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*The way to*

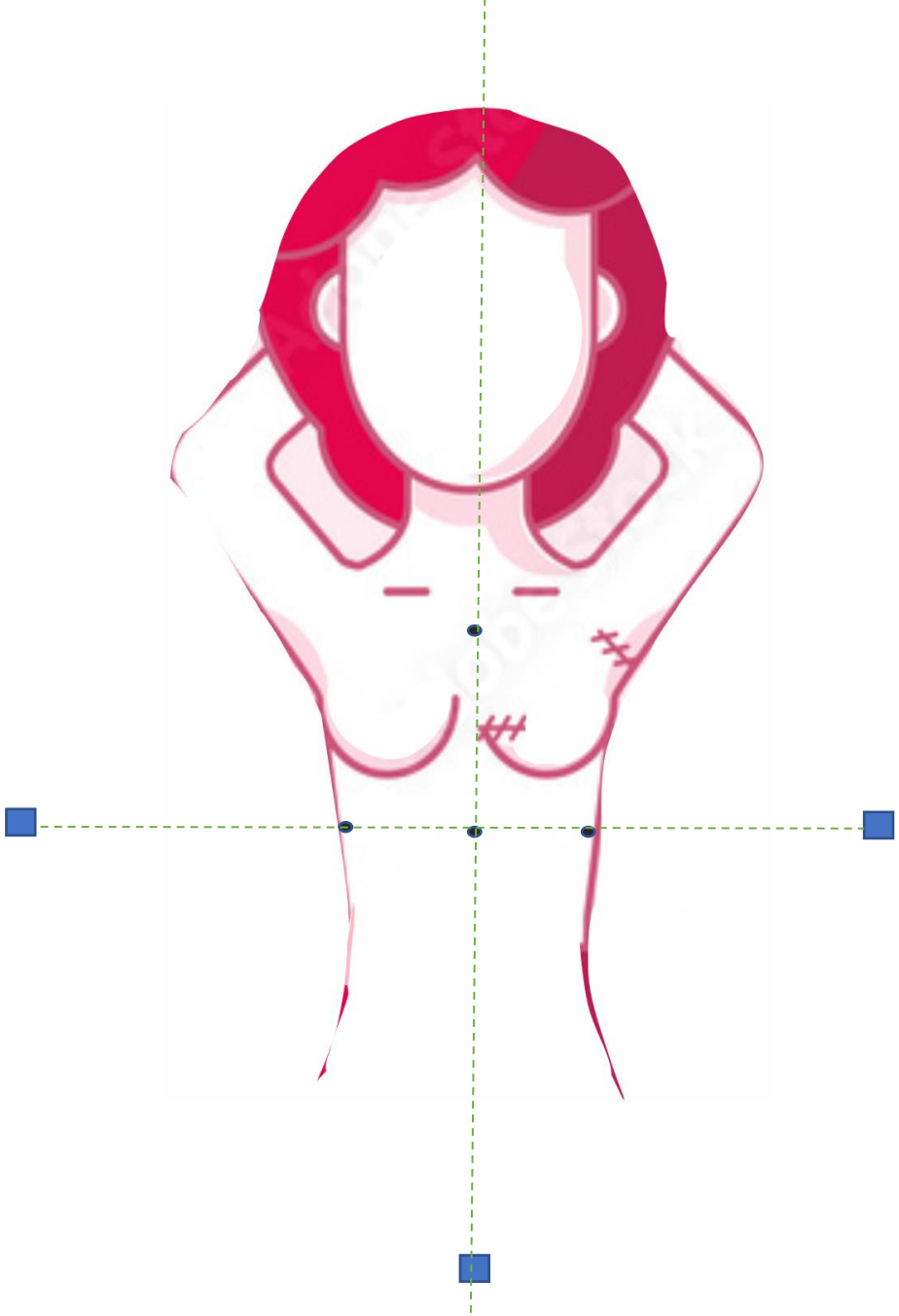
# TATTOOLESS

## WORKFLOW

# Aim of Study

to compare the systematic and random errors between patients positioned with tattoos / SGRT in Right (RT) breast cancer patients using values acquired from CBCT images.

