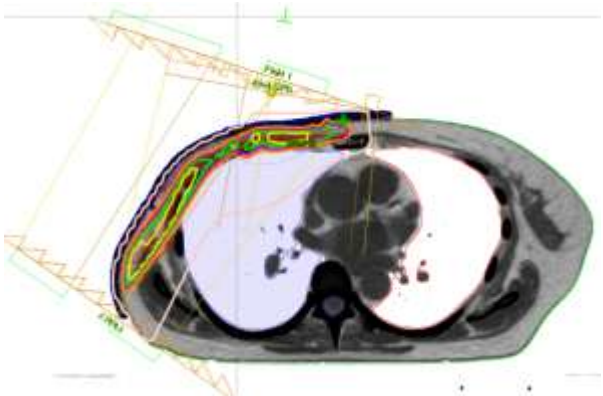
Tapa yhdistää IMRT- ja Elektronikenttä Ablaatiorinnan sädetyksessä



Pauliina Wright

Fields | Dose Prescription | Field Alignments | Plan Objectives | Optimization Objectives | Dose Statistics | Calculation Models | Plan Sum

Group	Plan ID	Field ID	Technique	Machine/Energy	MLC	Field Weight	Gantry Rtn [deg]	Coll Rtn [deg]	Couch Rtn [deg]	Wedge	Field X [cm]	X1 [cm]	X2 [cm]	Field Y [cm]	Y1 [cm]	Y2 [cm]	X [cm]	Y [cm]	Z [cm]	SSD [cm]	MU	Ref. D [Gy]
☐	Fotonit	Asettelu	STATIC-F	ClinacH2 - 6X		0.000	0.0	90.0	0.0	None	20.0	+10.0	+10.0	20.0	+10.0	+10.0	5.00	-5.30	-3.00	104.0		
☐	Fotonit	K1 v.rinta AP	STATIC-F	ClinacH2 - 6X	Static	0.850	0.0	90.0	0.0	None	19.5	+4.4	+15.1	18.5	+13.9	+4.6	5.00	-5.30	-3.00	104.0	167	1.552
☐	Fotonit	K2 PA	STATIC-F	ClinacH2 - 15X	Static	0.500	180.0	90.0	0.0	None	19.5	+4.4	+15.1	15.4	+1.5	+13.9	5.00	23.08	-3.00	100.0	96	0.963
☐	Elektronit	K3 Arpialue	STATIC-F	ClinacH2 - 9E		1.080	0.0	90.0	0.0	None	20.0	+10.0	+10.0	20.0	+10.0	+10.0	5.00	-5.30	-3.00	104.0	230	2.322

Taustaa

Tavoitteet:

Yhdistää tangentiaali- ja parasternaali kenttien edut ja saada varmempi sauma-annos

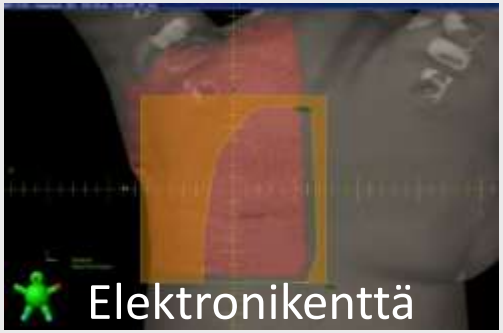
9 ablaatiopotilasta joille PTV piirretty

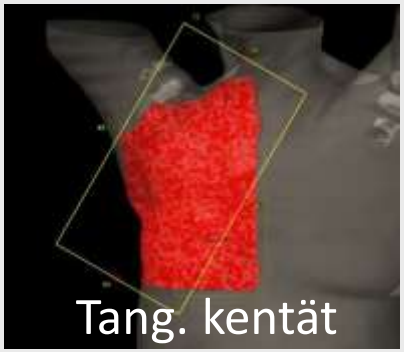
Testisuunnitelmat:

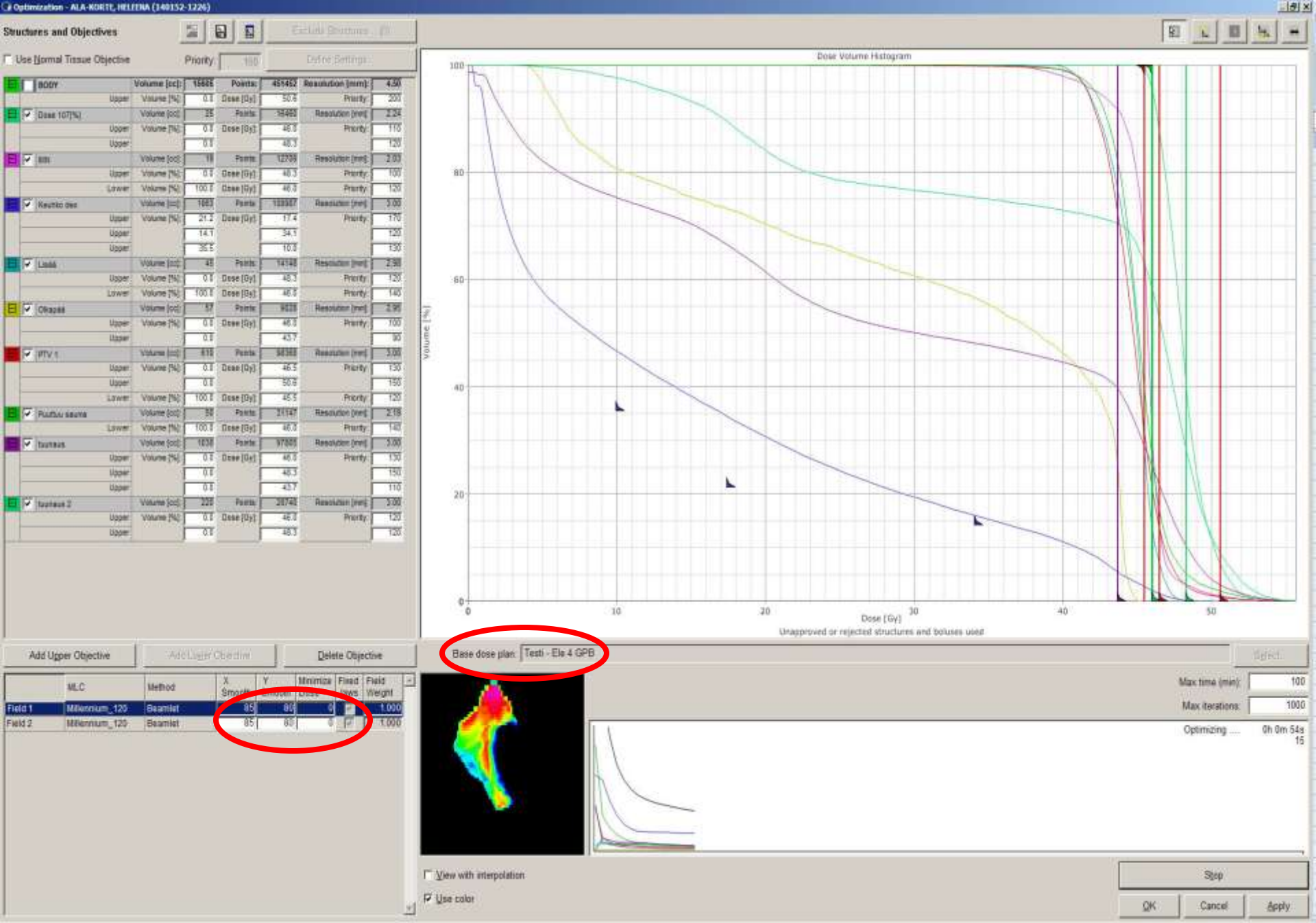
- Isosentrinen hoito
- Etu- ja takaviistot IMRT-kentät (6 X)
- Parasternaalinen elektronikenttä
- Bolusta tarpeen mukaan

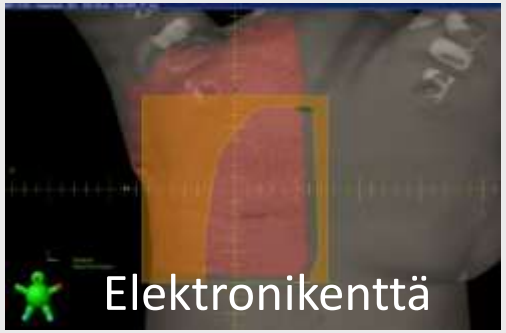
Suunnittelu Eclipsessä

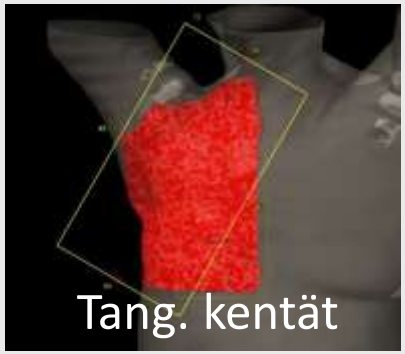
Elektroni- ja IMRT –kenttien yhdistäminen

