, HFS
Z: -104.55 cm



Transversal - PLAN - kv_CBCT_1b - 2/18/2019 9:46 AM

Isocenter: Treatment (Field: G 3 - 2/18/2019 9:51:19 AM)

Sagittal - PLAN - kv_CBCT_1b - 2/18/2019 9:46 AM

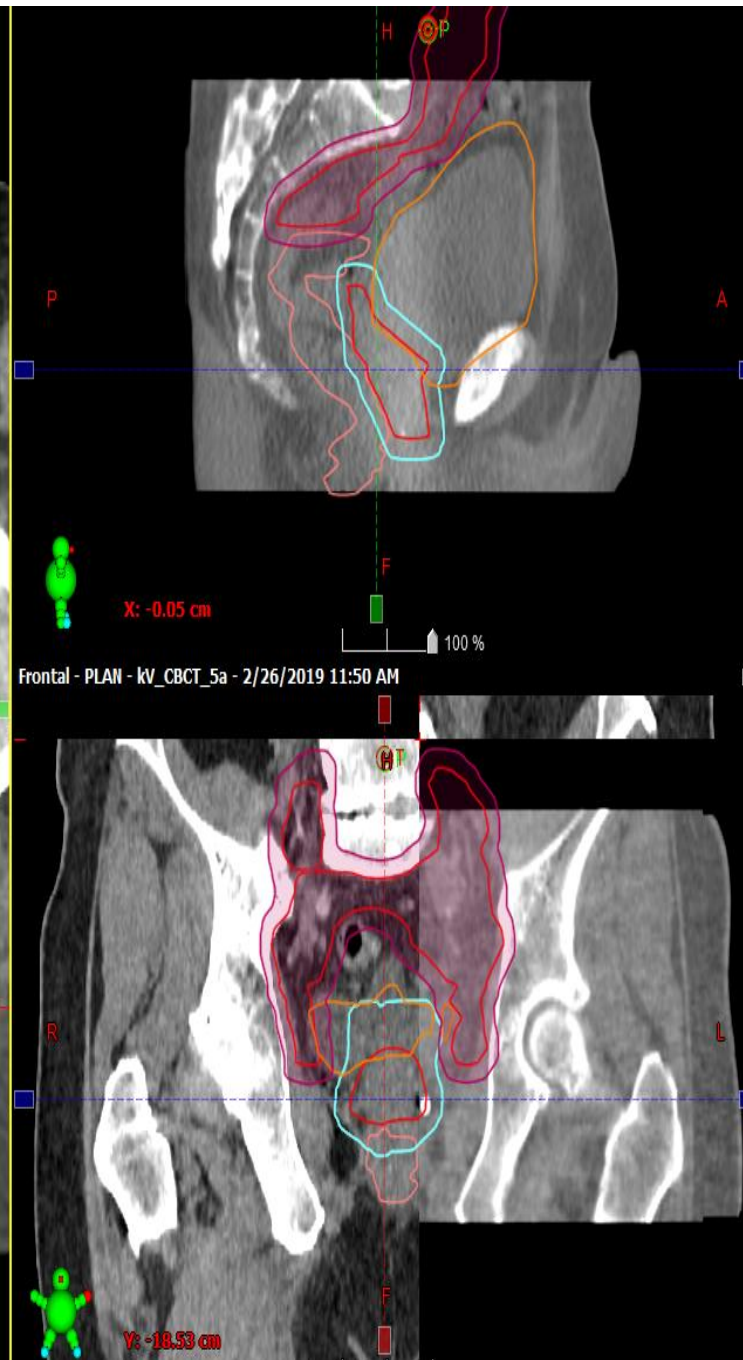
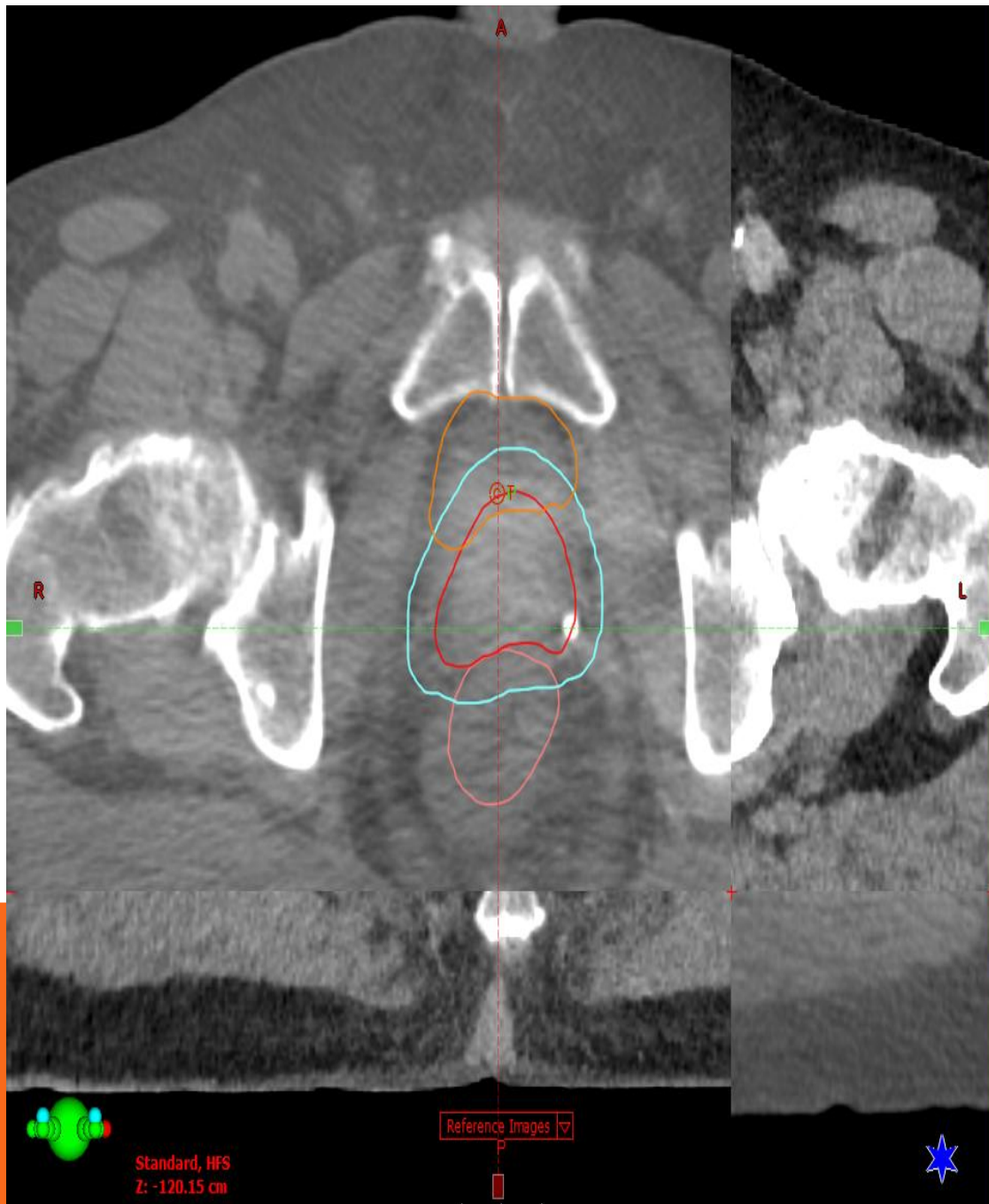


