REACHING NEW HEIGHTS WITH SGRT

SURFACE GUIDED RADIATION THERAPY
SGRT COMMUNITY

Future of SGRT: Beyond Traditional Motion Management

Matthew Spraker, MD
AdventHealth Parker

Future of SGRT: Beyond Traditional Motion Management

Matt Spraker, MD, PhD
Radiation Oncologist
AdventHealth Rocky Mountain Region
Denver, Colorado

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SGRT significantly improves modern radiation

Patient-centered solutions for my clinical practice

- Tattoo Free Simulations
- Accurate and Precise Breathing Control
- Cherenkov imaging to reduce invisible errors
- Open mask-based SRS
- Implementation of non-coplanar treatment

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A 67-year-old female patient with early-stage breast cancer.

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A 67-year-old female patient with early-stage breast cancer.

Recommendation:
VMAT APBI
with DIBH

From Colorado.

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Tattoo Free Simulation

““What are your overall feelings about receiving a tattoo as part of your cancer treatment?”

Moser et al., Breast J., 2019

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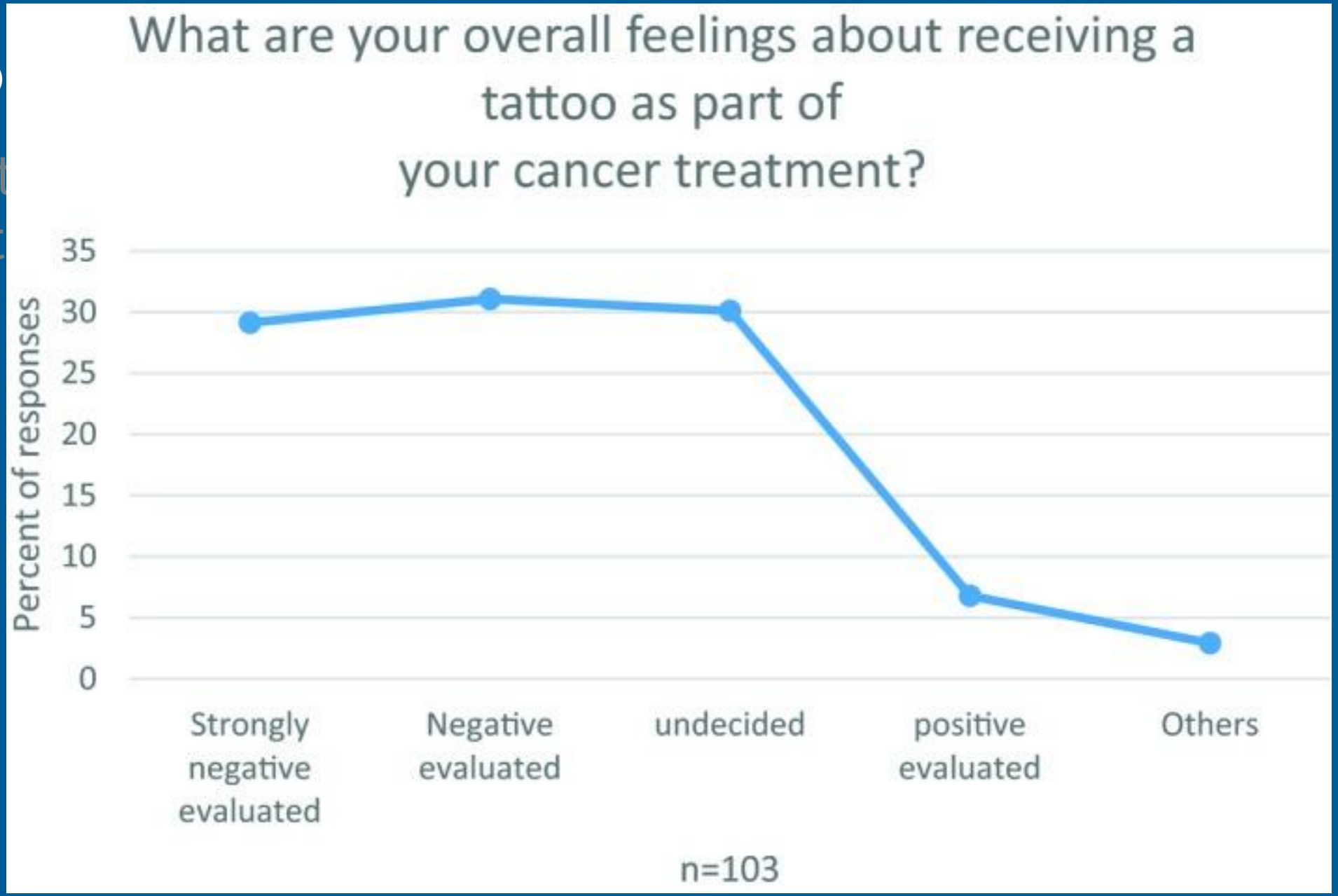
Tatto