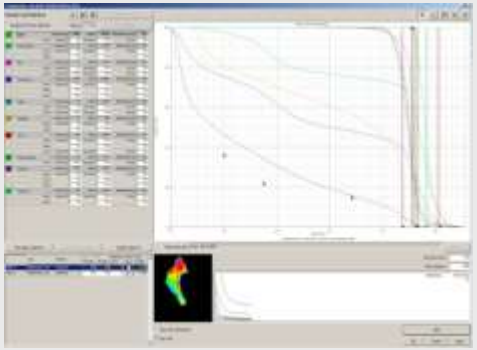


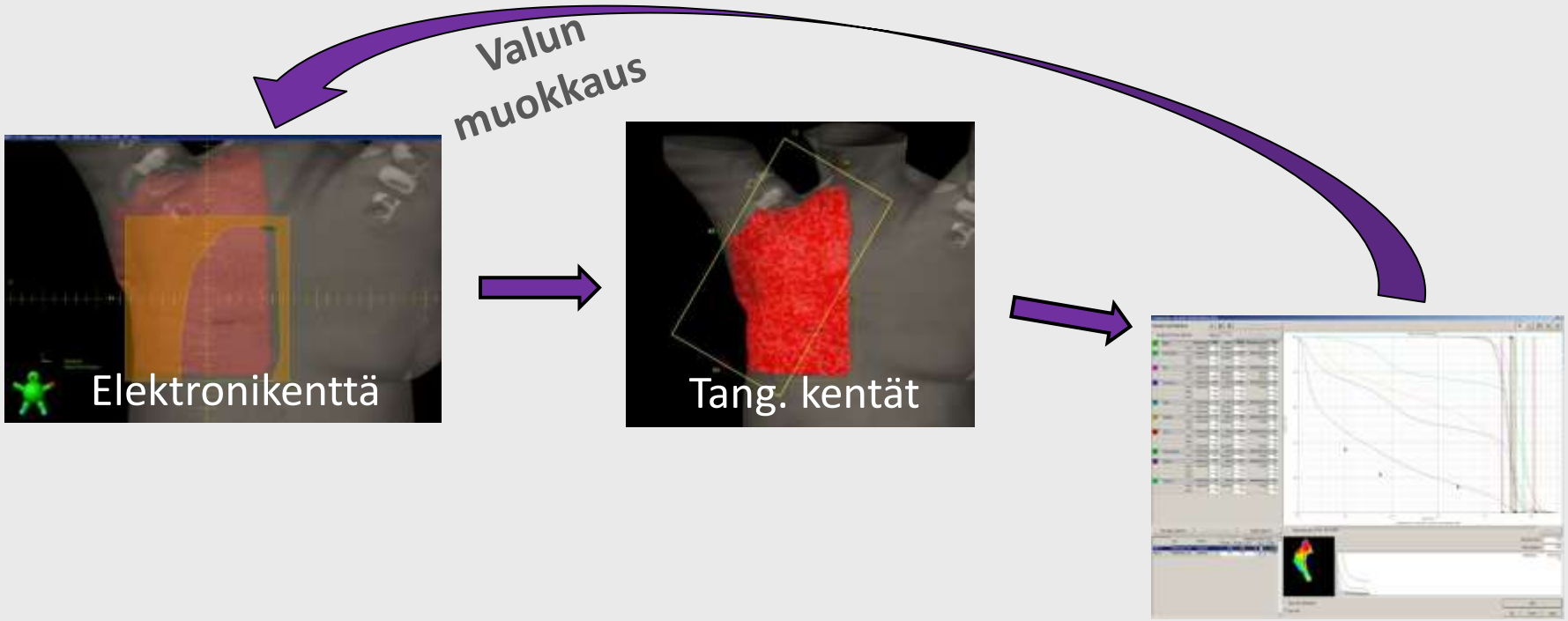


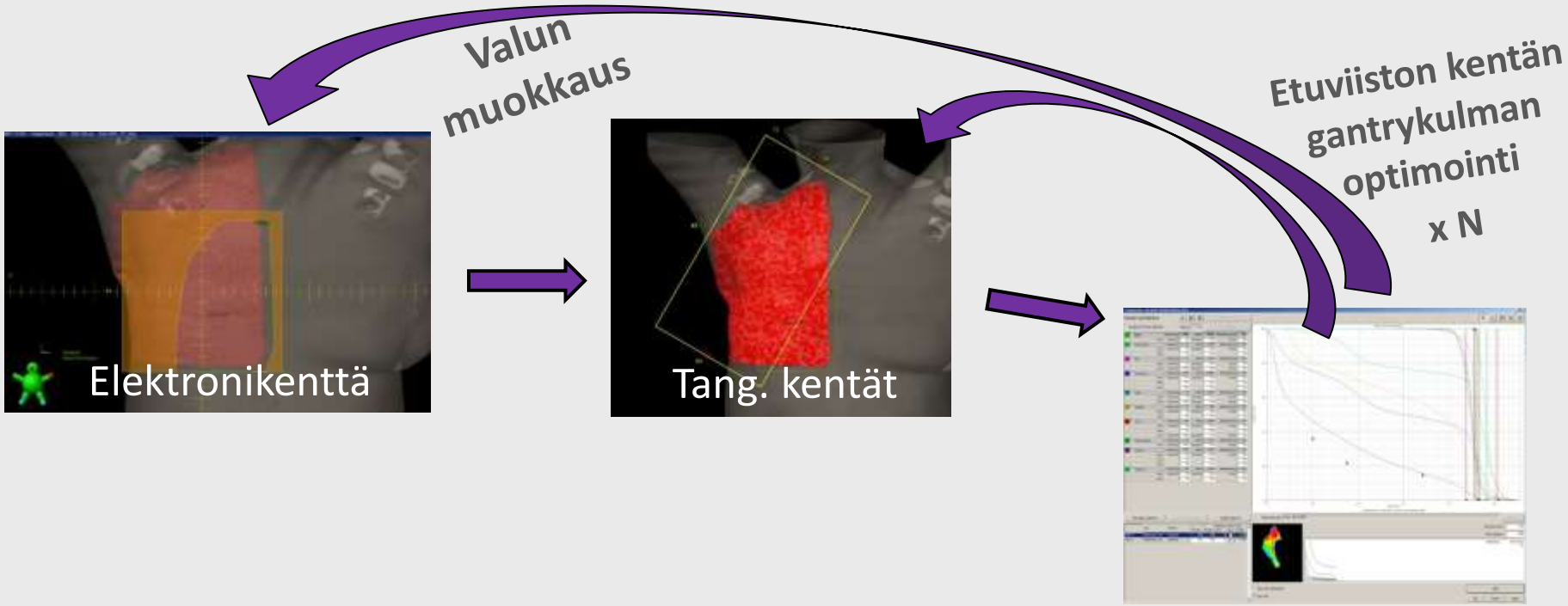

Optimization - ALA-KORTE, HELENA (140152-1226)
Structures and Objectives
Use Normal Tissue Objective
Priority:
Define Settings...
BODY
Dose 107[%]
BIN
Keuhko oik
Lisää
Oikaisä
PTV 1
Puutuu sauna
tuotteus
tuotteus 2
Volume [cc]:
Points:
Resolution [mm]:
Volume [%]:
Dose [Gy]:
Priority:
Upper
Lower
Dose Volume Histogram
Volume [%]
Dose [Gy]
Unapproved or rejected structures and boluses used
Add Upper Objective
Add Lower Objective
Delete Objective
Base dose plan:
Testi - Ela 4 GPB
Select...
MLC
Method
X Smooth
Y Smooth
Minimize Dose
Fixed Jaws
Field Weight
Field 1
Millennium_120
Beamlet
Field 2
Max time (min):
100
Max iterations:
1000
Optimizing ....
0h 0m 54s
15
View with interpolation
Use color
Stop
OK
Cancel
Apply

