

BrachyNext



Working Together to Shape the Future of
Brachytherapy

BrachyNext



Working Together to Shape the Future of
Brachytherapy

Interactive Session: Solve a Problem — Large-Volume Skin Brachytherapy — Scalp, Skin, Breast Wall, etc.

Alexandra Stewart, DM, MRCP, FRCR

University of Surrey
St Luke's Cancer Centre
Guildford, United Kingdom

Disclosure

Alexandra Stewart, DM, MRCP, FRCR, does not have any financial relationships or products or devices with any commercial interest related to the content of this activity of any amount during the past 12 months.



THE PHYSIOLOGICAL ACTION OF RADIO-ACTIVE SUBS

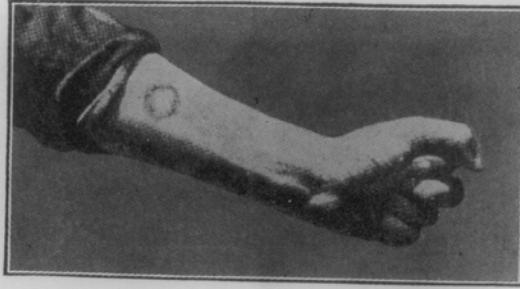
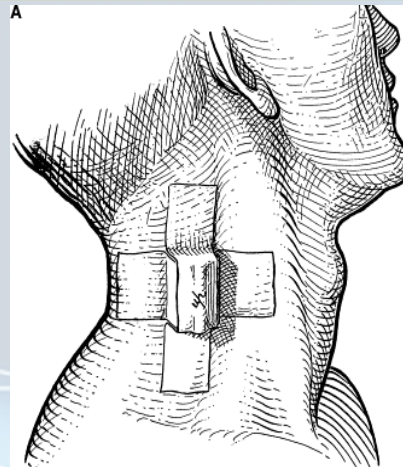


Fig. 51.

Professor Curie's arm, showing a scar resulting from a
(Through the courtesy of the Success Company.)