""What
as part



Moser et al., Breast J., 2019

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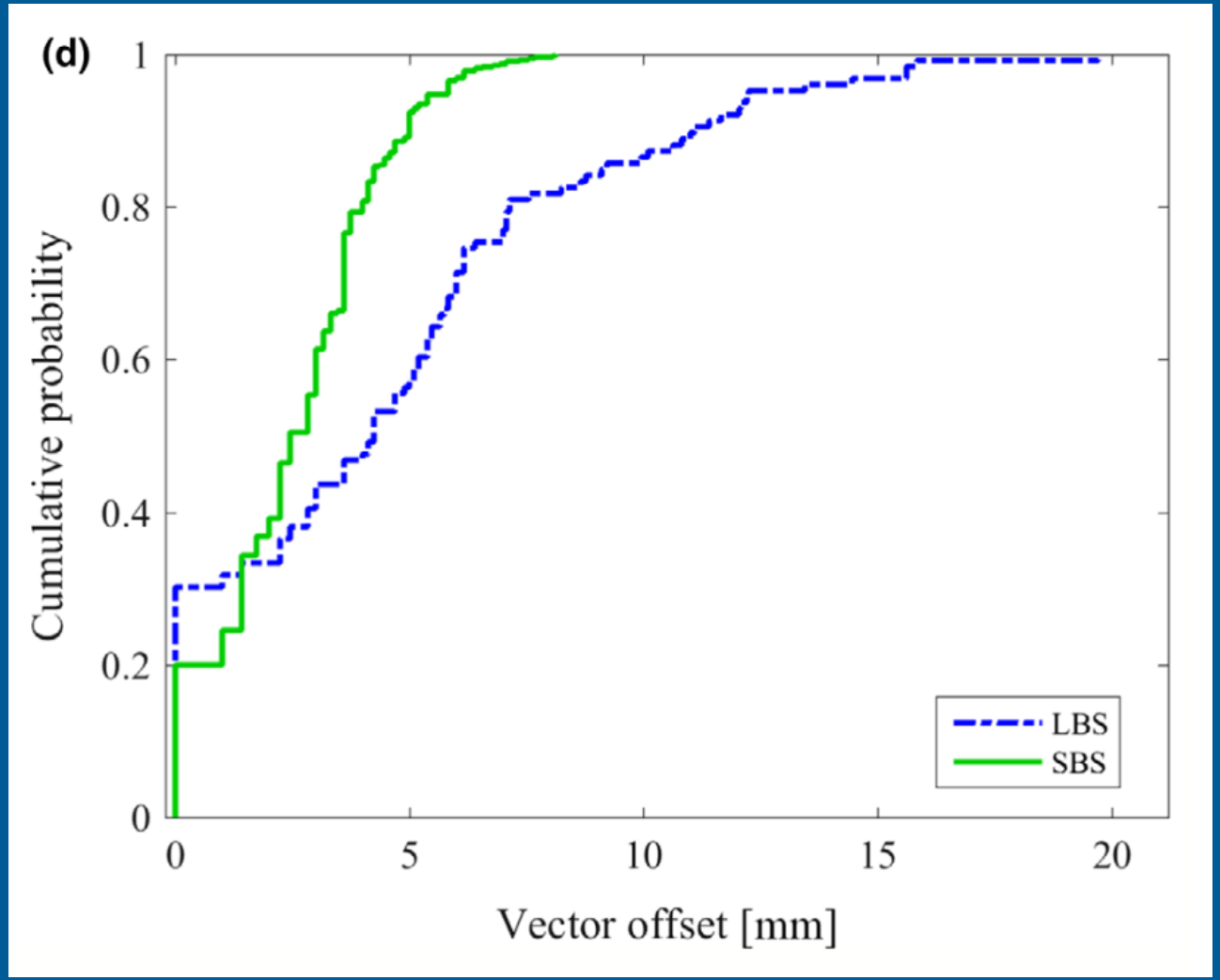
Tattoo Free Sims

SGRT versus laser-based set up

- Reduction in set up errors
- Tangents and multi-field RNI
- SGRT adds info about patient posture



