

Go-Live with Tattooless Radiotherapy Treatments

Lydia Kedziorek

Principal Treatment Lead

Royal Derby Hospital



University Hospitals of
Derby and Burton
NHS Foundation Trust

- ▶ 4 Varian Truebeams
- ▶ 1 Philips Big Bore CT
with SimRT
- ▶ 1 Xstrahl superficial unit
- ▶ HDR brachytherapy
- ▶ ARIA
- ▶ SGRT on 2 linacs
 - AlignRT Advance (6.3)



Introduction



Our Department Goals

- ▶ To improve our DIBH technique
- ▶ Offer tattoo and mark free treatments as soon as possible for all types of breast treatments (from day 1 of implementation)

'Tiny' tattoos aren't 'tiny' for patients

Radiotherapy tattoos: Women's skin as a carrier of personal memory—What do we cause by tattooing our patients?

[Torsten Moser](#), PhD,¹ [Menna Creed](#), BSc Hons,¹ [Robyn Walker](#), BA,¹ and [Gernot Meier](#), PhD²

138 women took part in a study that showed:

- ▶ 70% had negative feelings about this involuntary body modification
- ▶ 78% of patients would choose a treatment which avoided tattoos and/or marks
- ▶ 45 miles is the average additional distance patients are willing to travel to a centre that is tattooless/markless (Moser et al 2019)

Our patients at the heart of our implementation

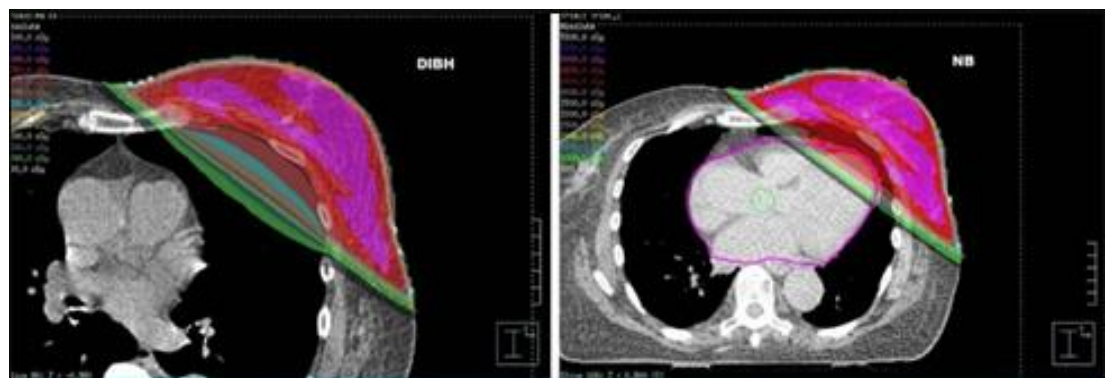
Getting tattooed sort of punctuated that feeling of being out of control. I know that, in the grand scheme of things, it is simply a few teenie-tiny little dots, but it is a daily, physical reminder that I had stage 3 cancer - and that there was no time to really consider the options

They are a reminder of times I'd rather forget - it's a constant reminder of the treatment and traumatic time

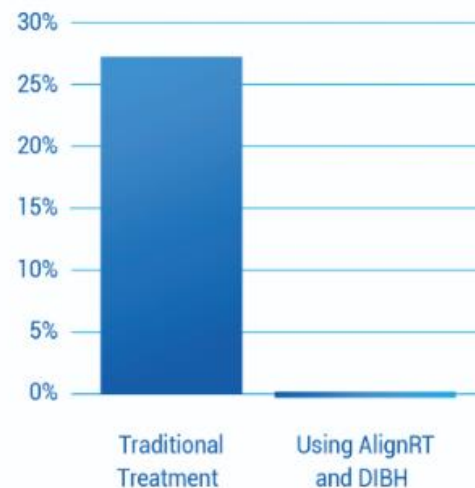
The thought of being tattooed mentally "tortured" me

Improving our DIBH Technique

- ▶ Voluntary DIBH using lasers and pen marks
- ▶ Left side breast RT has been shown, in some cases, to lead to serious long-term cardiac complications
- ▶ Implementing DIBH with AlignRT eliminates this risk