Standard, HFS
Z: -117.95 cm

Reference Images ▾



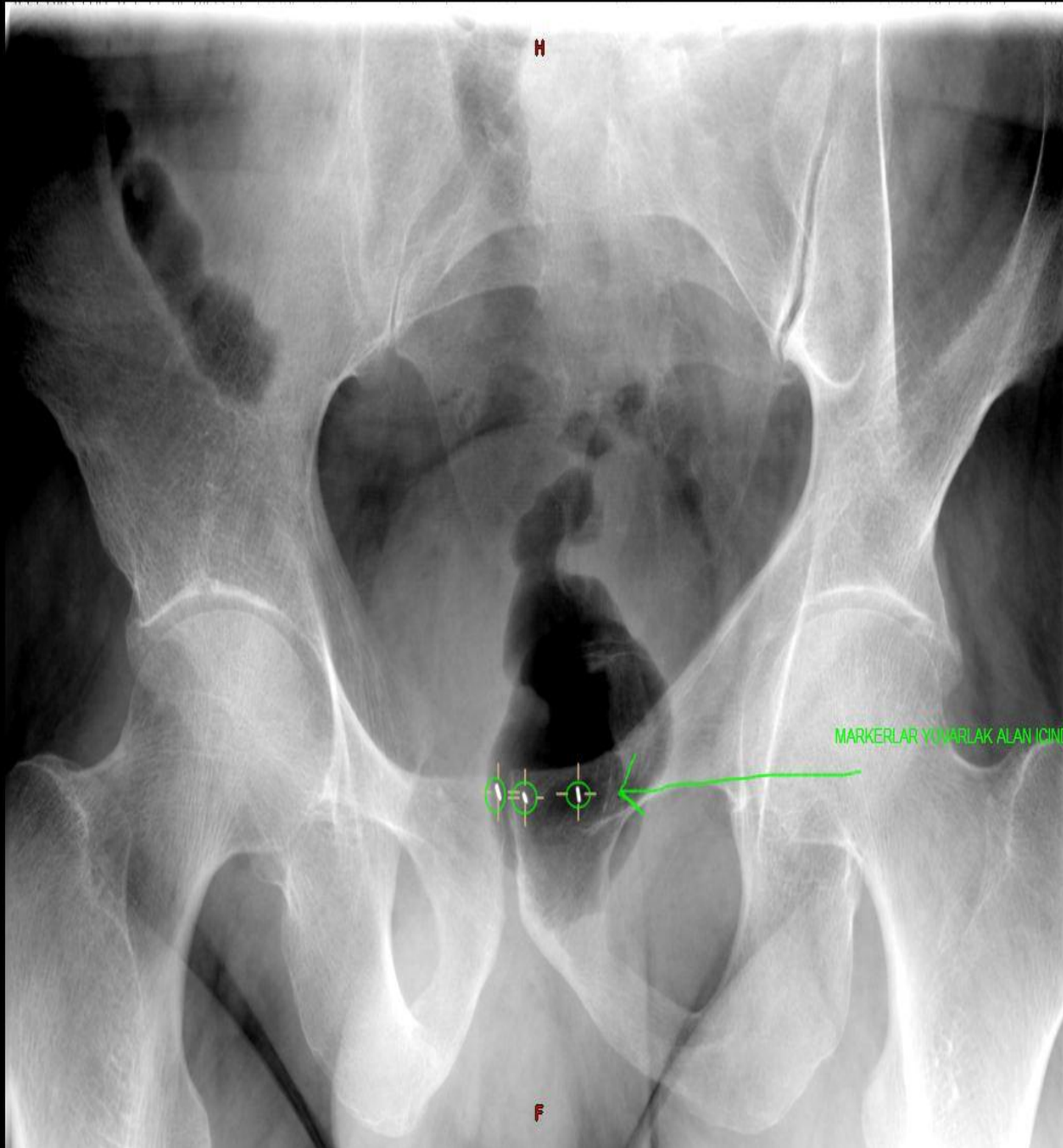
Y: -16.67 cm



TRIGGER IGRT

- ✓ Tedavi esnasında görüntü olarak uygulanan IGRT yöntemi
- ✓ Marker kontrolü
- ✓ Süre-Açı-MU