Kugele et al., J App. Clin. Med. Phys.., 2019

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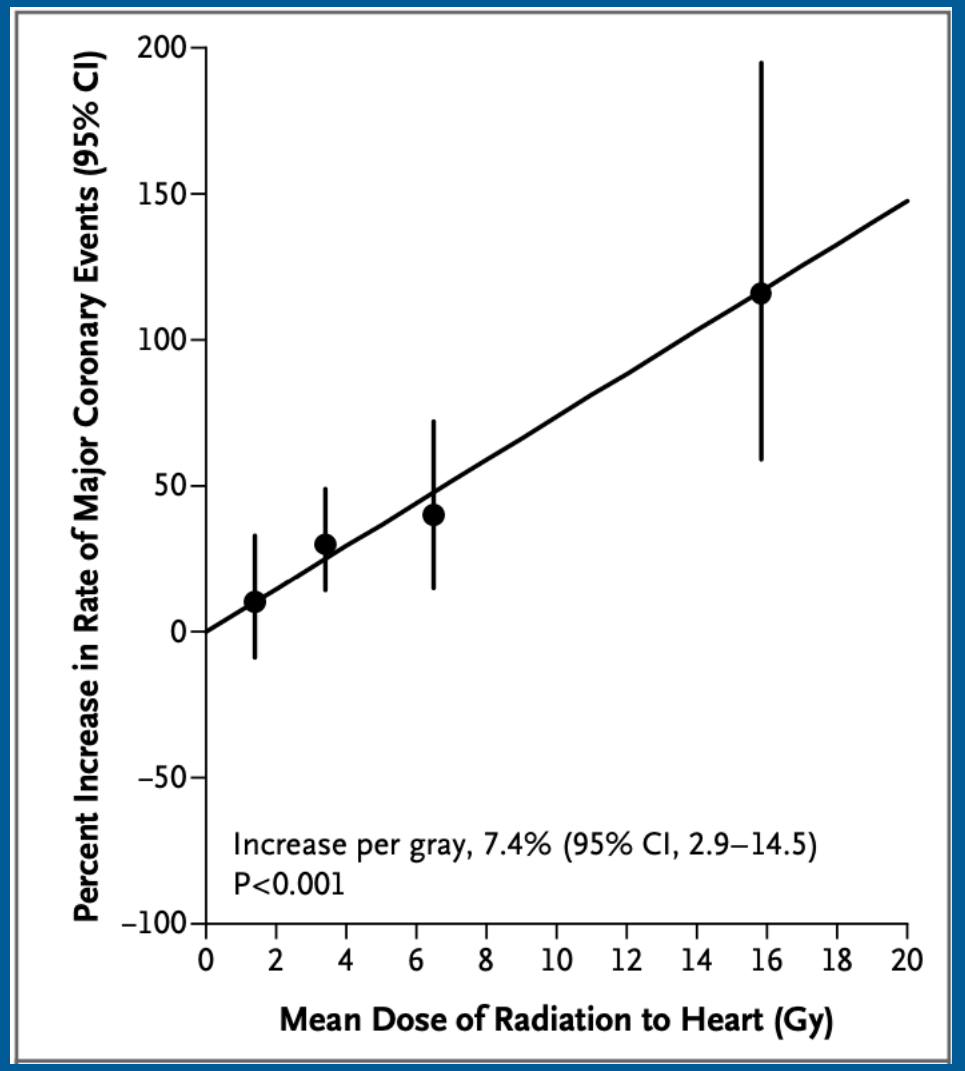
Cardiac Sparing with DIBH

- High doses of radiotherapy have deleterious effects on the heart
- Deep Inspiration Breath Hold reduces heart dose in thoracic radiotherapy



Darby et al., NEJM, 2013

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SGRT facilitates high quality breast treatment

- Set up margins within 5 mm for APBI, tangents, and RNI
- Accurate and reproducible DIBH, intrafraction motion <2 mm
- Significantly reduced set up time

Reduce use of ionizing radiation IGRT?

Rudat et al., J App. Clin. Med Phys., 2023
Gierga et al., IJRBOP, 2008
Jimenez et al., J App. Clin. Med. Phys., 2019