Danlos and lupus patient



Radium surface applicator



Large Subaxillary Keloid Scar





7.5 Gy x 1 Fraction

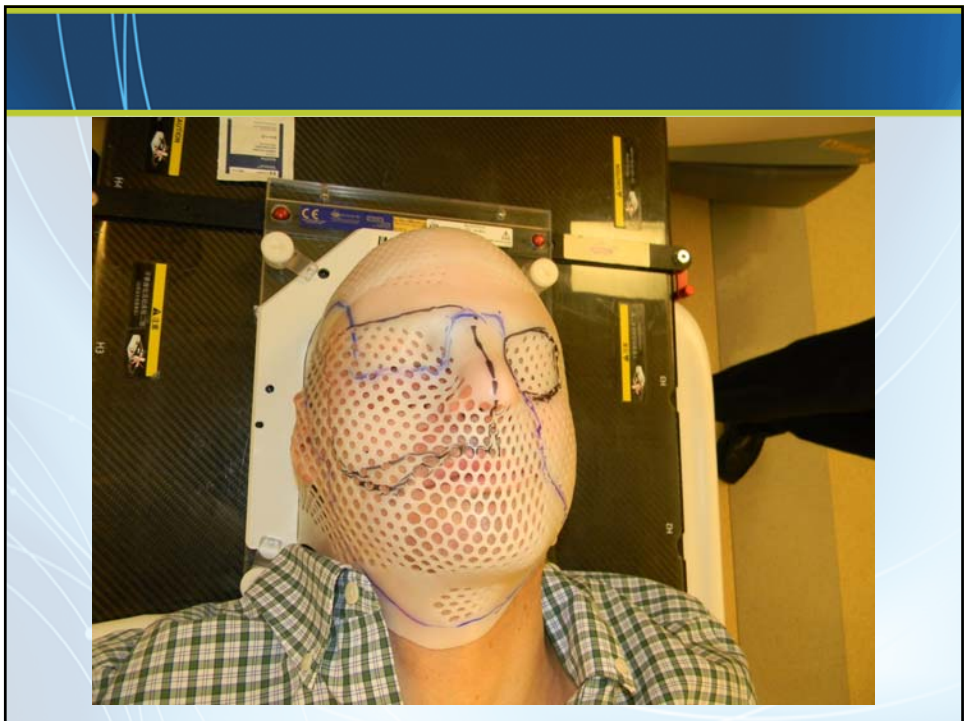


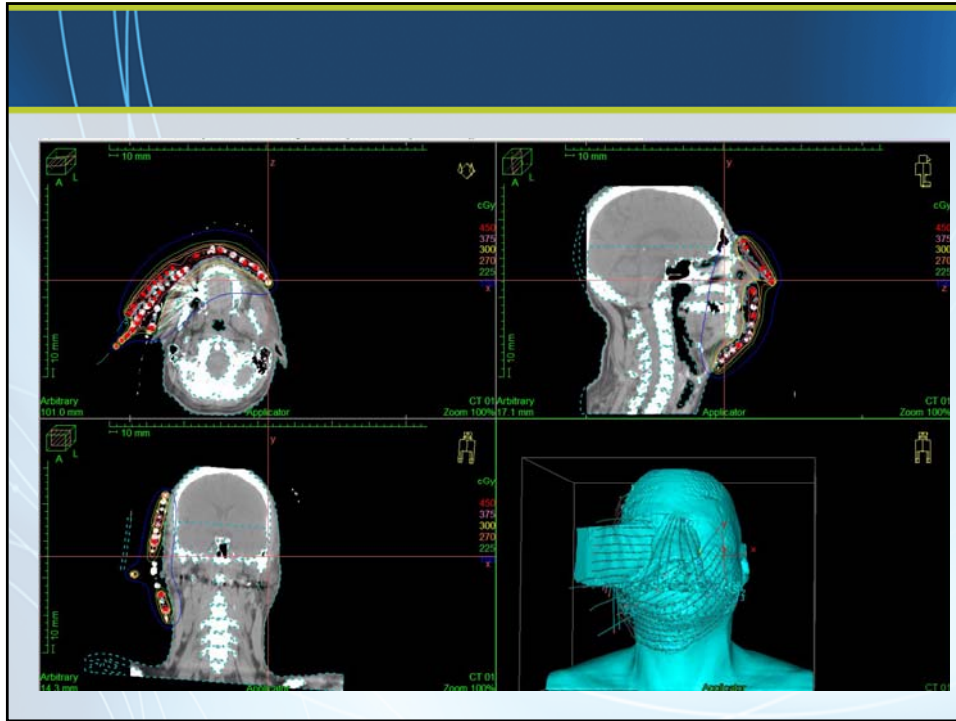
Angiosarcoma

- 40-year-old man
- Angiosarcoma of face
- Post-operative but widespread field change
- 3 Gy x 17 fractions at surface