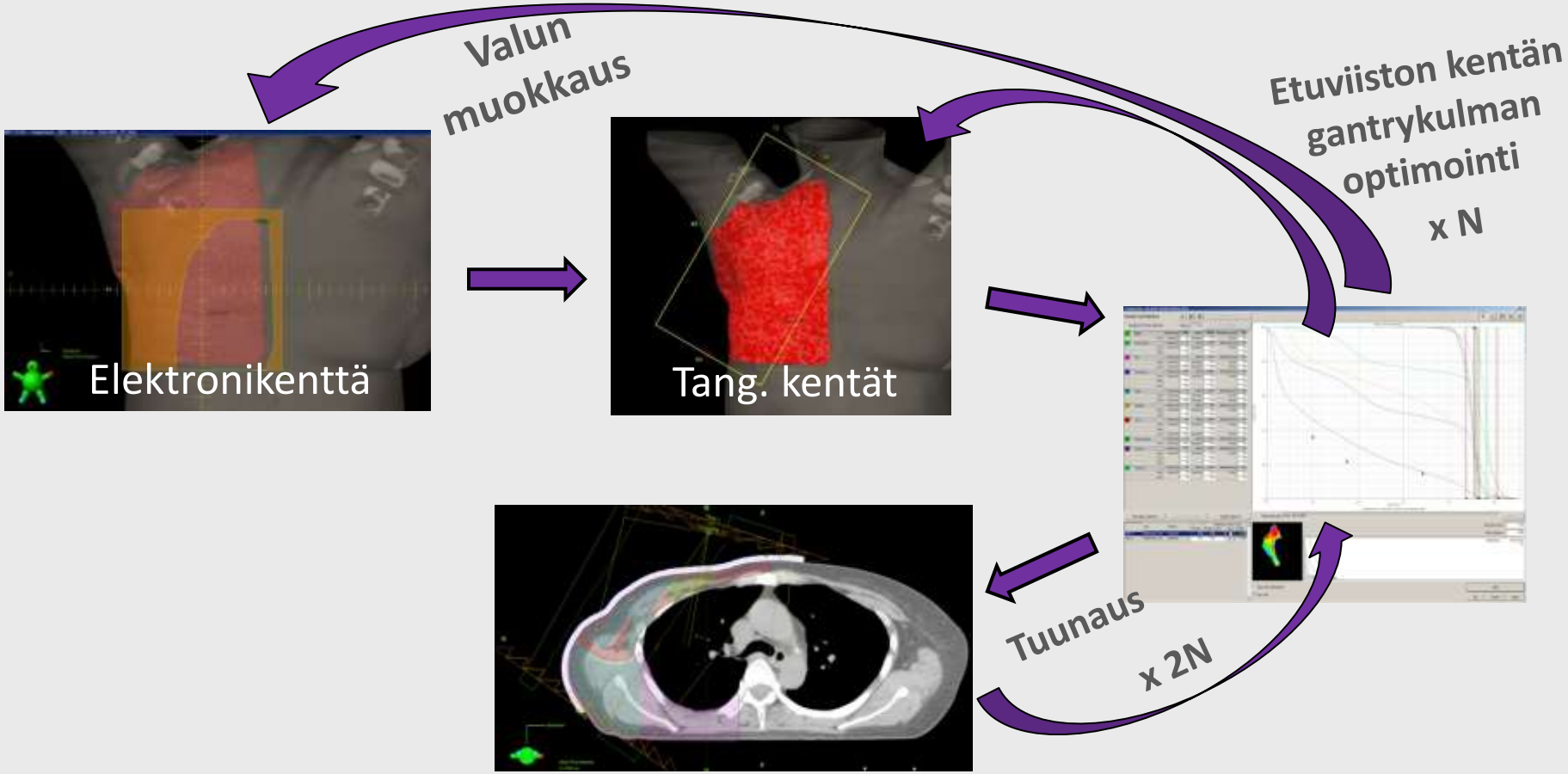

Elektronikenttä

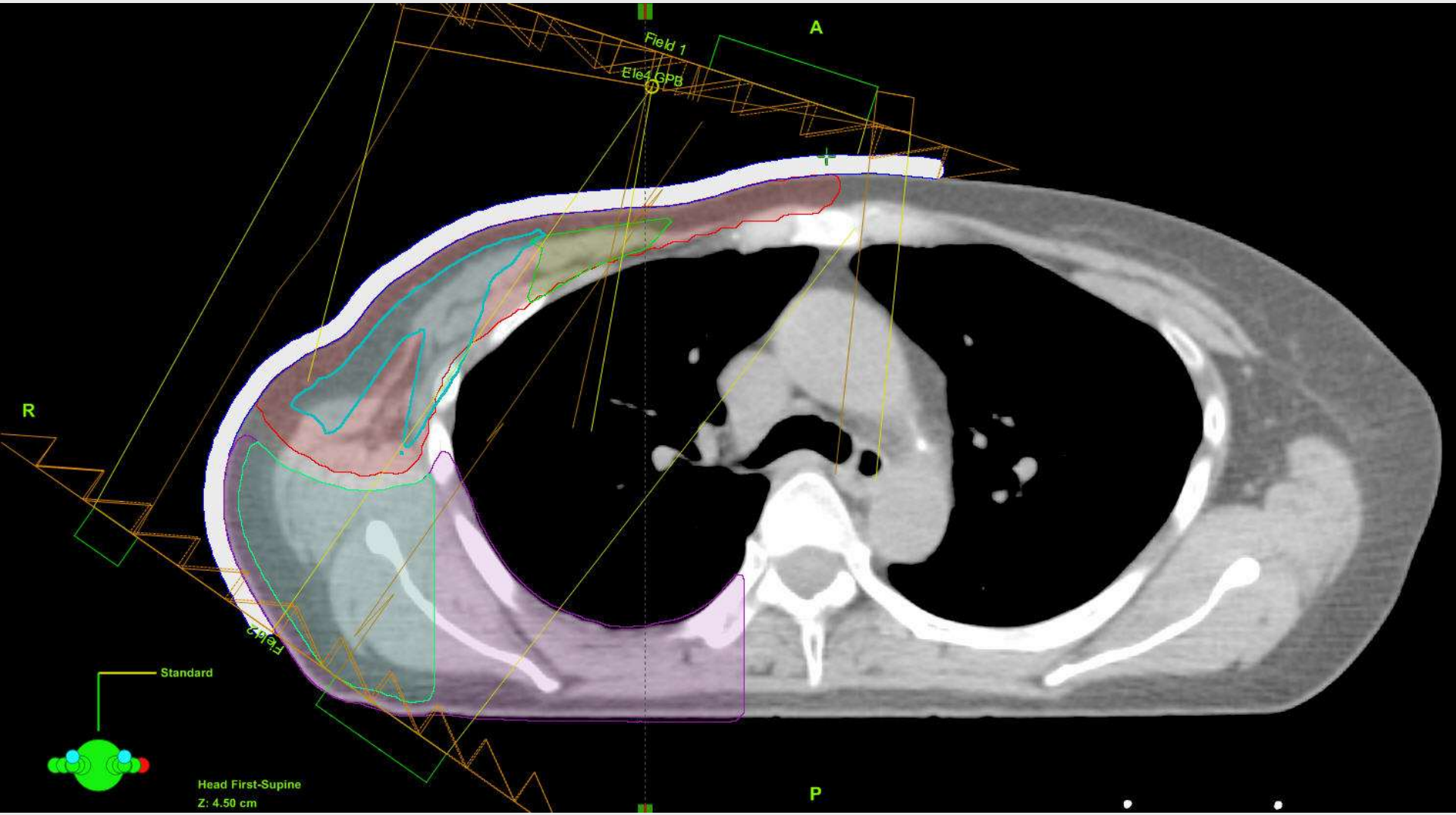

Tang. kentät

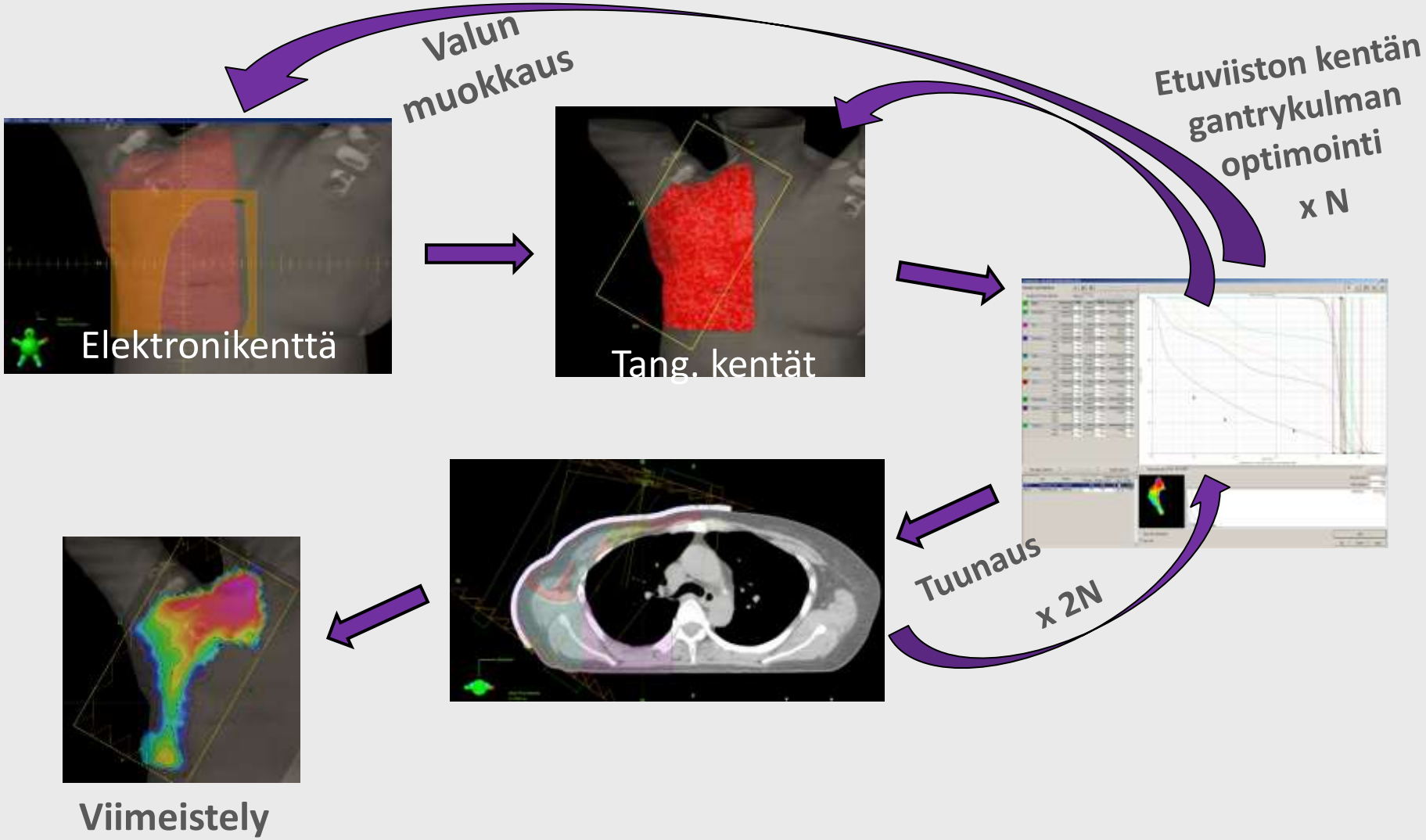


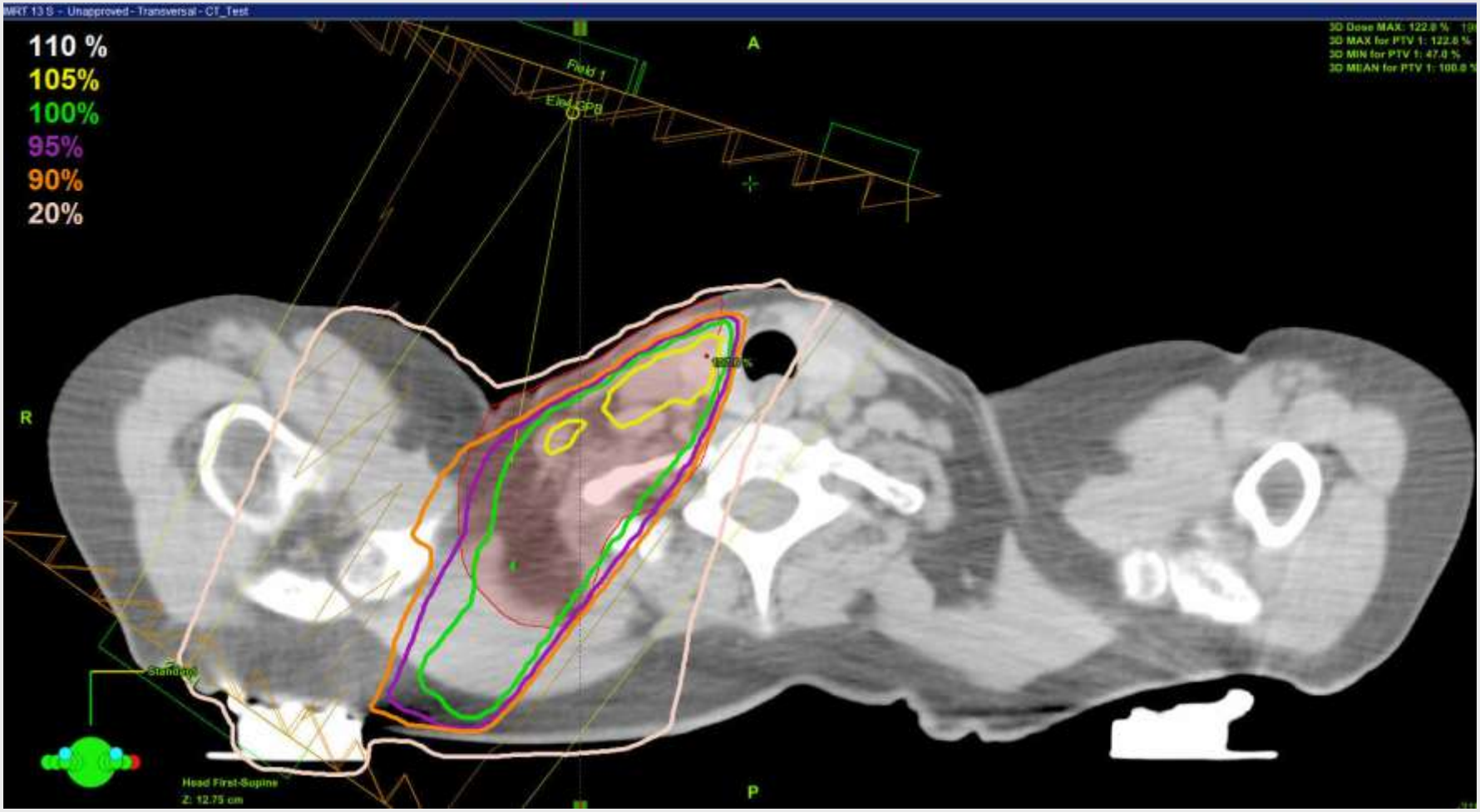

Valun muokkaus
Elektronikenttä
Tang. kentät