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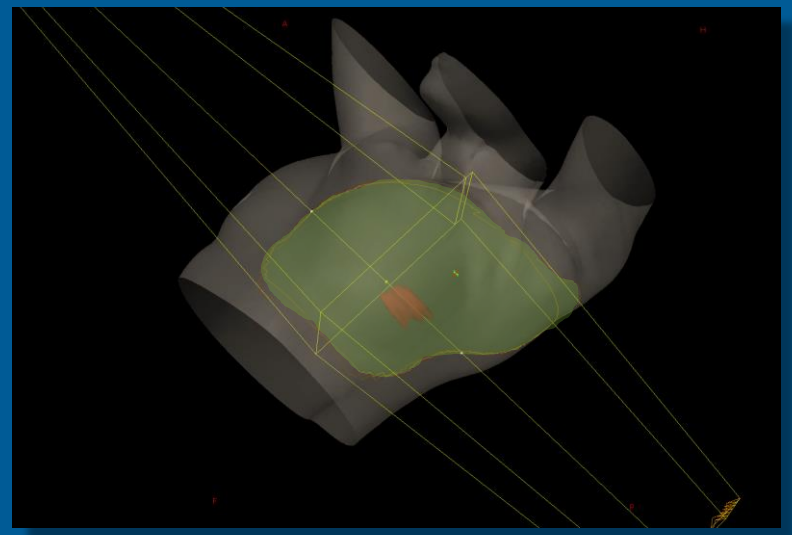
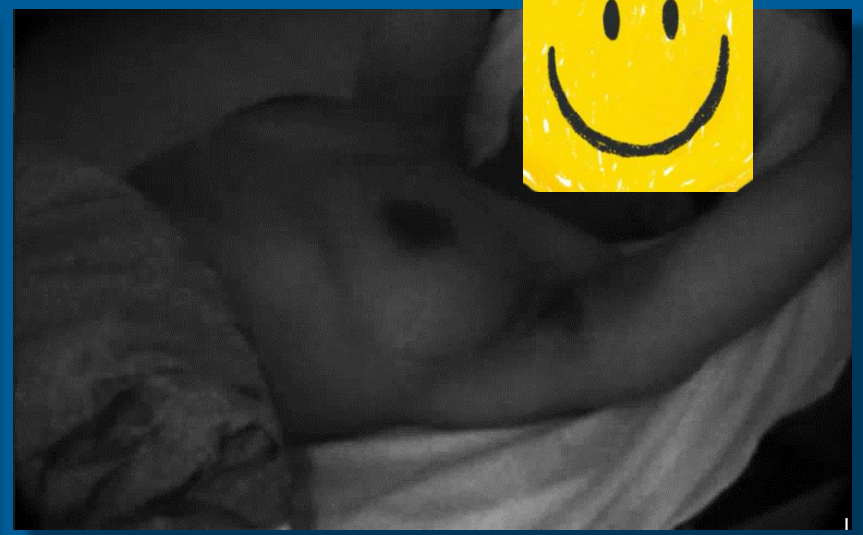
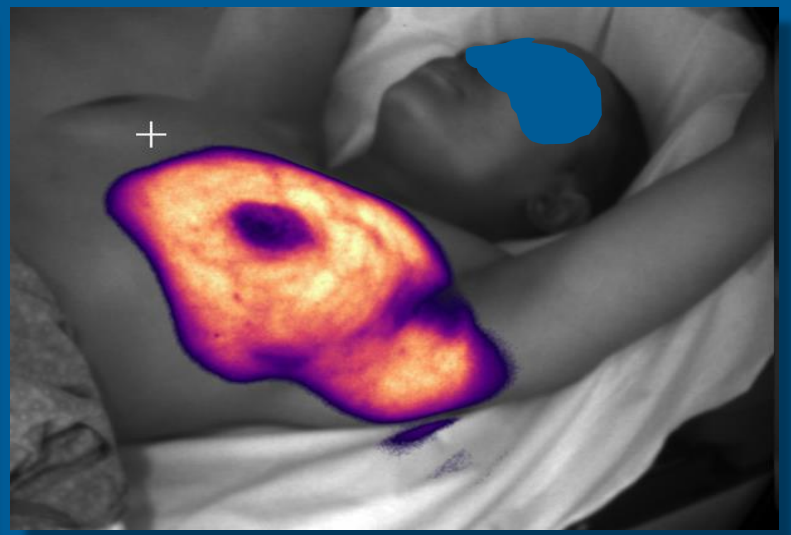
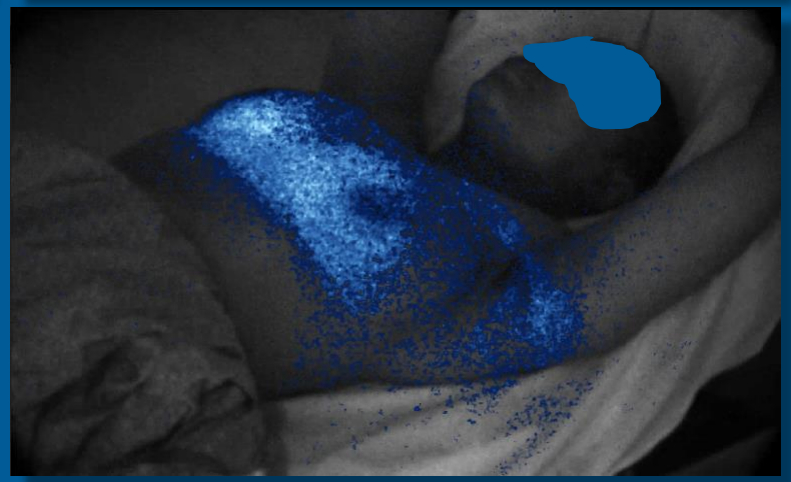
Quality and Safety In Breast Radiotherapy









- DIBH Tangents of Left Breast
- Stray anomalous dose witnessed during video review of Fx1
- Incorrect port film technique was used
- Corrected for Fx2 and beyond

Slide Content Courtesy of Mike Tallhamer

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Our patient returns with 4 brain metastases

Recommendation: single-iso, multi-target SRS in 1 fraction (20 Gy)

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Evolution of Brain Radiotherapy

SRS initially used as a boost, then as sole treatment

Pros	Cons
Improved QoL	Increased risk of regional failure
Improved independent function	Frequent MRI surveillance
Excellent local control	Invasive immobilization

Aoyama et al., JAMA, 2006
Chang et al., Lancet Oncol, 2009
Brown et al., Lancet Oncol, 2017

Delivery Considerations for SRS

How much brain can we spare?