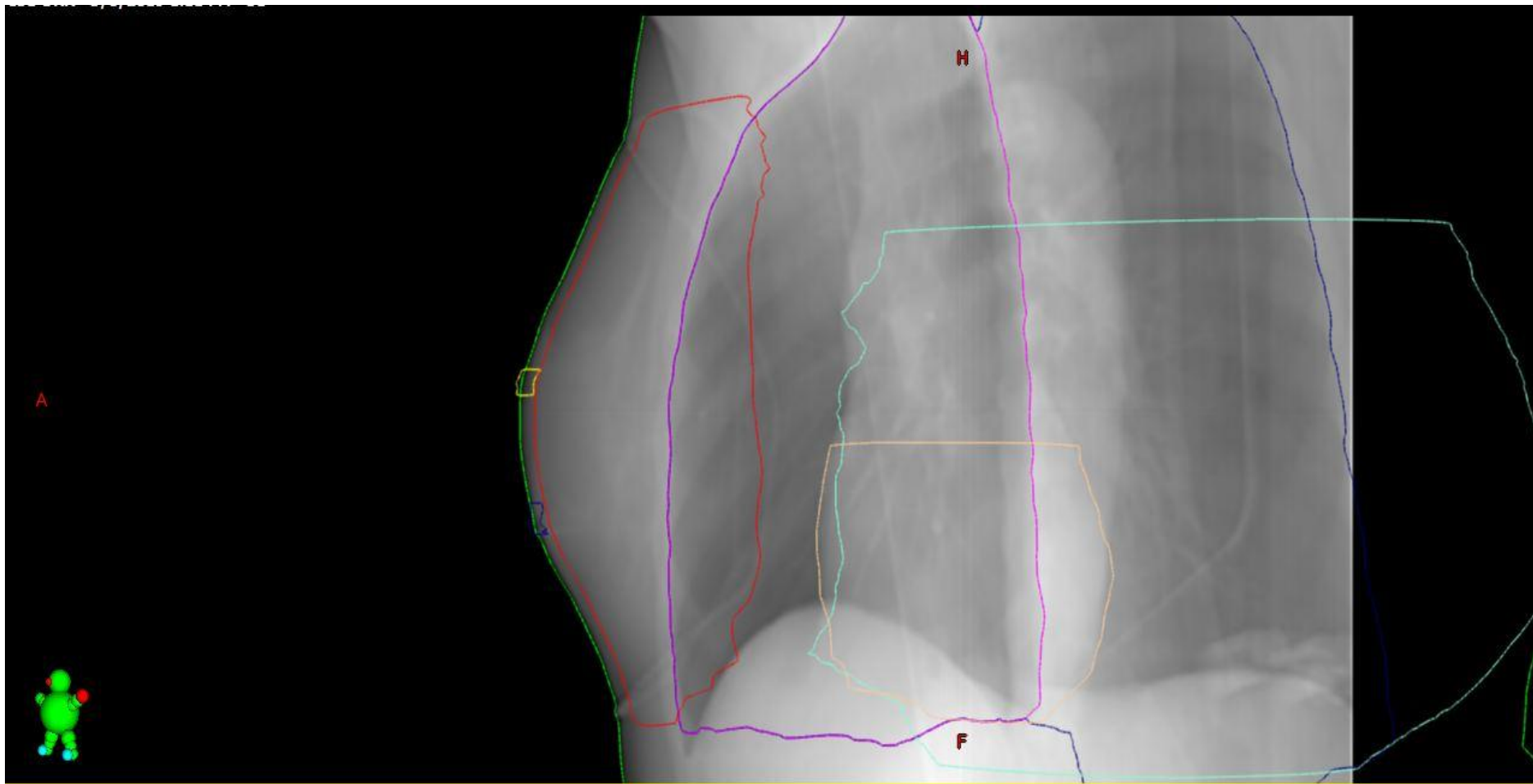


MARKERLAR YUVARLAK ALAN ICINDE OLMALI

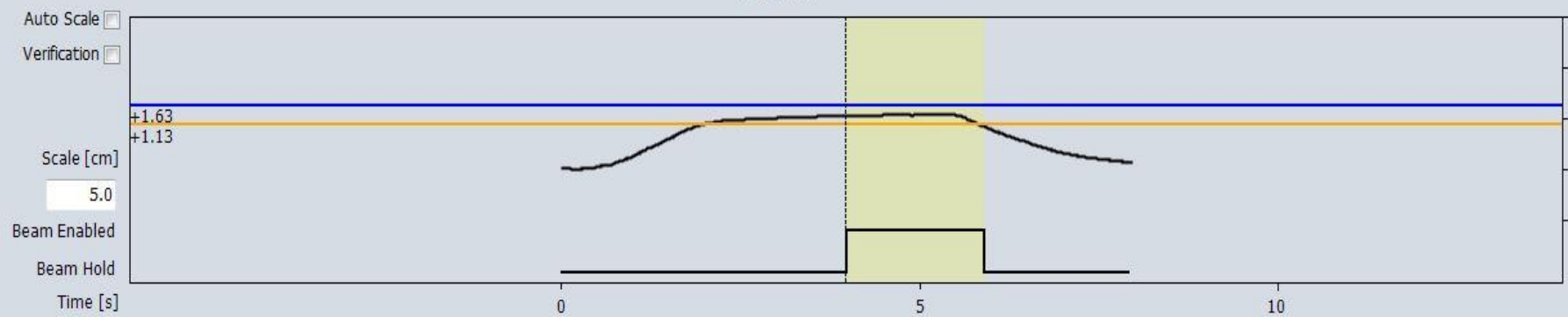


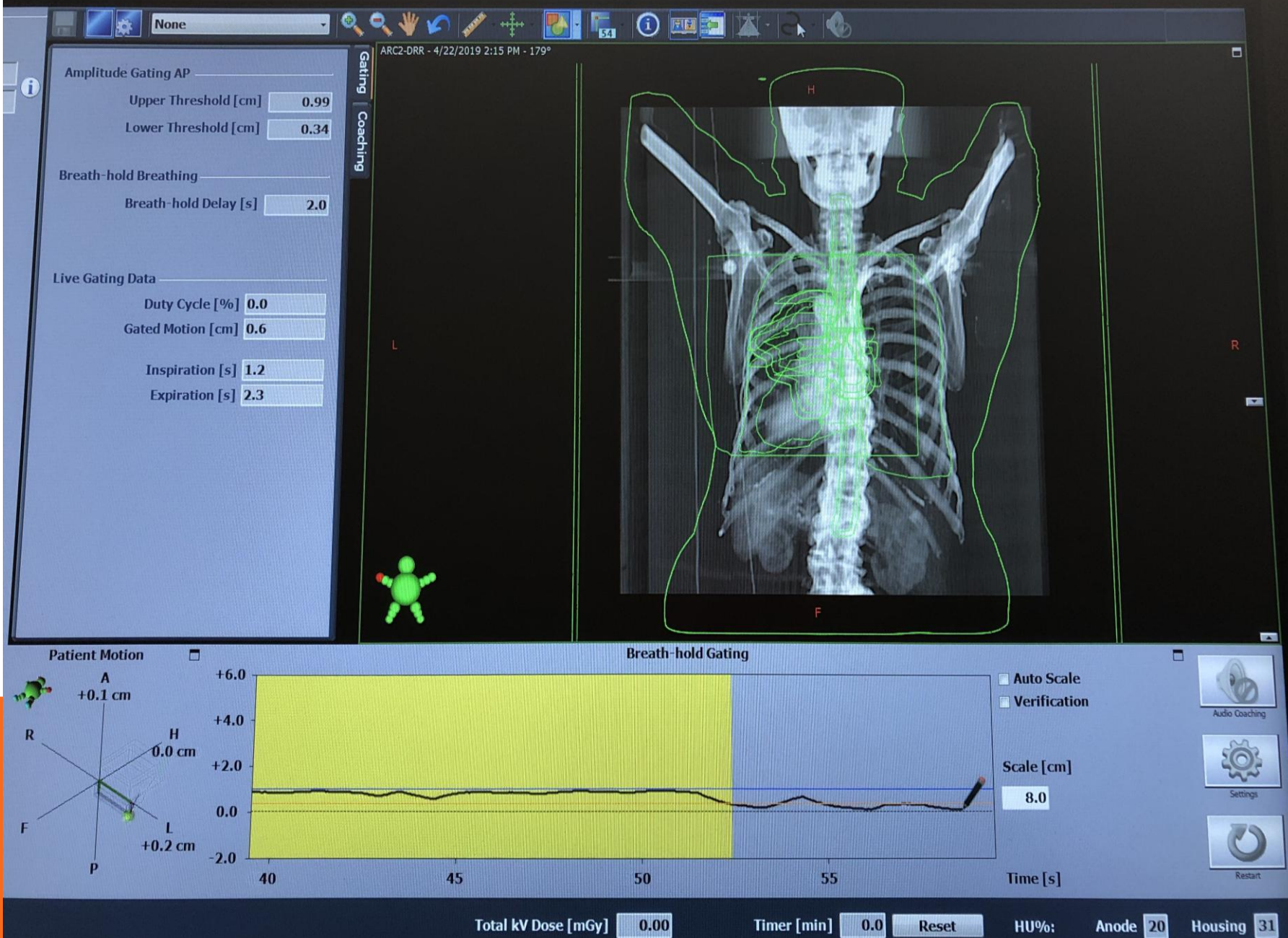
BREATH-HOLD IGRT

- ✓ Tedaviyi nefes kontrolü eşliğinde uygulamak
- ✓ CT nefes aralığının belirlenmesi



Amplitude





ÖZET

DOĞRU SETUP + DOĞRU IGRT = DOĞRU TEDAVİ



TEŞEKKÜRLER