Cardiac perfusion defects at 6 months
as measured using SPECT imaging



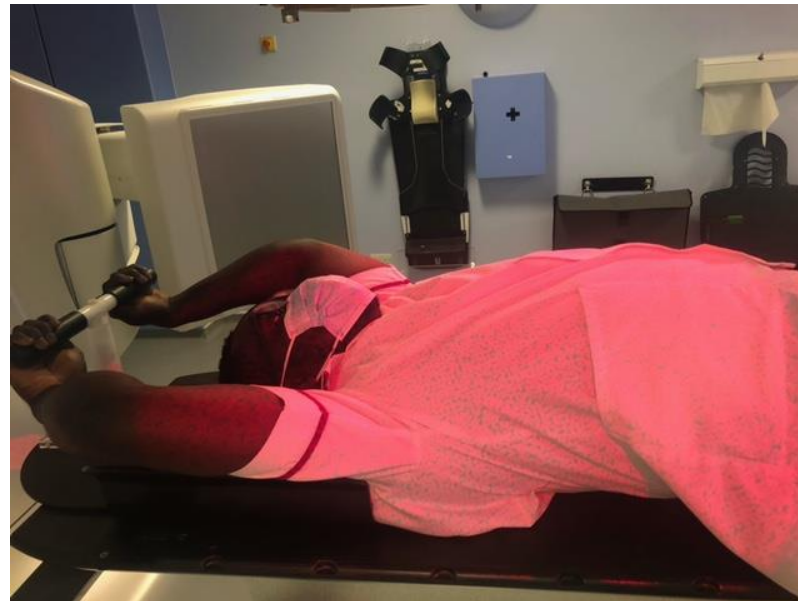
Our Training

- ▶ Theory and practical sessions with the Clinical Applications Specialist
- ▶ Vision RT Portal - training modules
- ▶ Training package created for staff using resources from the portal
- ▶ Created treatment protocols using resources from the Vision RT training portal
- ▶ Created test patients within Align RT for Region of Interest (ROI) training



Practical Training Sessions

- ▶ DIBH Workflows
- ▶ Bolus Workflows
- ▶ Difficult set ups
- ▶ Build staff confidence



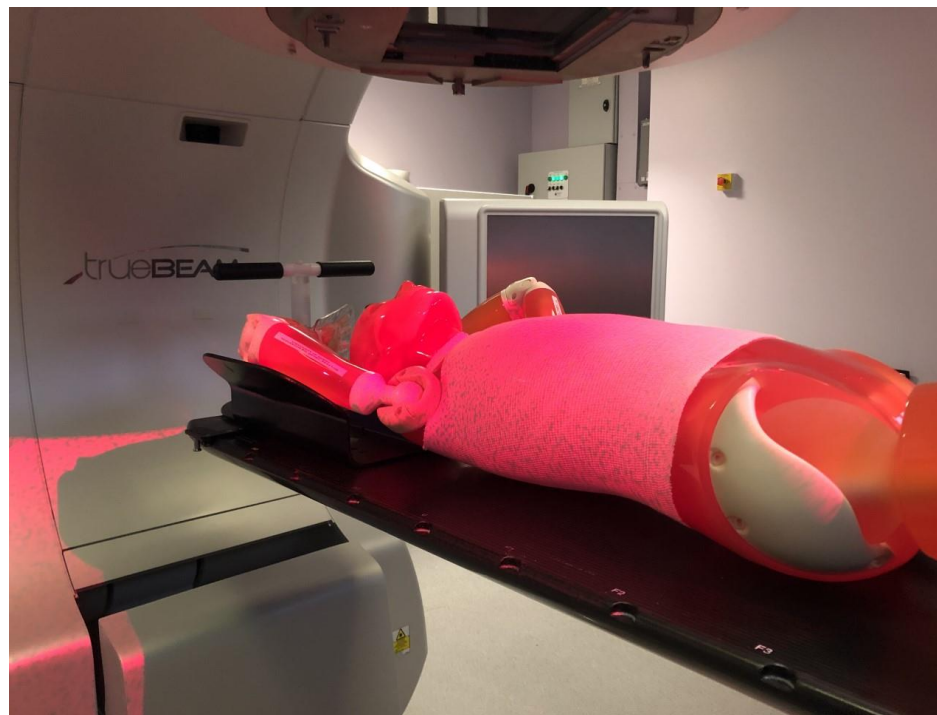
End to End Testing

- ▶ Anthropomorphic phantom
- ▶ CT Scan / plan
- ▶ Export/Import protocol created
- ▶ Staff practical sessions using SGRT
 - > image and treat