- Trade off between local control and mitigation of toxicity
- Registration errors, immobilization, delivery led to failure
- SGRT platform demonstrates excellent motion management

Agazaryan et al., Radiother Oncol, 2021
Grishchuk et al., Prac Rad Oncol, 2023

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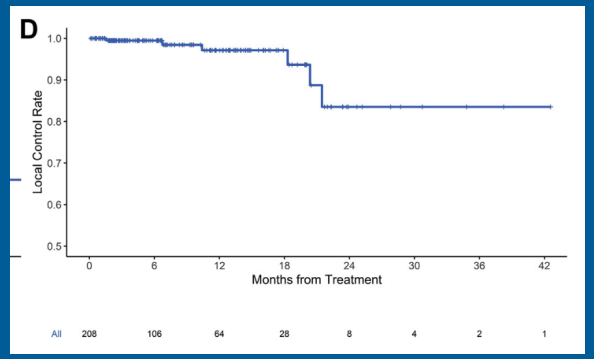
The Future: Linac-Based Multi-Target SRS

- 173 patients, 1014 lesions (intact and post-op)
- “Closed Mask”, daily kV CBCT, continuous SGRT
- **4.1 minutes beam on, <3% risk of grade 3 radionecrosis**



Palmer et al., Adv Rad Onc, 2019

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The Future: Linac-Based Multi-Target SRS

- 173 patien
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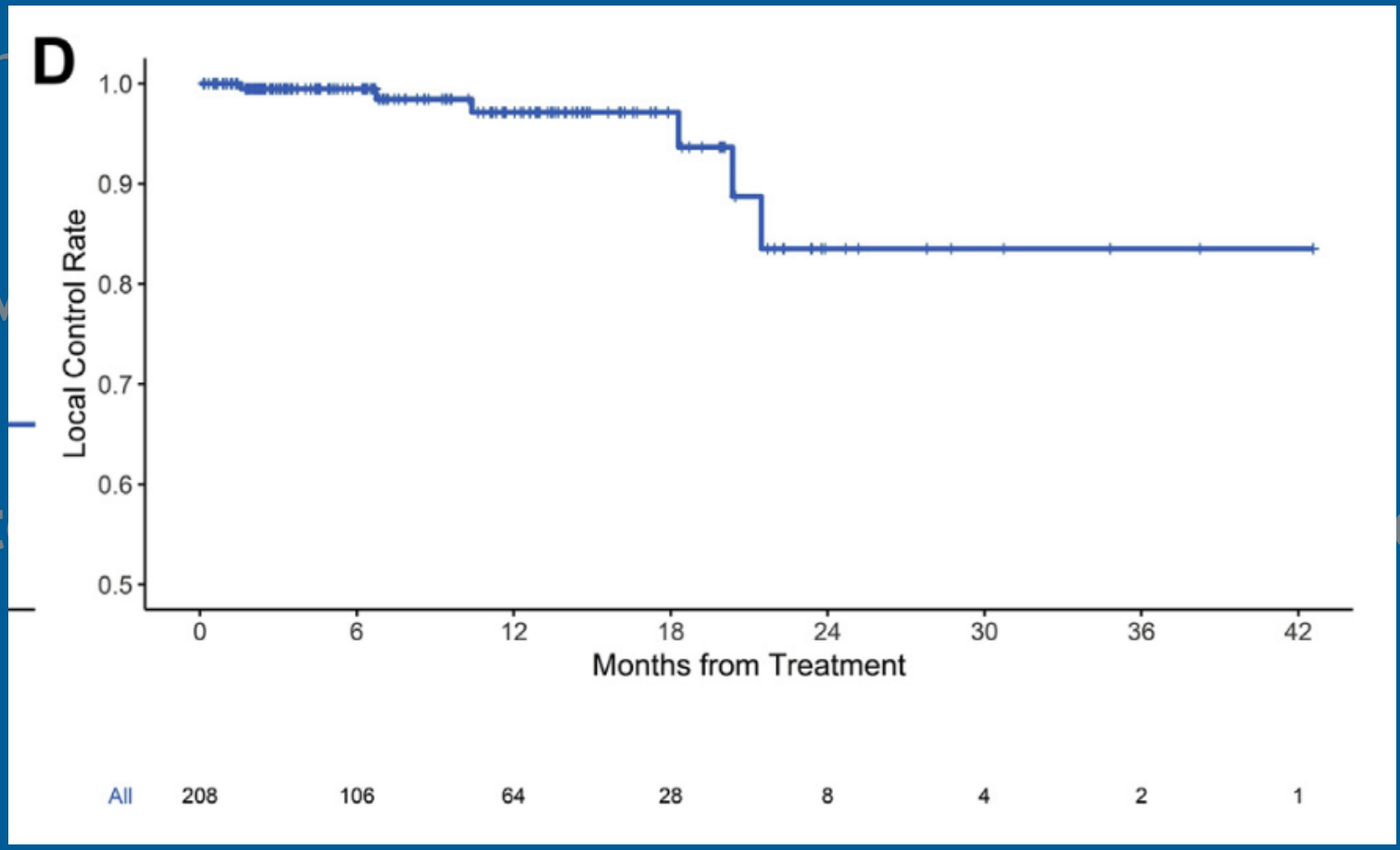