# Tattoo



# Tattoo position Method

Patient alignment by tattoo

STEP 01

Isocenter shift

STEP 02

MV-KV image

STEP 03

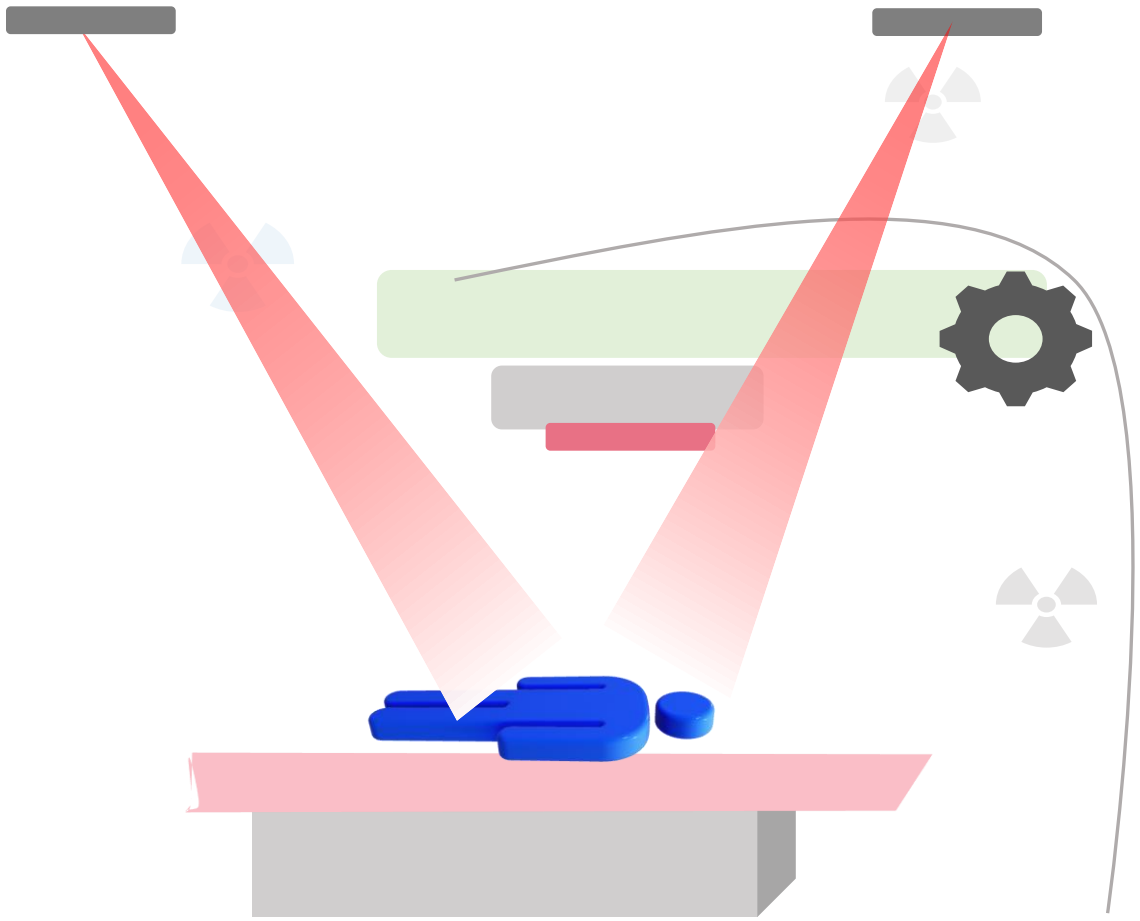
CBCT verification

STEP 04

Treatment delivery

STEP 05

# SGRT



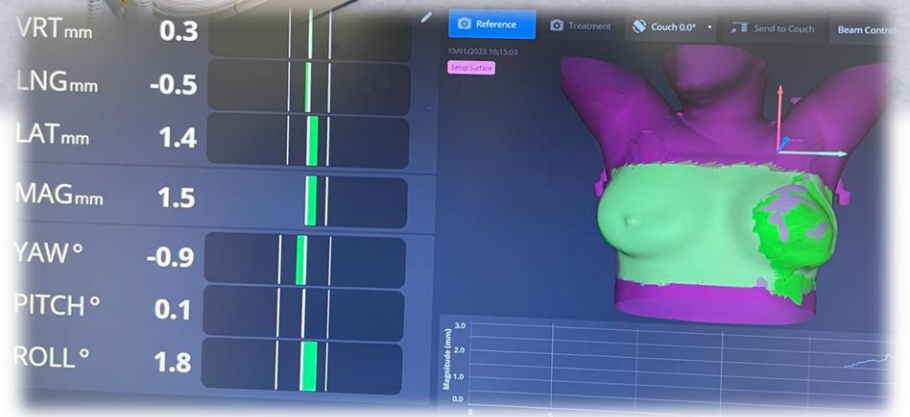
Patient alignment by laser