Valun muokkaus
Etuviiston kentän gantrykulman optimointi x N
Elektronikenttä
Tang. kentät

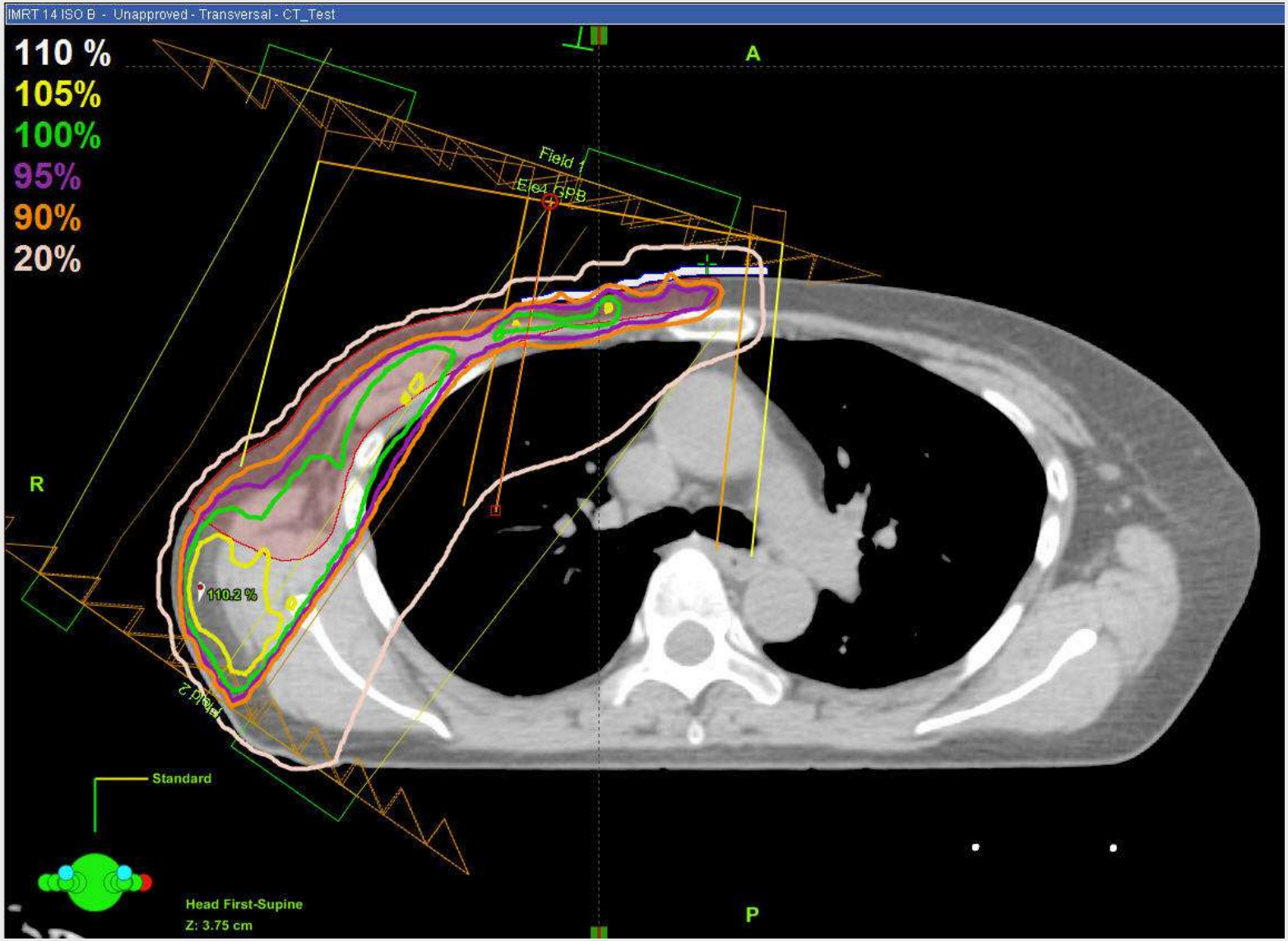

Valun muokkaus
Elektronikenttä
Tang. kentät
Etuviiston kentän gantrykulman optimointi x N
Tuunaus x 2N