Palmer et al., Adv Rad Onc, 2019

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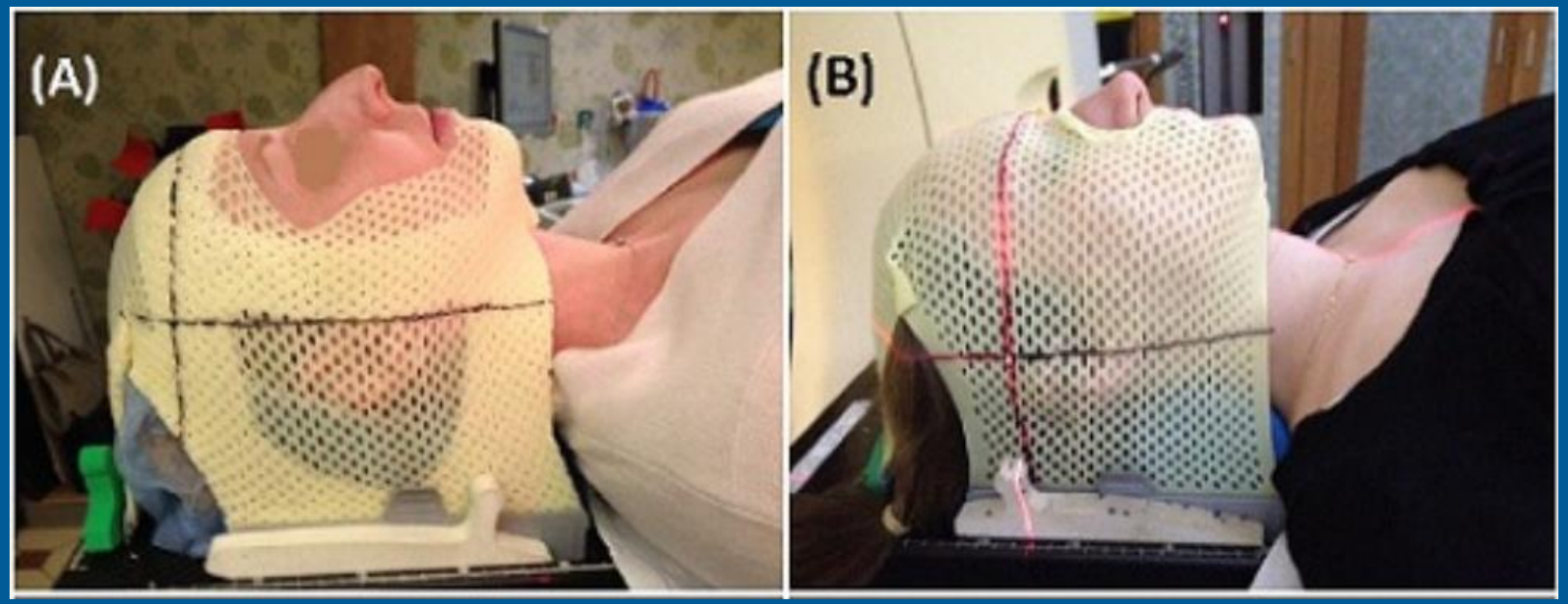
Open Face Mask Optimizes Patient QoL

- Clinical series shows stability: **1 mm and 1 degree or less**
- Preferred by most patients, acceptable in claustrophobia