BrachyNext

Working Together to Shape the Future of
Brachytherapy





Acute Reaction



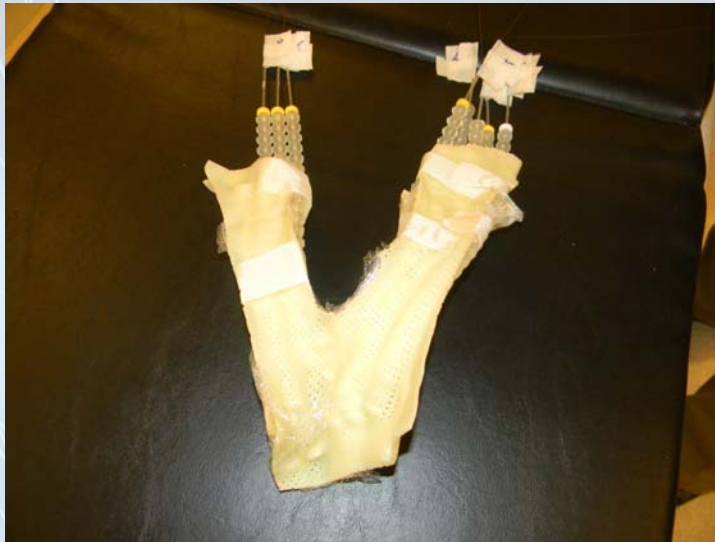


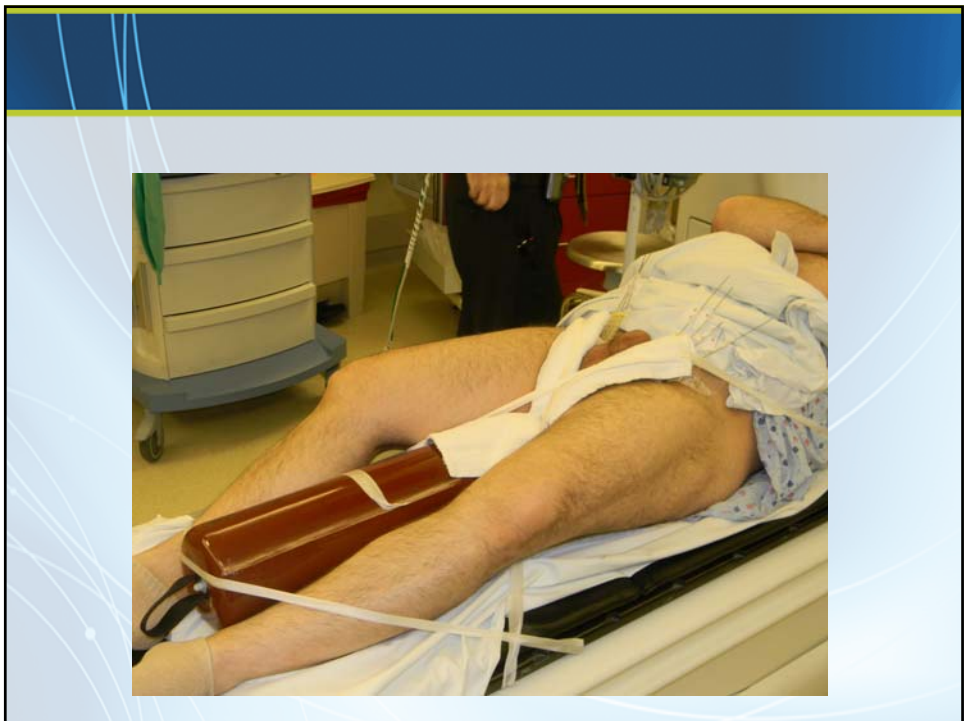
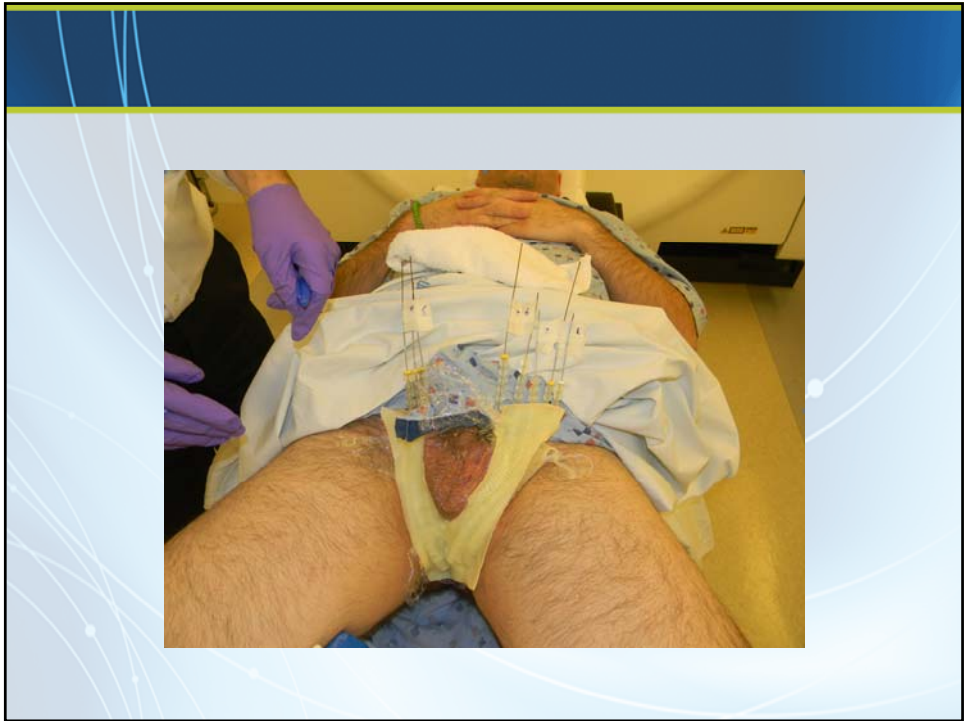
Bilateral Groin Application

- 32-year-old male
- Localized Langerhans cell histiocytosis refractory to topical therapy
- Bi-lateral groins and gluteal crease
- 2 Gy x 6 fractions @ 3 mm in tissue