Field 1
Ele4 GPB
A
R
Field 2
Standard
Head First-Supine
Z: 4.50 cm
P


Valun muokkaus
Etuviiston kentän gantrykulman optimointi x N
Elektronikenttä
Tang. kentät
Tuunaus x 2N
Viimeistely


110 %
105%
100%
95%
90%
20%
A
R
P
Field 1
Head First-Supine

110 %
105%
100%
95%
90%
20%
A
R
L
P
Field 1
Standard
Head First-Supine


IMRT 14 ISO B - Unapproved - Transversal - CT_Test
110 %
105%
100%
95%
90%
20%
A
R
P
Field 1
Ele4 GPB
110.2 %
Field 2
Standard
Head First-Supine
Z: 3.75 cm

IMRT 14 ISO B - Unapproved - Transversal - CT_Test
110 %
105%
100%
95%
90%
20%
A
R
P
Field 1
Field 2
108.3 %
Standard
Head First-Supine
Z: 0.75 cm

110 %
105%
100%
95%
90%
20%
A
R
P
Field 1
Standard
Head First-Supine
Z: -5.25 cm

9 potilaan yhteenveto

	IMRT ja Elektroni	Tyksin Perus
Hoidetut potilaat	1	8
IS-hoito	kaikkille mahdollinen	ei
Käy normi-tubukseen	5	kaikki

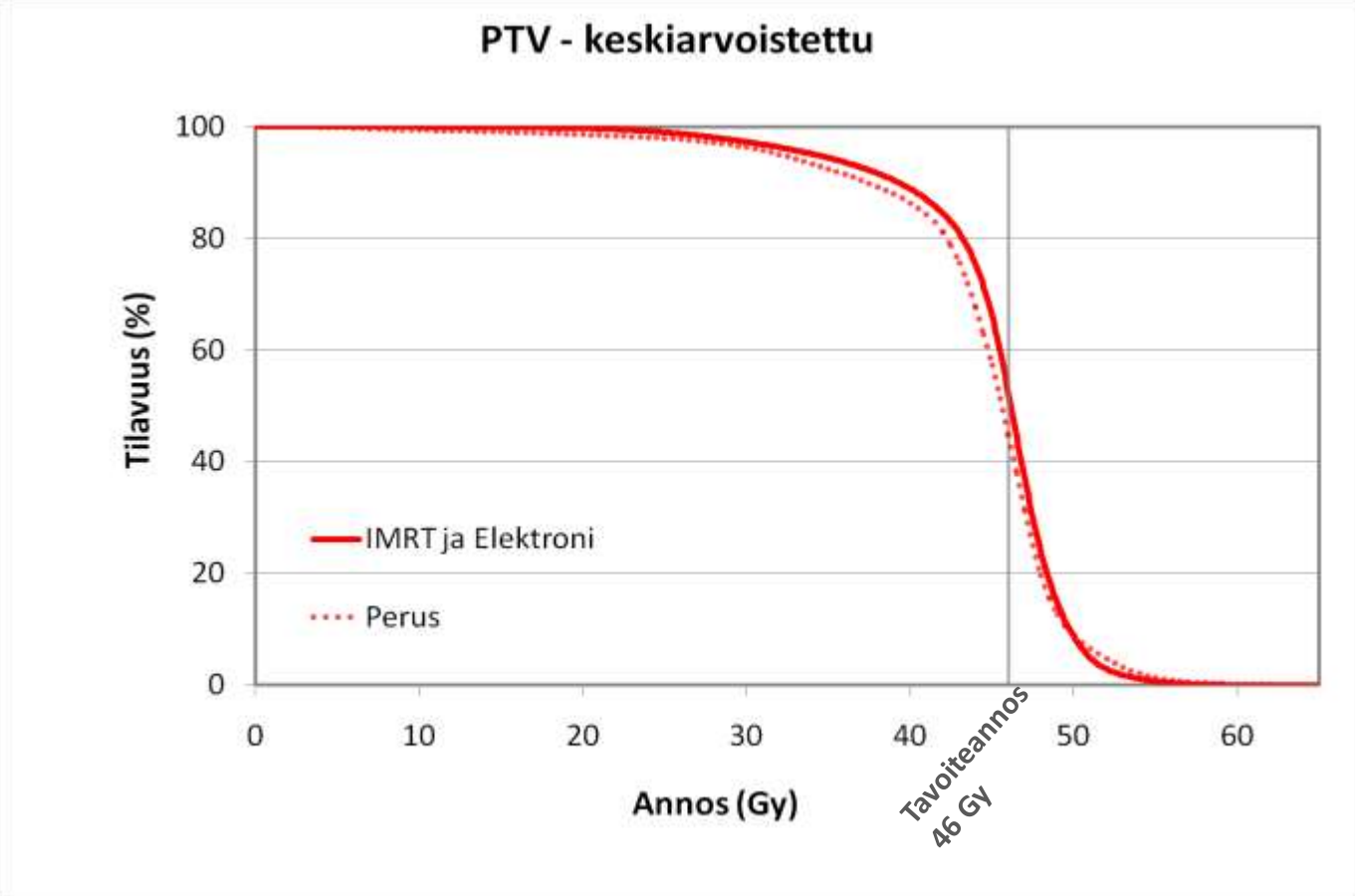
9 potilaan yhteenveto

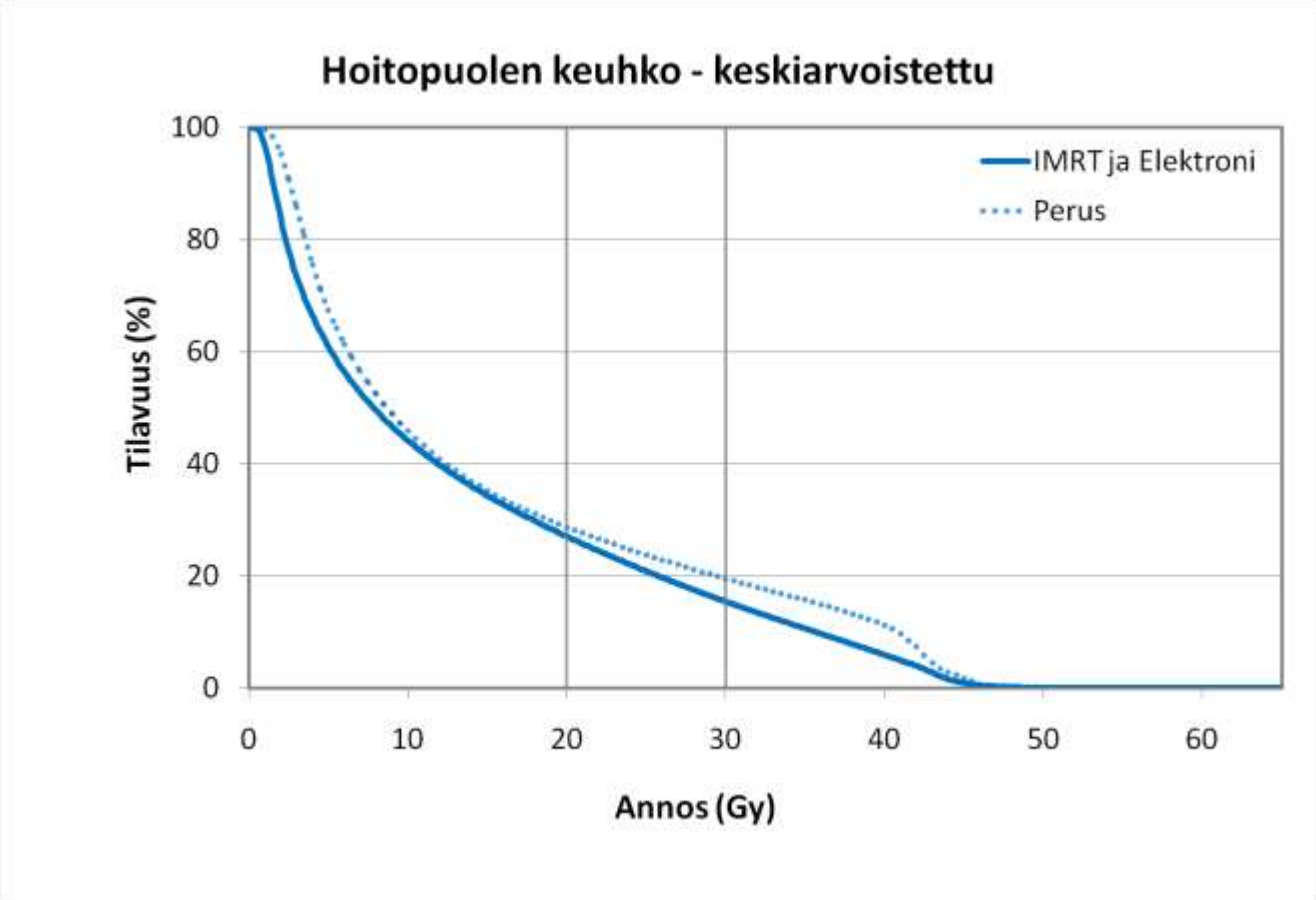
	IMRT ja Elektroni	Tyksin Perus
Hoidetut potilaat	1	8
IS-hoito	kaikkille mahdollinen	ei
Käy normi-tubukseen	5	kaikki
Elektronienergiat	6 - 12 MeV	6 - 16 MeV
Jaetut elektronikentät	0	4
Tubuskoko	15 x 15 cm^2	15 x 15 cm^2