Li et al., J App Clin Med Phys, 2013

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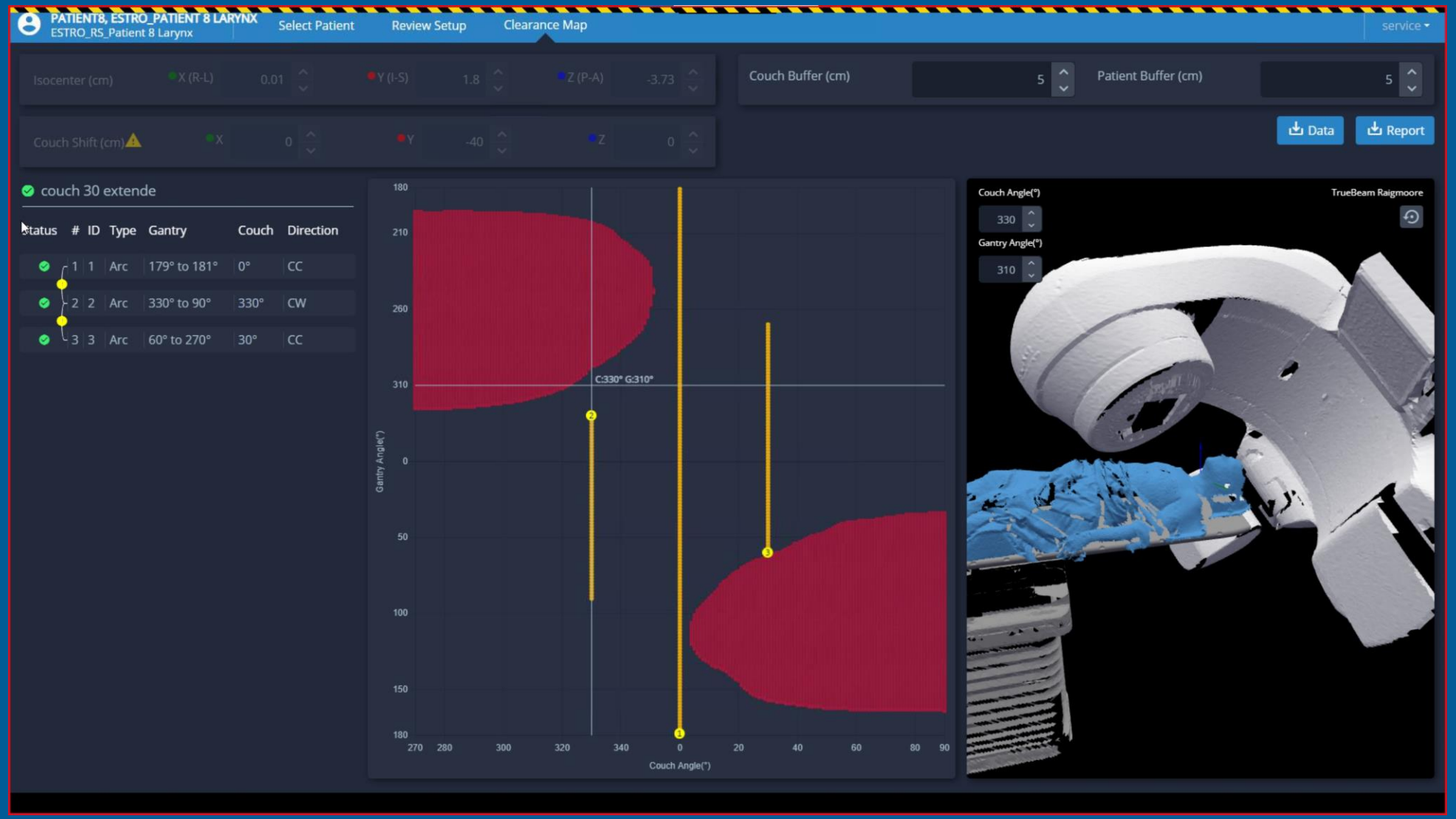
MapRT Facilitates Non-Coplanar Planning