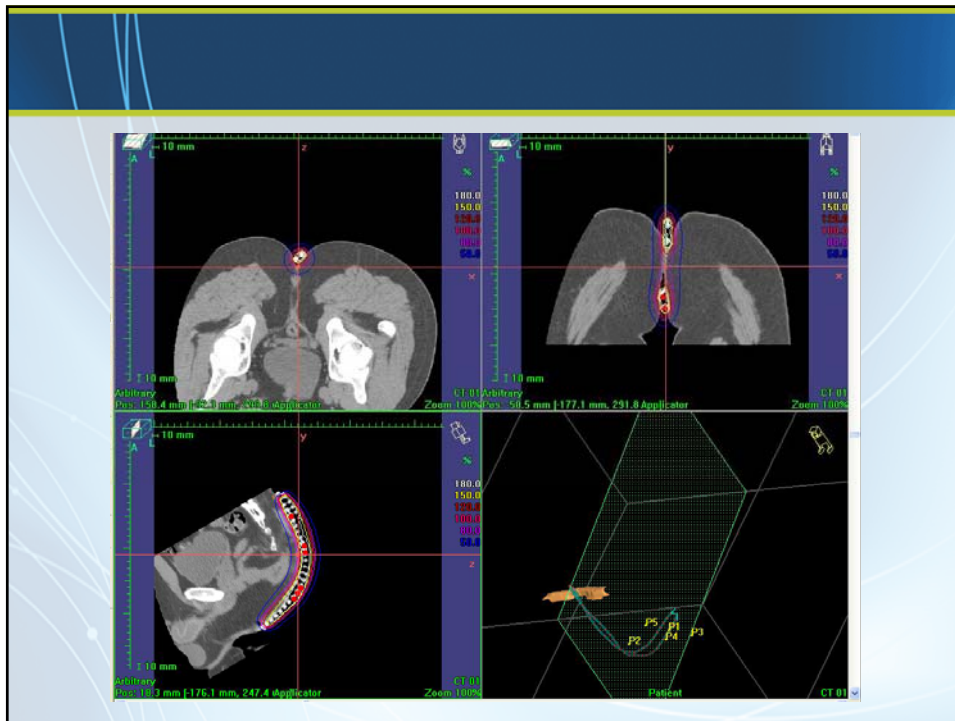
Electrons





BrachyNext

Working Together to Shape the Future of
Brachytherapy





Target: Highly Curved Reconstructed Breast Scar

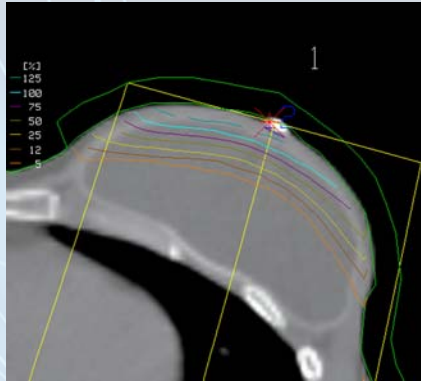


Treatment Options: Audience Vote

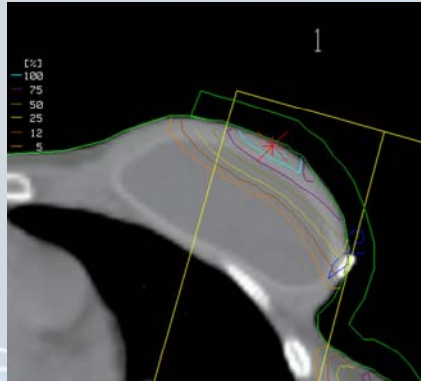
- Single Field Electrons
- Matched Electrons
- Photons
- Brachytherapy