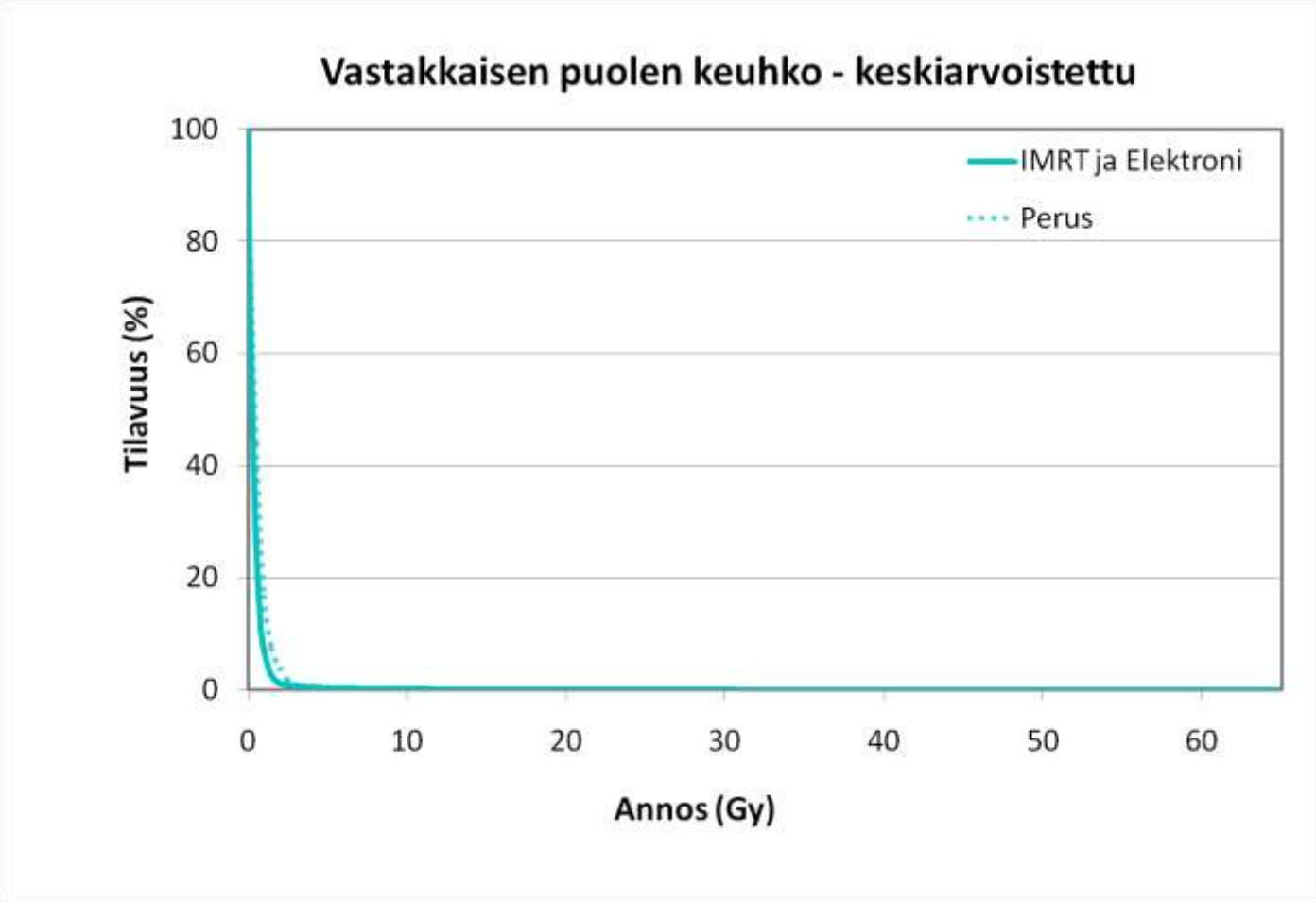
9 potilaan yhteenveto

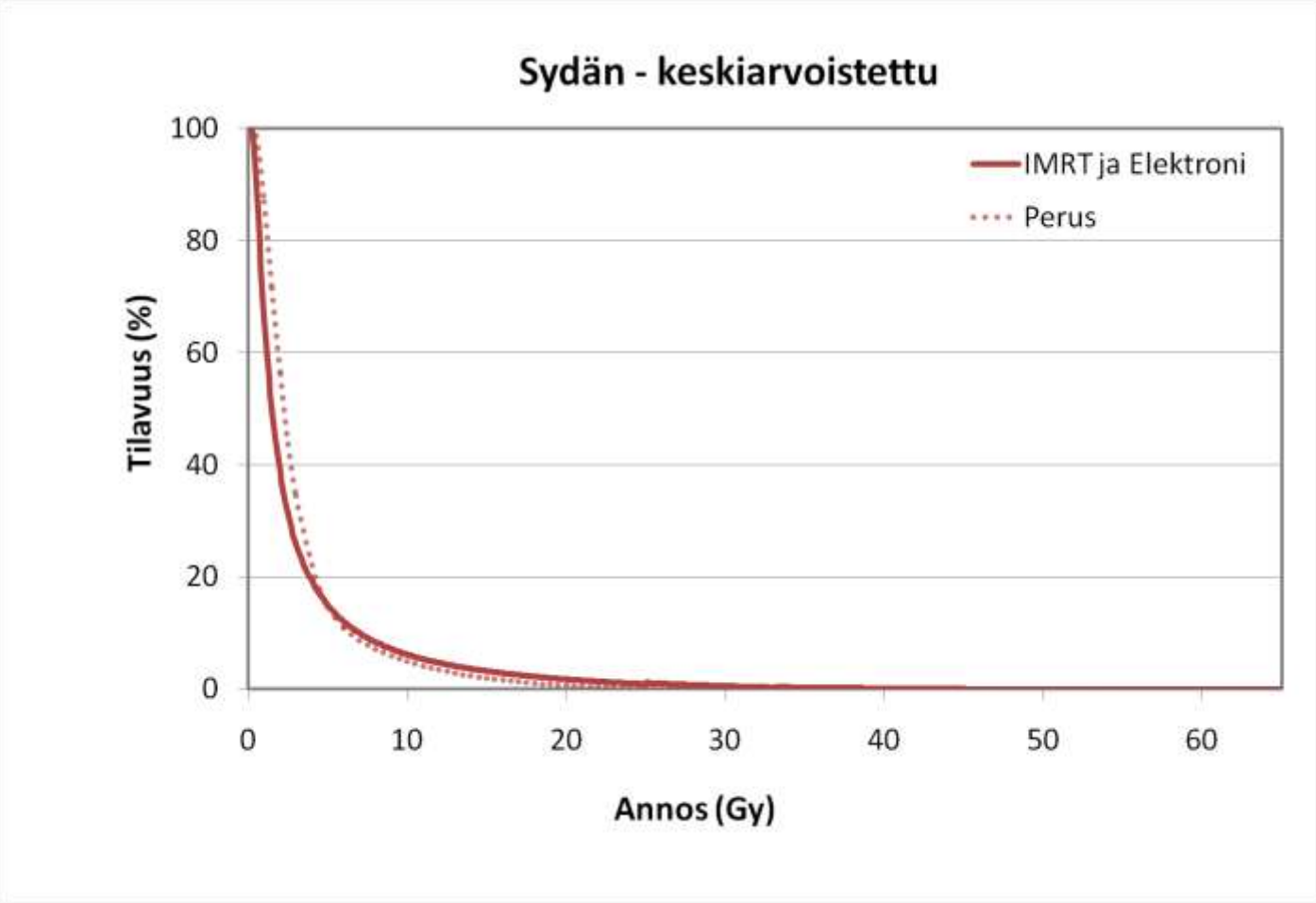
	IMRT ja Elektroni	Tyksin Perus
Hoidetut potilaat	1	8
IS-hoito	kaikkille mahdollinen	ei
Käy normi-tubukseen	5	kaikki
Elektronienergiat	6 - 12 MeV	6 - 16 MeV
Jaetut elektronikentät	0	4
Tubuskoko	15 x 15 cm^2	15 x 15 cm^2
Jaettuja IMRT-kenttiä	0	-
IMRT/Perus fotoni-MU:iden suhde	1,3 - 2,2	