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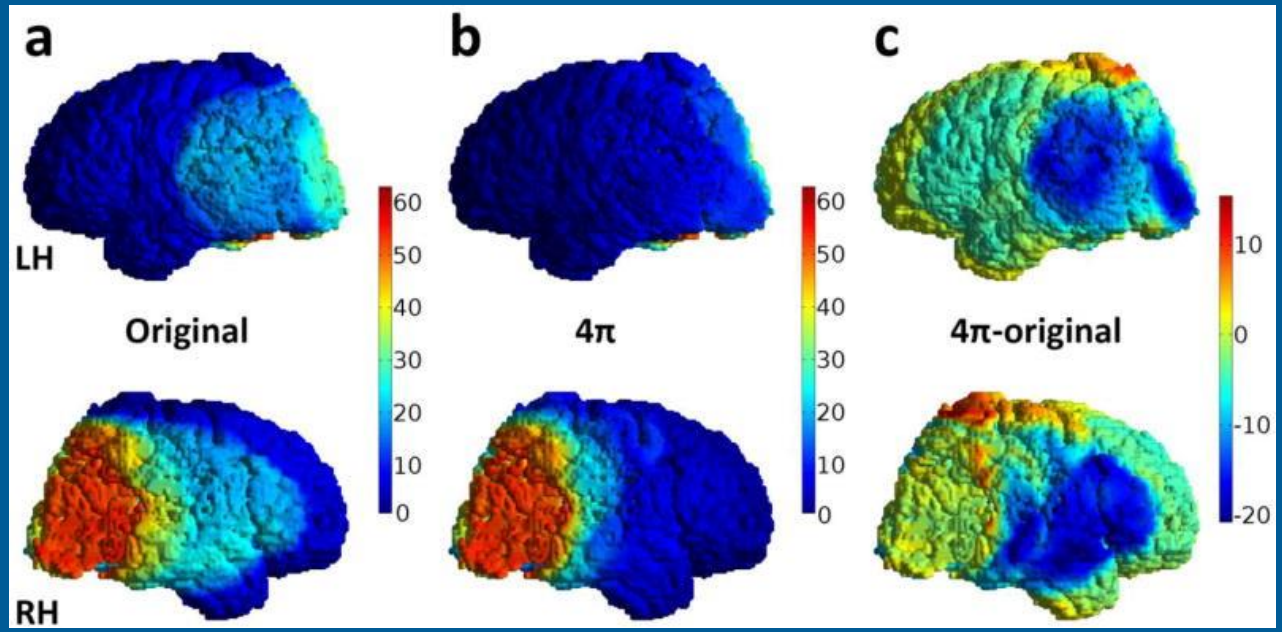
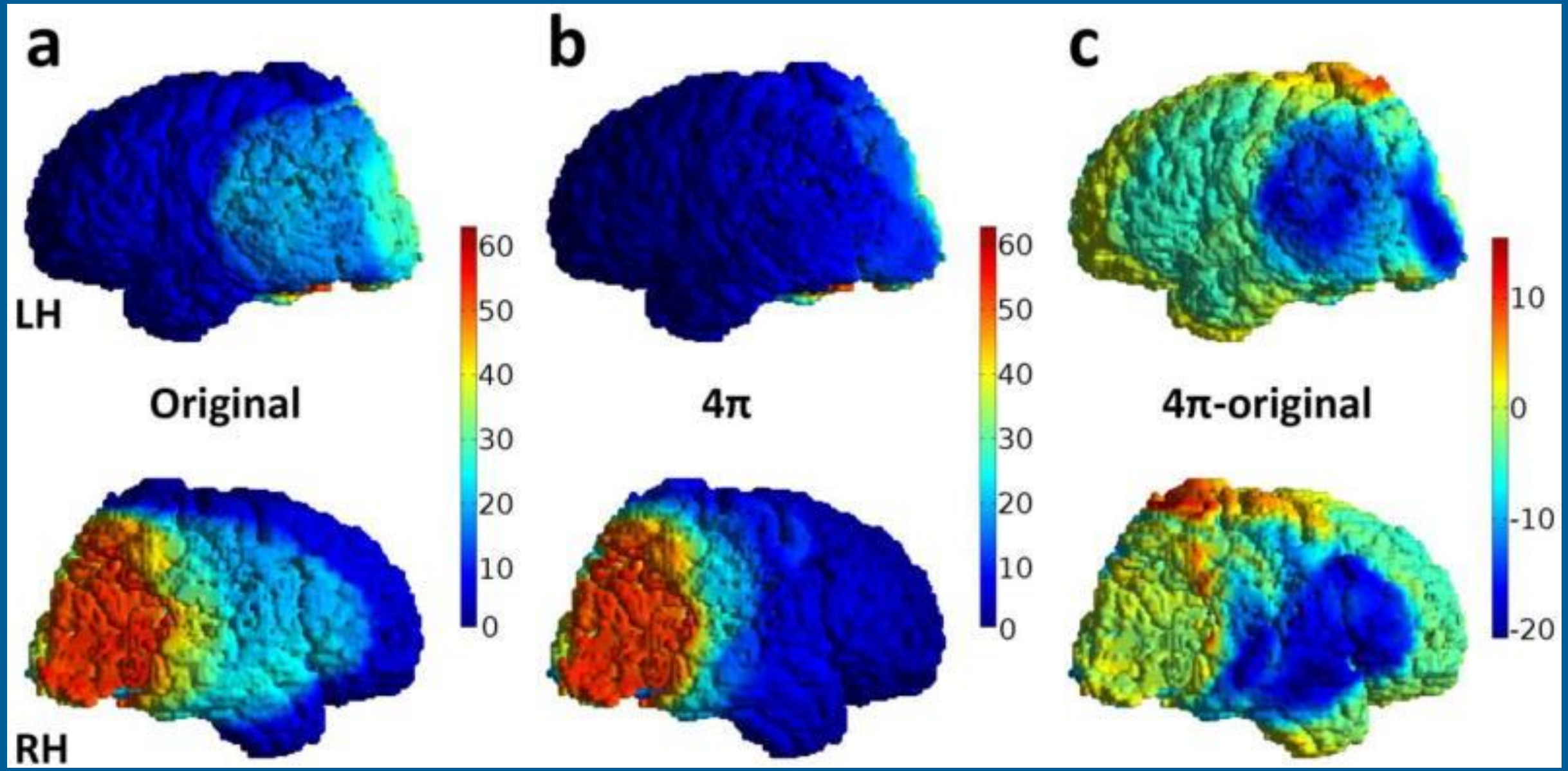
Non-Coplanar Treatment to Spare Cortex

- Non-coplanar beam delivery enhances conformality
- 13 patients evaluated, non-coplanar versus delivered plans
- Example: Hippocampus mean dose improved 40%



Murzin et al., Radiother Oncol, 2019



Murzin et al., Radiother Oncol, 2019

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SGRT significantly improves modern radiation

- SGRT can improve patient QoL while maintaining expected cancer outcomes.
- Improvements in all disease sites
- SimRT, AlignRT, MapRT, and DoseRT offer enhancements from simulation through planning and delivery
- Single platform offers safe, future-proof solution

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Contact Information and Online Content

TAP X VisionRT:
"Beyond Traditional Motion Management"

mspraker@gmail.com
SprakerMD.com

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REACHING NEW HEIGHTS WITH SGRT

SURFACE GUIDED RADIATION THERAPY
SGRT COMMUNITY

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