Single Field Electrons

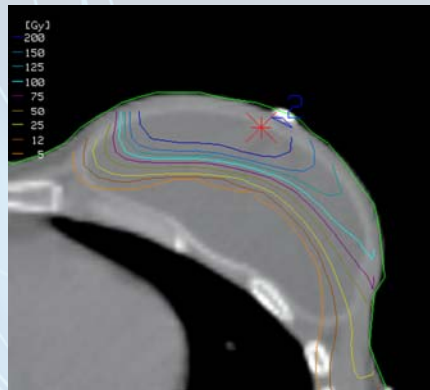


Dosimetry at Midplane

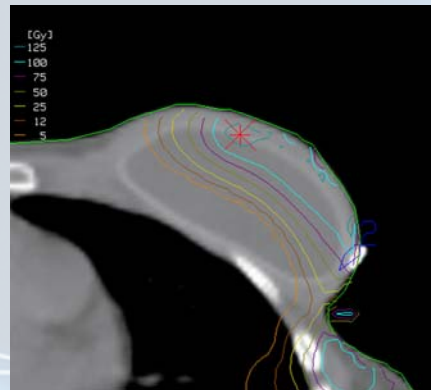


Dosimetry at Periphery

Matched Field Electrons



Dosimetry at Midplane



Dosimetry at Periphery



0.5 cm Aquaplast sheet conformed to shape of breast

Arm in reproducible position within Aquaplast cast

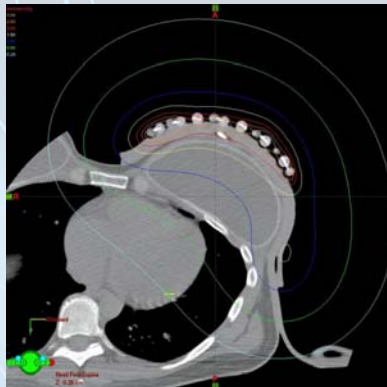
Scar traced before sheet opacifies

Freiburg Flap catheters placed along scar, secured with Aquaplast strips

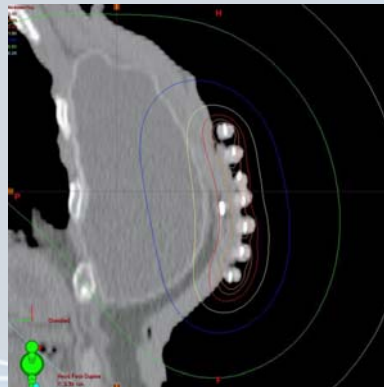
Skin fiducials traced onto cast



HDR Brachytherapy Surface Applicator



Axial Midplane Dosimetry



Sagittal Midplane Dosimetry

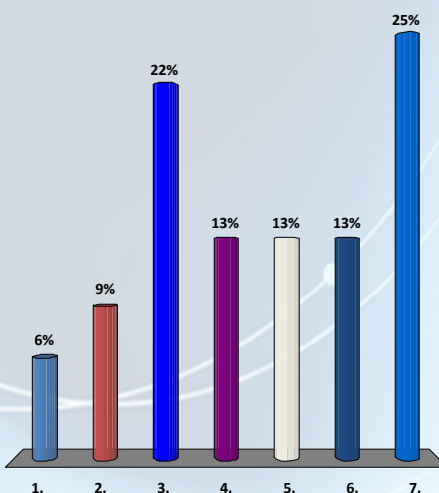


Target: Squamous Cell Carcinoma on Scalp Vertex



Treatment options?