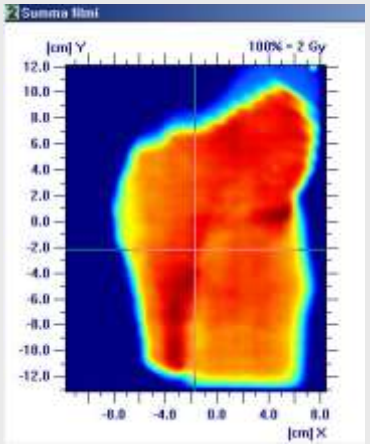
Algoritmit: AAA gridi 0,2 cm ja GGPB gridi 0,5 cm

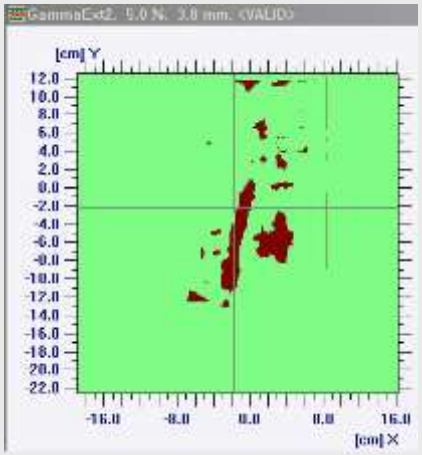



Hoitopuolen keuhko - keskiarvoistettu
IMRT ja Elektroni
Perus
Tilavuus (%)
100
80
60
40
20
0
0
10
20
30
40
50
60
Annos (Gy)

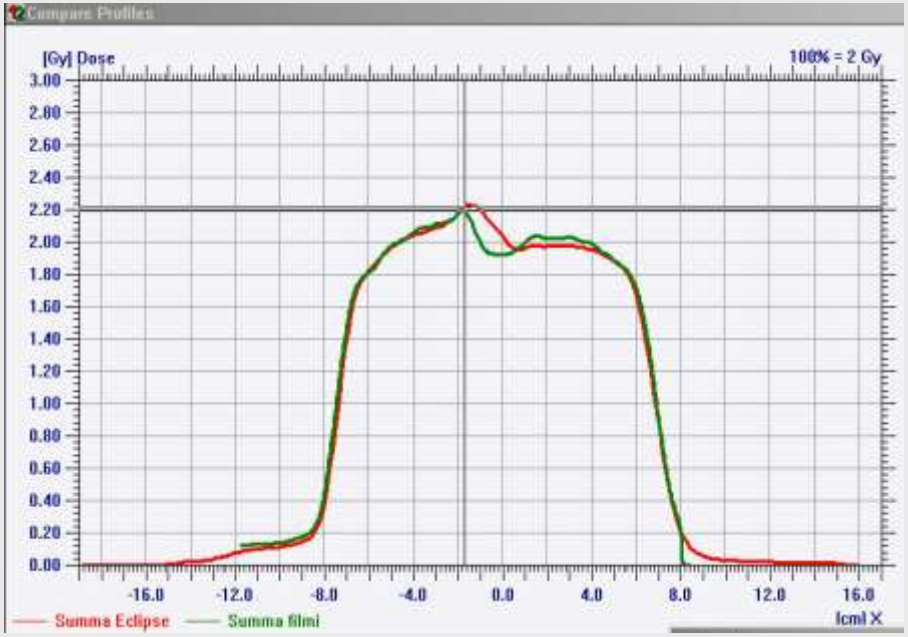

Vastakkaisen puolen keuhko - keskiarvoistettu
IMRT ja Elektroni
Perus
Tilavuus (%)
100
80
60
40
20
0
0
10
20
30
40
50
60
Annos (Gy)

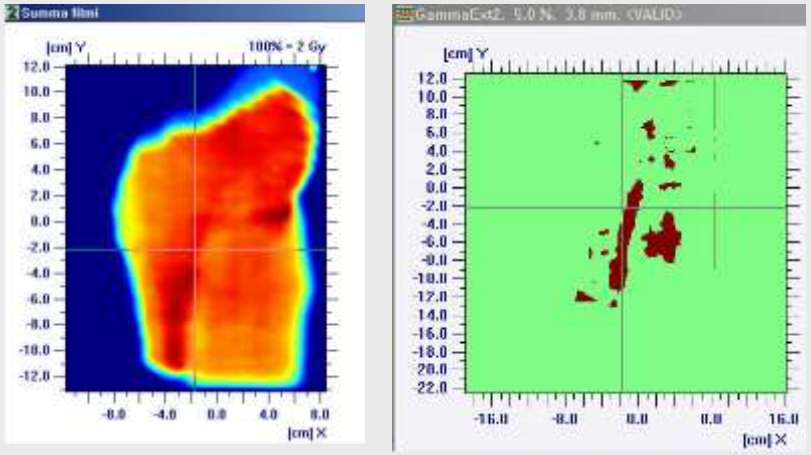

Sydän - keskiarvoistettu
IMRT ja Elektroni
Perus
Tilavuus (%)
100
80
60
40
20
0
0
10
20
30
40
50
60
Annos (Gy)