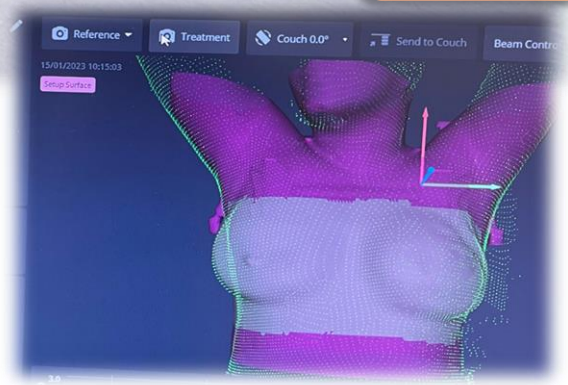
- shift the couch approximately  to treatment isocenter, based on live SGRT information, fine tune isocenter real time data as close as possible to zero

- correct patient ( arm and chin )

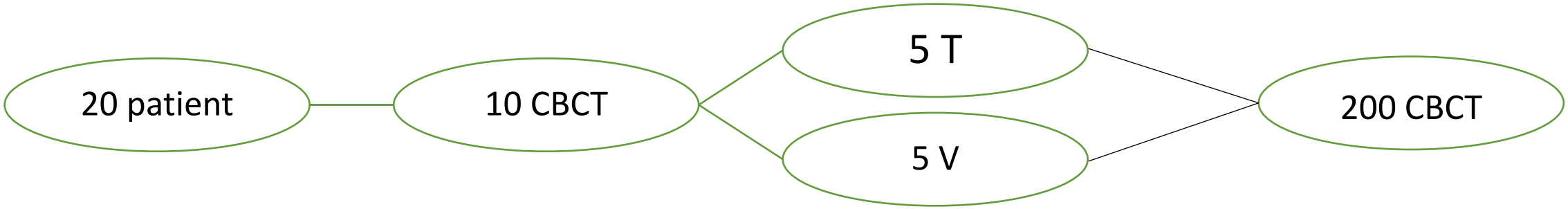
Perform CBCT Verification and apply any requirement correction