1. Surgery
2. Orthovoltage
3. Static Electrons
4. Electron arc
5. IMRT
6. Tomotherapy
7. Brachytherapy

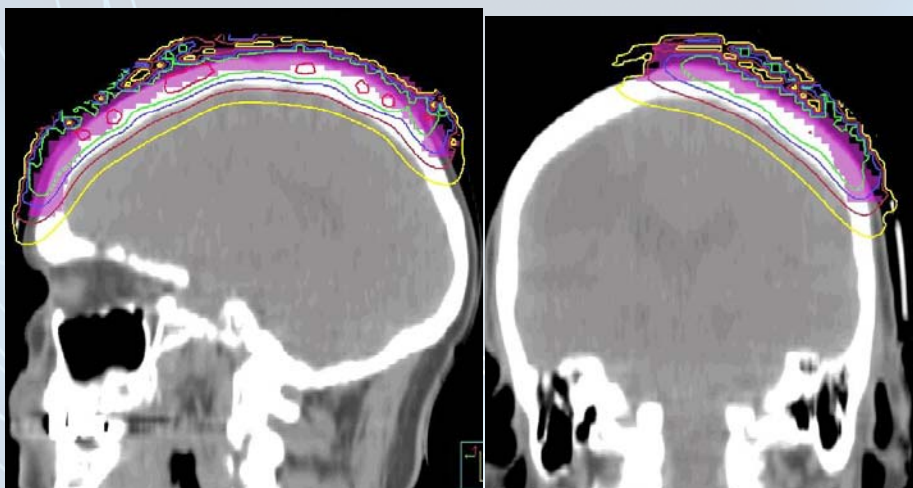




Orthovoltage



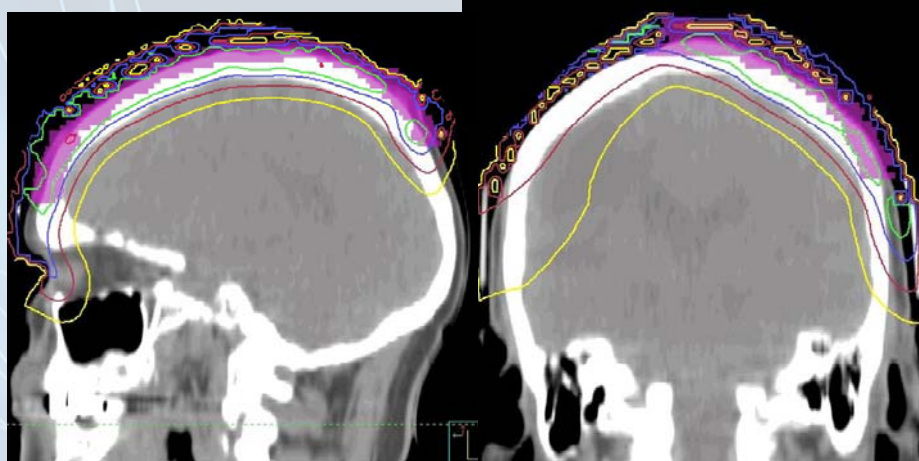
Static Electron Fields



107% 95% 80% 50% 20%



Arcing Electron Fields



107% 95% 80% 50% 20%

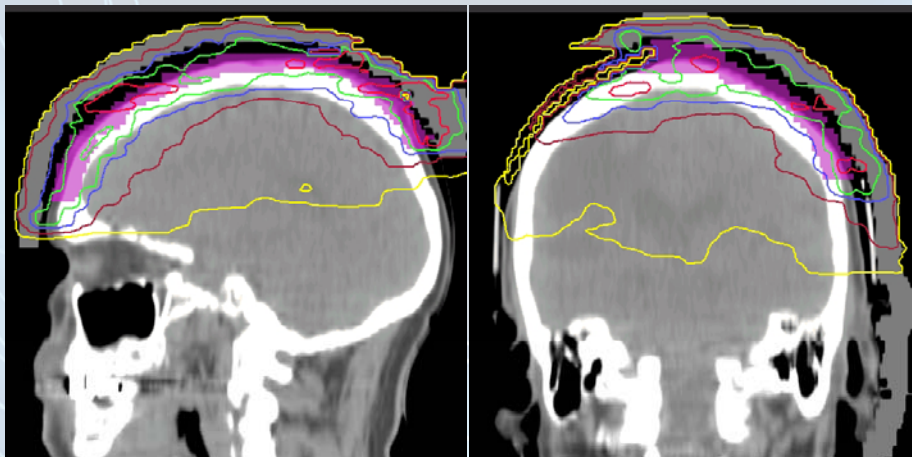
Electron Treatment



- 8 MeV electrons
- 1-cm Perspex spoiler
- 0.5-cm gap between fields
- Treatment verified with film (for the gap) and TLD