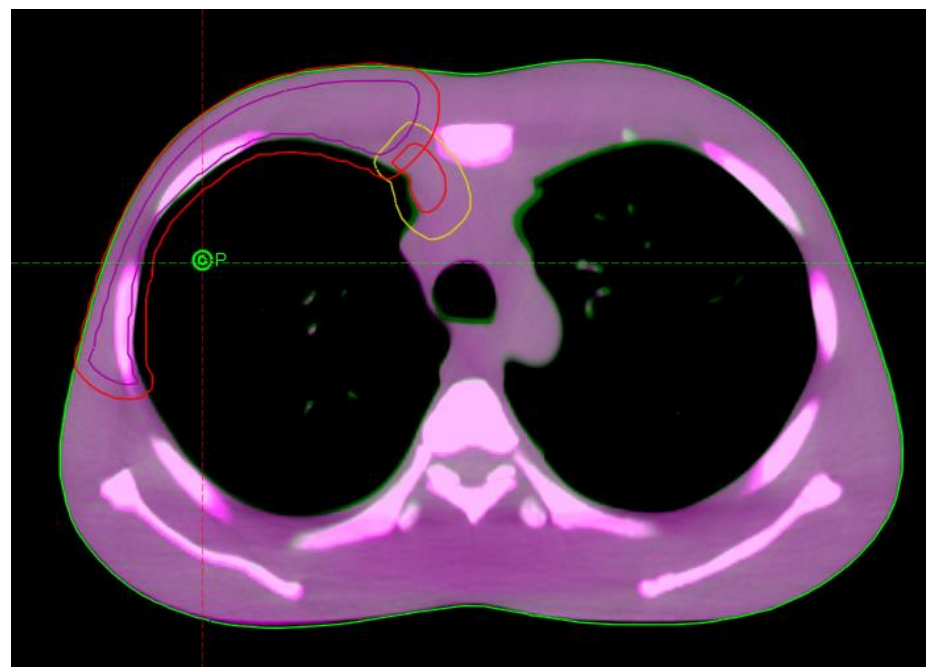


End to End Testing

- ▶ Allowed staff to get used to the system



Seeing is Believing



Session	Vrt [cm]	Lng [cm]	Lat [cm]	Pitch [°]	Roll [°]	Rtn [°]
▶ Tue 08/06/	+0.22	-0.04	-0.14	n.a.	n.a.	0.0
Thu 10/06/	+0.18	+0.15	+0.15	n.a.	n.a.	0.0
Fri 11/06/20	+0.27	+0.33	-0.35	n.a.	n.a.	0.0
Mon 14/06/	+0.16	+0.43	+0.22	n.a.	n.a.	0.0
Wed 16/06/	+0.04	+0.08	+0.09	n.a.	n.a.	0.0

Go Live

- ▶ Team of 6 radiographers including 2 super users
- ▶ Support from the clinical applications specialist
- ▶ By following a clear training and testing programme we were able to meet our objectives of go live for DIBH SGRT treatments on day 1 of implementation
- ▶ First in the country to go tattoo and mark free from day 1 of implementation

Achieving our Goals

- ▶ DIBH much more accurate - staff members could see the benefit
- ▶ Staff report having a greater job satisfaction using SGRT - would not go back to the 'old' way of treating
- ▶ Feedback from both patients and staff has been extremely positive
- ▶ Patients travelling further to receive tattoo free treatments

Further tattooless treatments

- ▶ Lymphoma Abdomen (DIBH)
- ▶ Palliative sites i.e. humerus, SCF
- ▶ Lung SABR & Oligometasases SABR
- ▶ All thorax patients



Tips for Success

- ▶ Believe in the system
- ▶ Have a clear training and testing programme
- ▶ Utilise the Vision RT Training portal
- ▶ Access support from the SGRT community forums
- ▶ Get hands on