Proceed with treatment delivery



# DATA COLLECTION



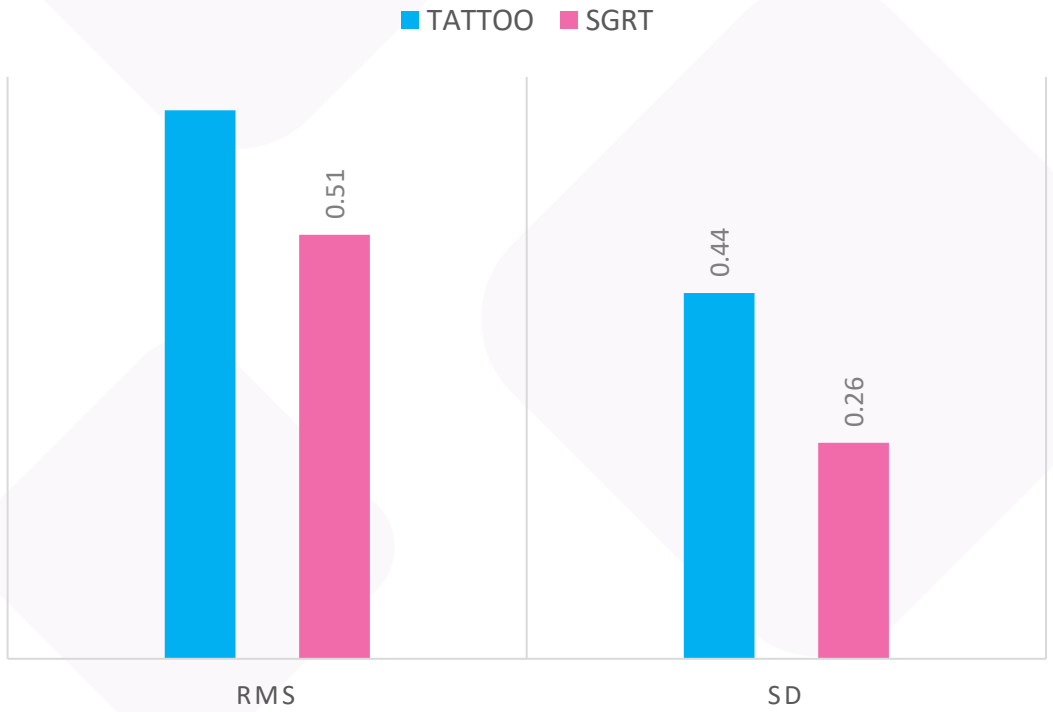

| | Tattoo/ SGRT sessions | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | translation shift (cm) | | | | | rotational shift (degree) | | | | | |
| patient info | VERT | LONG | LAT | SD | Mean | pitch | Roll | yaw | SD | Mean | Time min |
| | | | | | | | | | | | |

# RESEARCH DATA

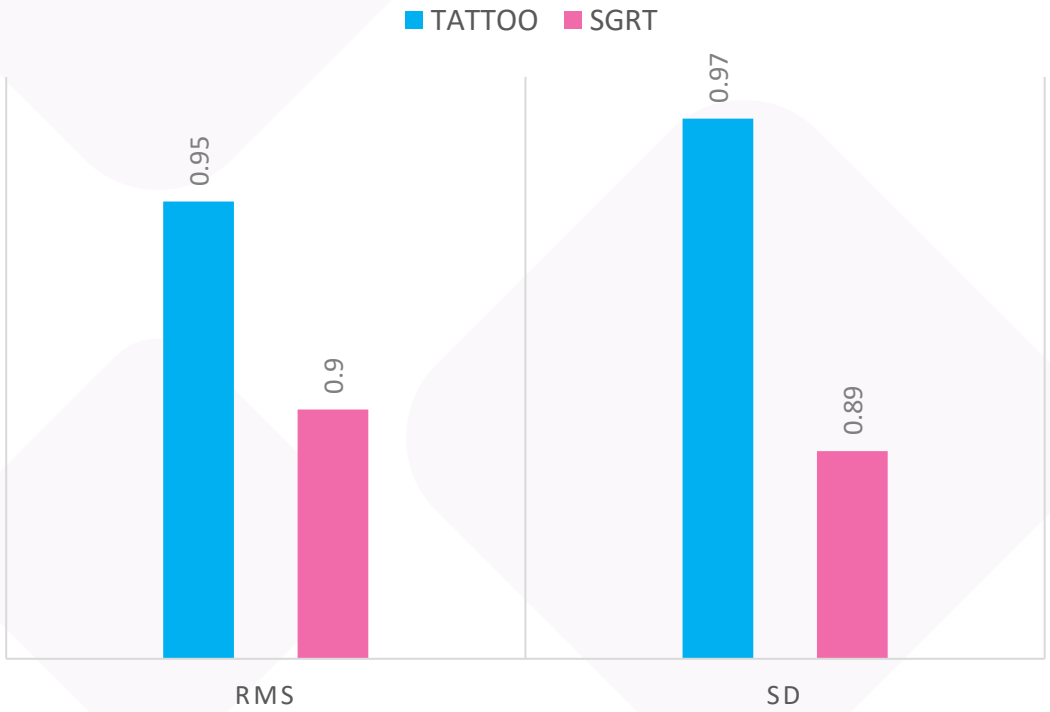
- SD to represent the systematic errors, RMS to represent the random Errors.