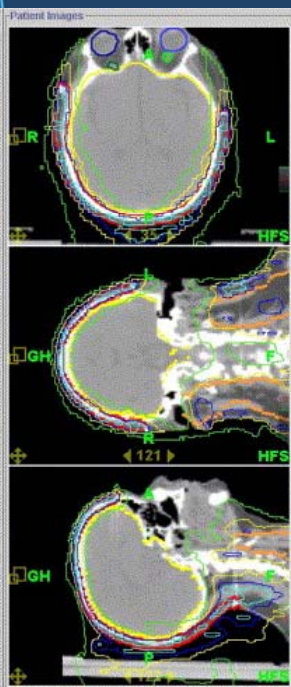


IMRT



107% 95% 80% 50% 20%

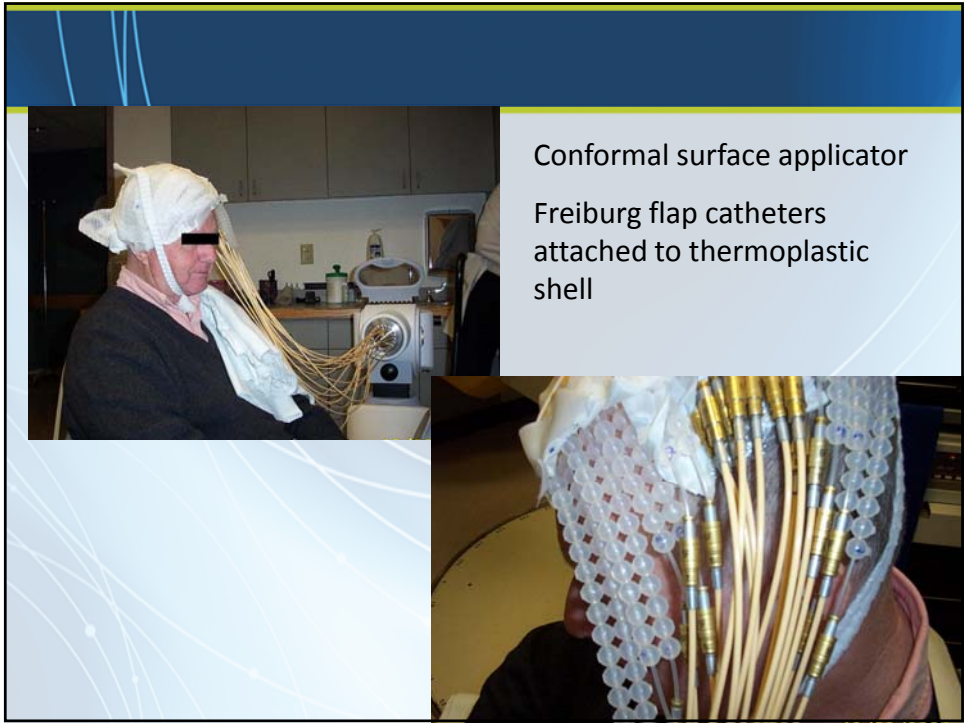
Tomotherapy



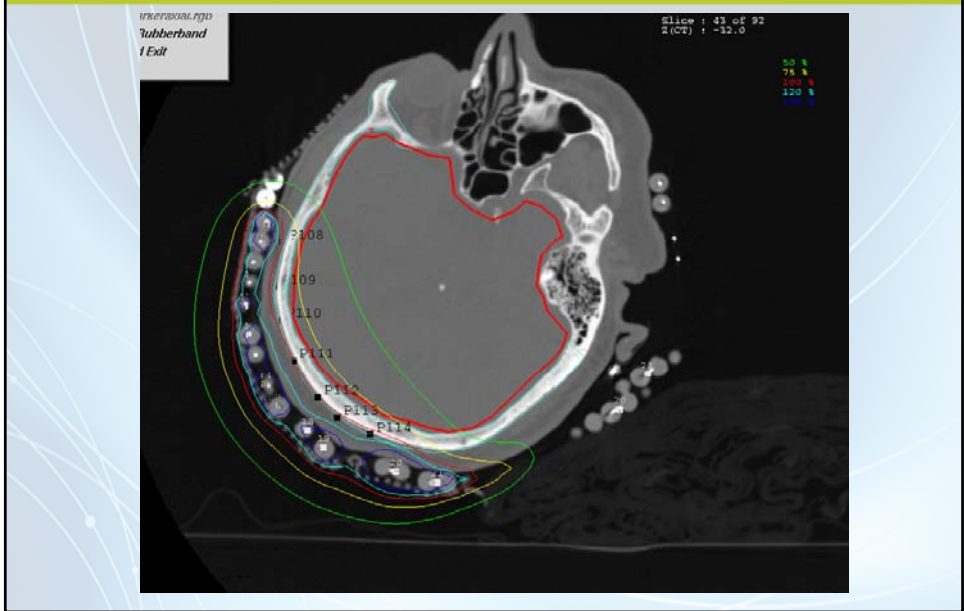
Whole scalp and bilateral neck
for angiosarcoma

Good sparing of eyes and brain

Khuntia et al IJROBP 64(4) 1288-9



HDR Brachytherapy Dosimetry (50% Isodose in Green)





Mrs. W (69 Years Old)

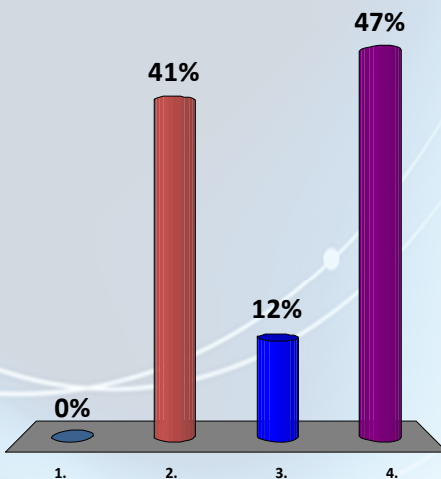
- T1N0M0 squamous cell carcinoma
- R Middle Finger
- Post Mohs surgery – positive deep margin at tendon





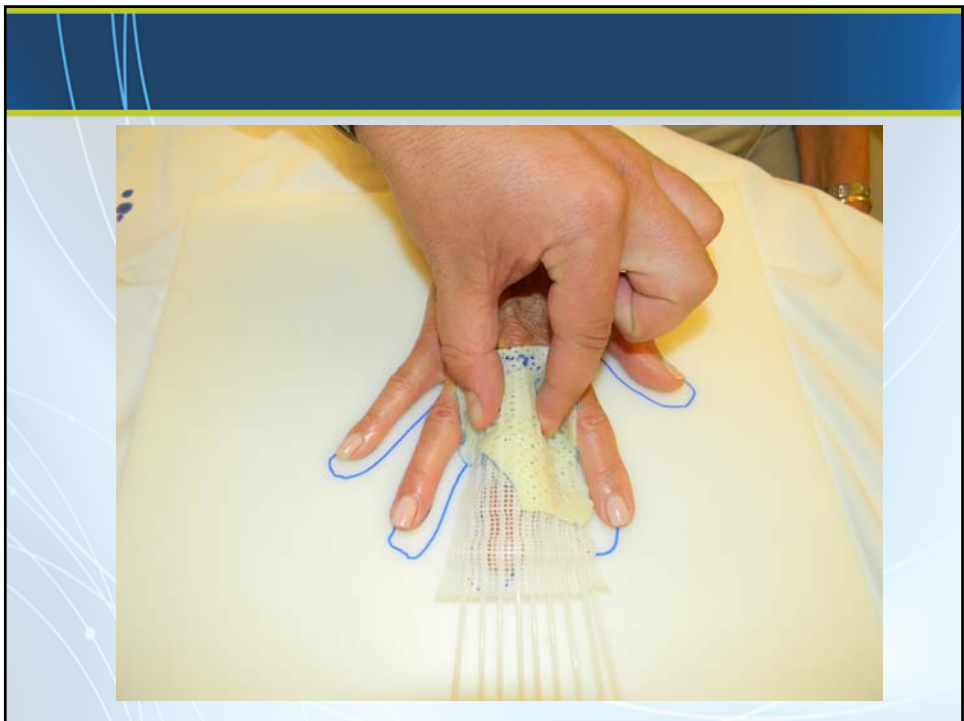
Treatment options?