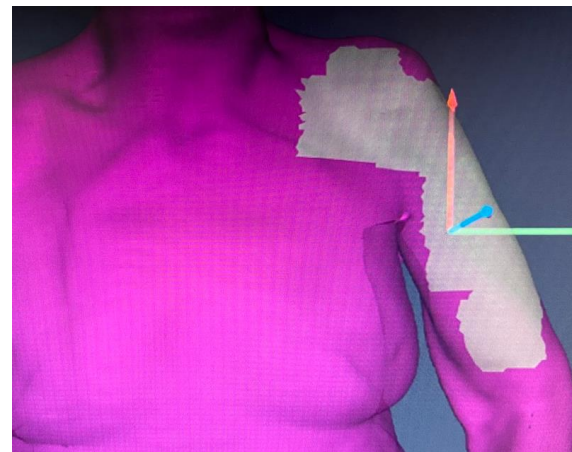
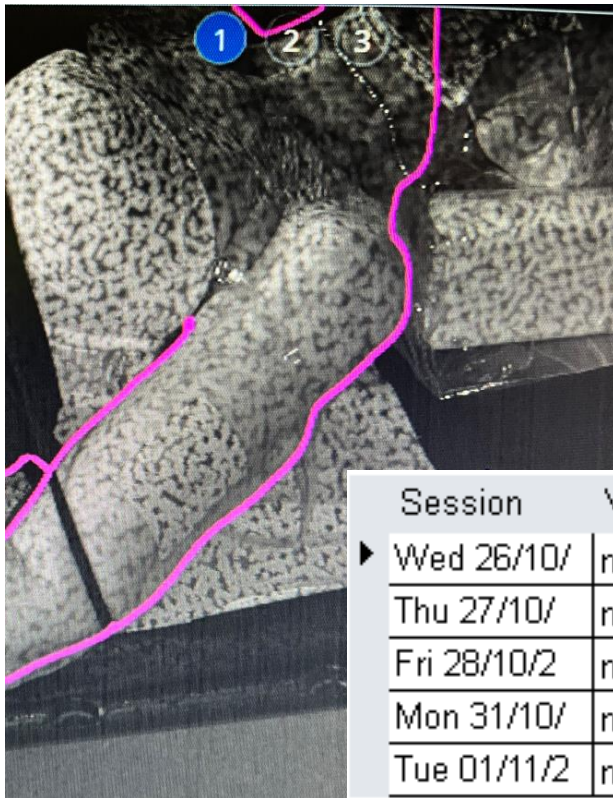
Tips for Success

- ▶ 'Super users' to support with challenging patients and roll out further training
- ▶ Gain experience with problem solving:
 - 1 second beam delay
 - Change of skin tone
 - Editing ROIs during treatment
- ▶ Utilise Postural Video

Postural Video

▶ Palliative or non-standard position

▶ Thorax, one arm down



Session	Vrt [cm]	Lng [cm]	Lat [cm]	Pitch [°]	Roll [°]	Rtn [°]
▶ Wed 26/10/	n.a.	+0.57	-0.11	n.a.	n.a.	0.0
Thu 27/10/	n.a.	0.00	0.00	n.a.	n.a.	0.0
Fri 28/10/2	n.a.	0.00	0.00	n.a.	n.a.	0.0
Mon 31/10/	n.a.	+0.33	-0.10	n.a.	n.a.	0.0
Tue 01/11/2	n.a.	-0.56	+0.43	n.a.	n.a.	0.0

Cat 1 Contingency Procedure

- ▶ Contingency Procedure for Thorax Cat 1 patients

KV-KV Pair					Kv-KV Pair				
Pitch	RTN	Vert	Long	Lat	Pitch	RTN	Vert	Long	Lat
0.3	-0.1	-0.60	-0.04	-0.37	N/A				
1.6	-3.9	0.14	-1.28	-0.11	1.7	-2.0	0.14	-0.22	-0.25
-0.5	1.7	-0.51	-0.41	0.65	N/A				
1.5	2.4	-	-	-	1.7	1.0	0.20	0.31	-0.70

CBCT					
RTN	Pitch	Roll	Vert	Long	Lat
0.5	1.6	0.4	0.16	-0.07	0.05
2.5	1.9	-2.2	-0.11	-0.24	-0.17
0.3	-1.0	1.8	0.37	0.16	0.14
1.9	0.6	1.9	-0.22	-0.17	-0.07

Moving Forwards

- ▶ Charity Bid for a 3rd system
- ▶ Open faced masks
- ▶ Pelvic treatments



Thank You!

HSJ Partnership Awards 2023 for “The Most Effective Contribution to Improving Cancer”