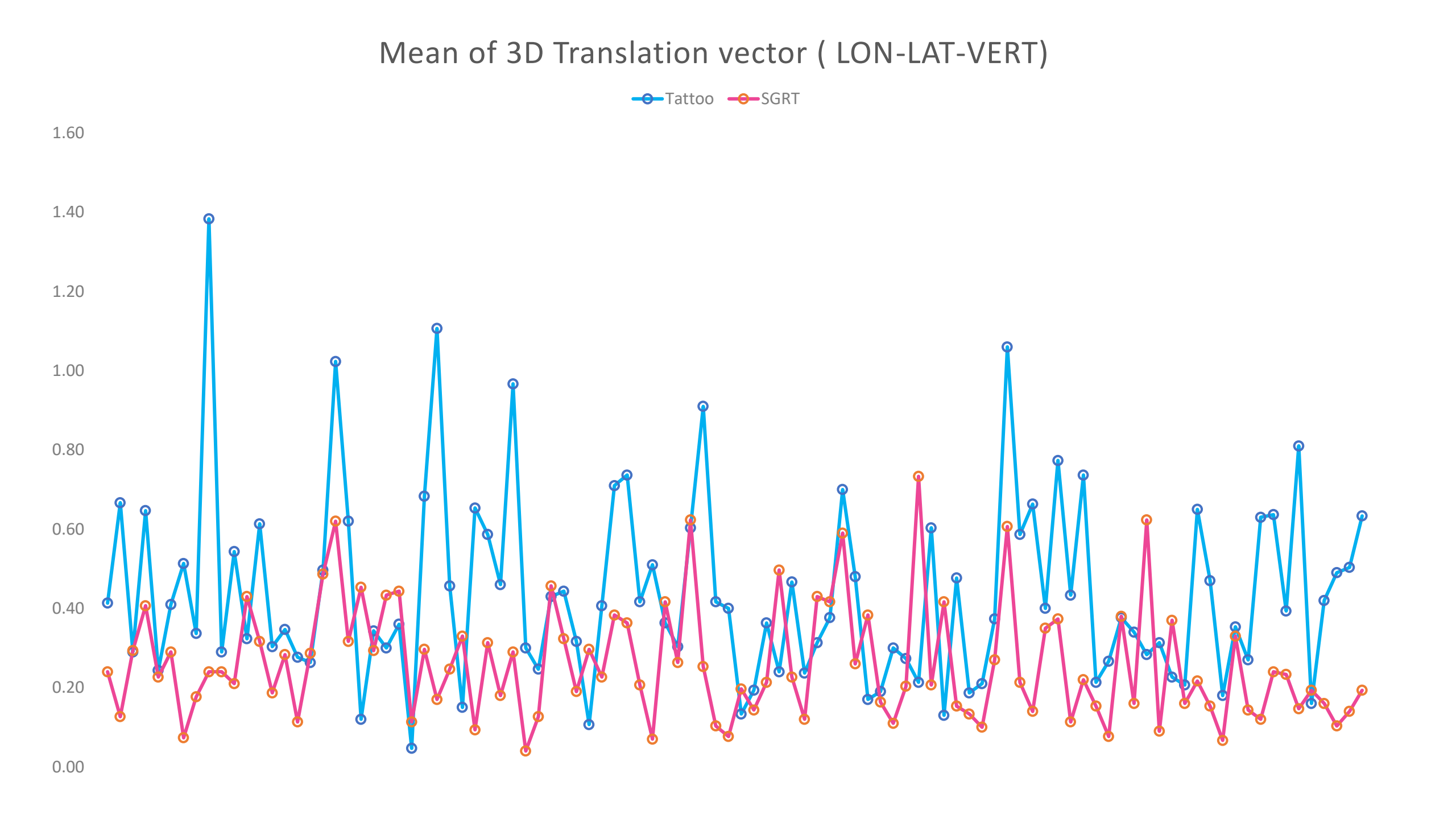
| | TATTOO | | SGRT | |
|---|---|---|---|---|
| | RMS | SD σ | RMS | SD σ |
| TRANSLATION SHIFT (cm) | 0.66 | 0.44 | 0.51 | 0.26 |
| ROTATIONAL SHIFT (degree) | 0.95 | 0.97 | 0.9 | 0.89 |