1. Amputations
2. Electrons
3. Photons
4. Brachytherapy



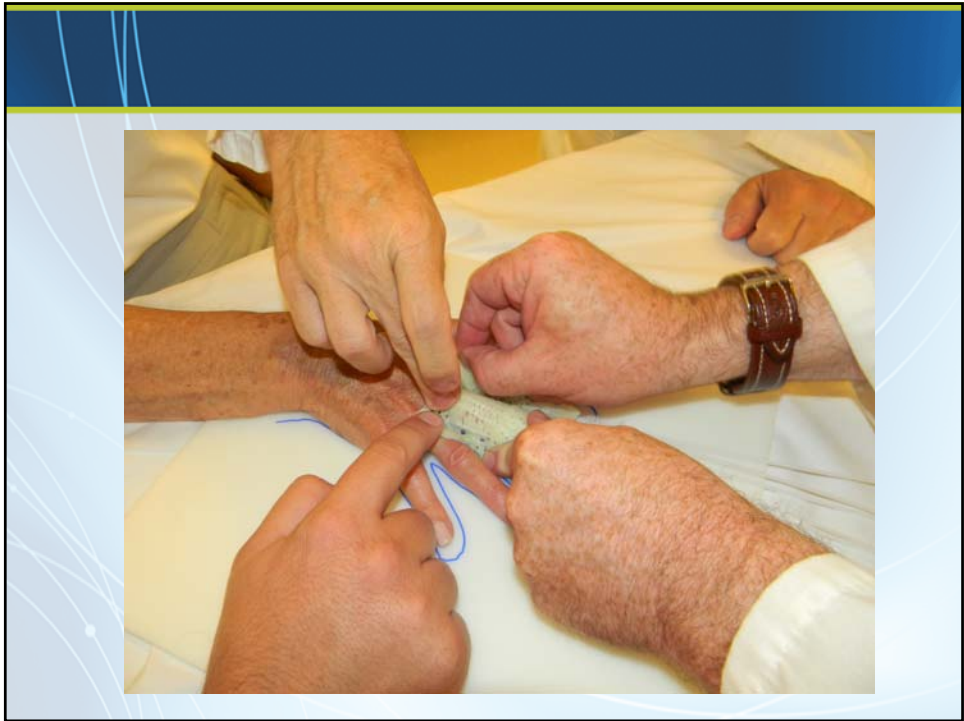
Brachytherapy

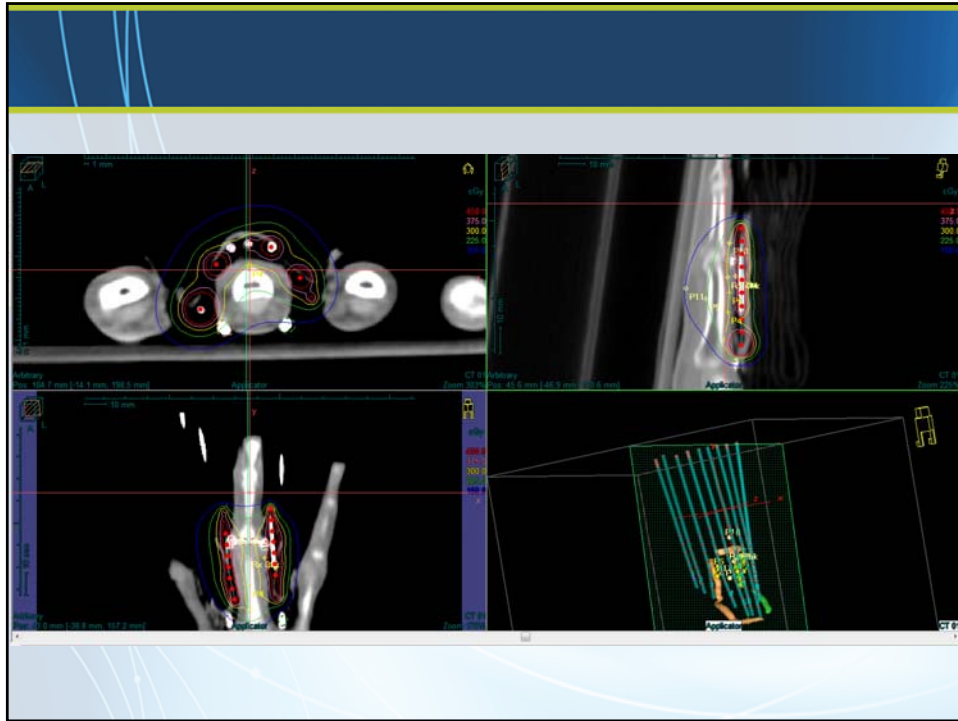
- Custom-made surface mesh
- CT planned
- 300 cGy x 17 fractions to a conformal 100%



BrachyNext

Working Together to Shape the Future of
Brachytherapy





Mrs. Roentgen's Hand
Nov 1895



Mrs. W's Hand
Nov 2013