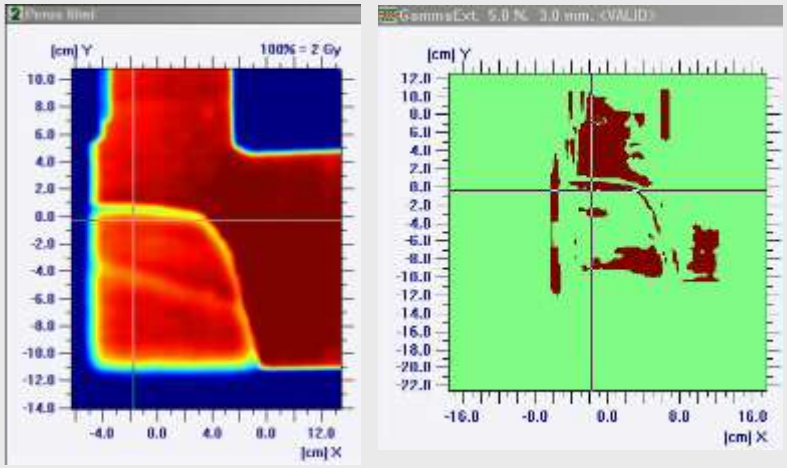




IMRT + Elektroni

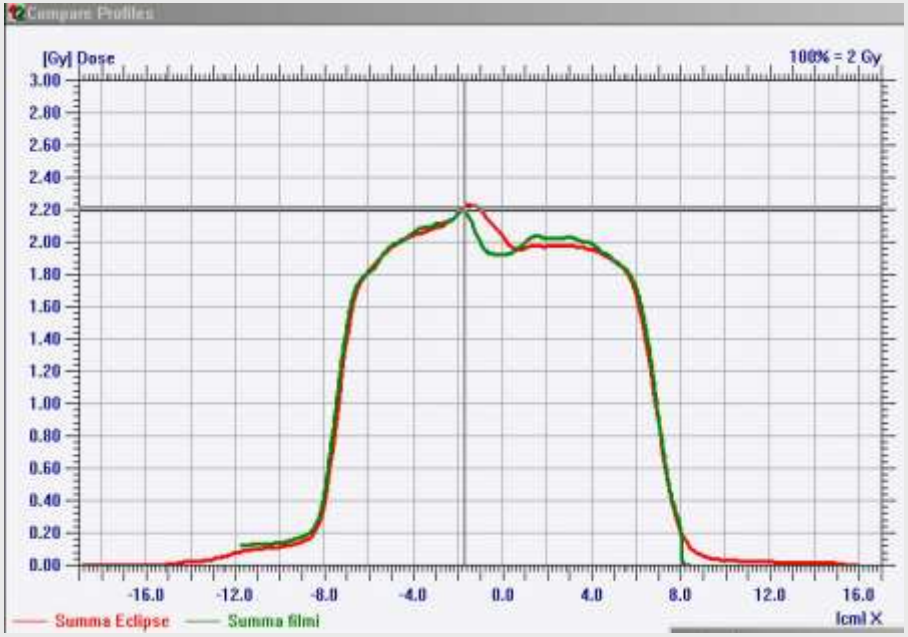


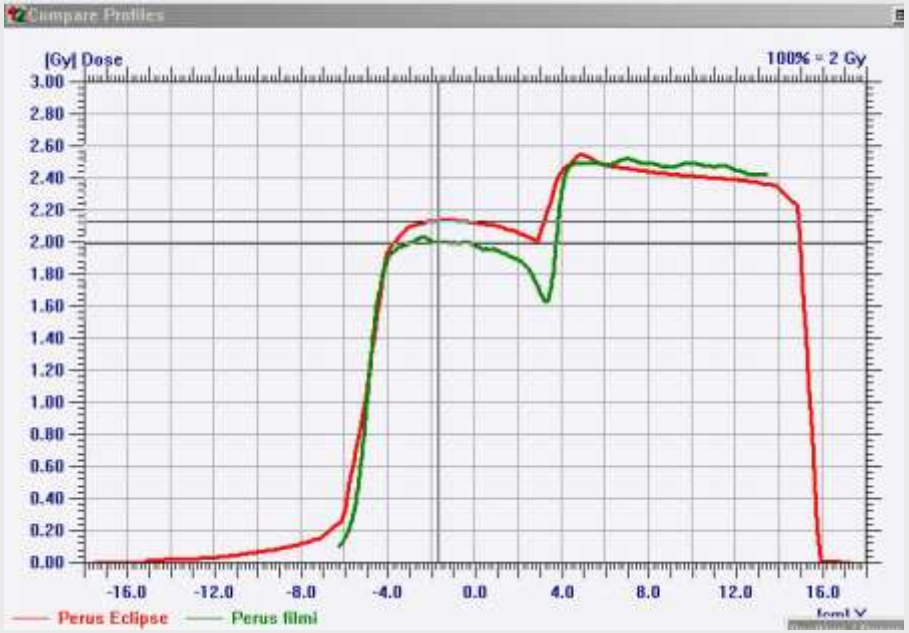


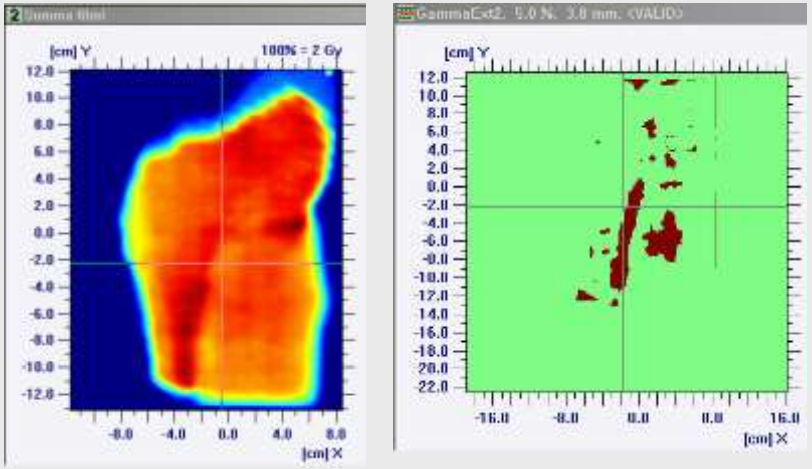


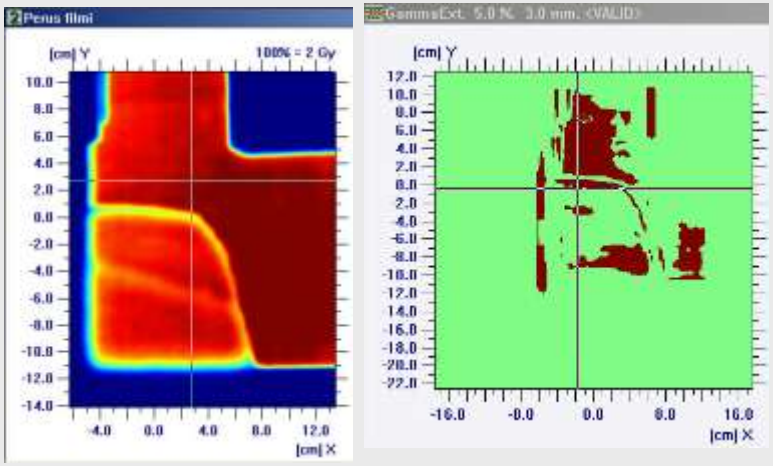
IMRT + Elektroni

Tyksin perus



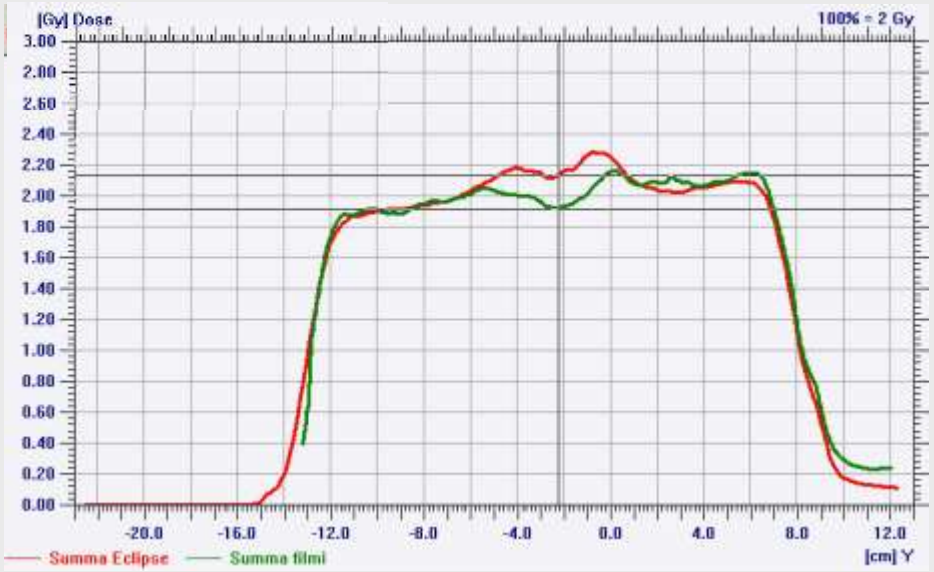


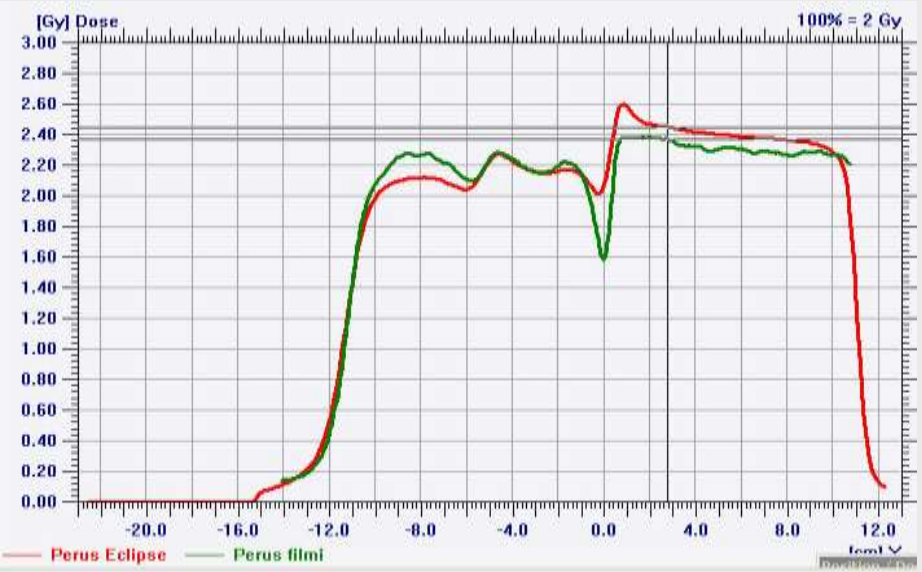




IMRT + Elektroni

Tyksin perus





Pohdintaa / Jatkoa

- **Jos rintakehän paksuus n. 20 – 24 cm voidaan hoitaa isosentrisesti elektroni- ja fotonikenttiä**
  - Katkaistulla tubuksella isompiakin potilaita
- **PTV:n piirto**
  - Kuinka mediaalisesti halutaan hoitaa?
  - Käsialan riippuvuus
- **Annosjakauman vaatimukset**
  - Paljonko vaihtelua voidaan sallia PTV:n sisällä, esim. 95-115%?
  - ICRU 50: annos 95-107%
  - Entä maksimiannokset PTV:n ulkopuolella, esim. 105%?
  - ”Uudet” kriittiset elimet: olkapää, kurkunpää…
- **Pinta-annosta lisää – takakentässä 15MV?**
- **Sauman verifiointia ja arvio sen herkkyydestä asetteluvirheille**
  - Elektronilaskentojen tarkkuus?
  - Fantomi?
  - A3 skanneri

KIITOS!