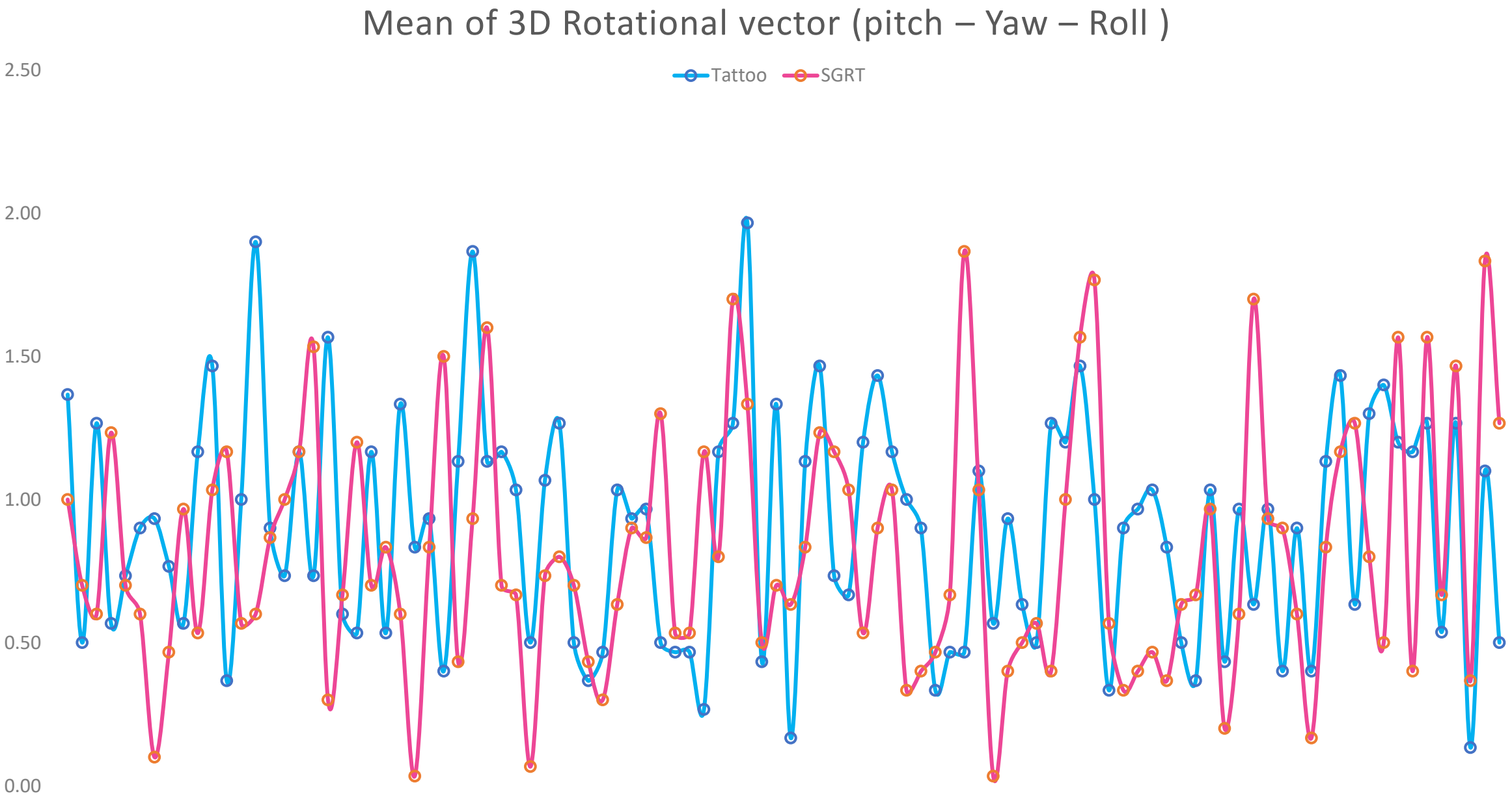
## TRANSLATION SHIFT (CM)




## ROTATIONAL SHIFT (DEGREE)




Mean of 3D Translation vector ( LON-LAT-VERT)
Tattoo
SGRT
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00


Mean of 3D Rotational vector (pitch – Yaw – Roll )
Tattoo
SGRT
2.50
2.00
1.50
1.00
0.50
0.00

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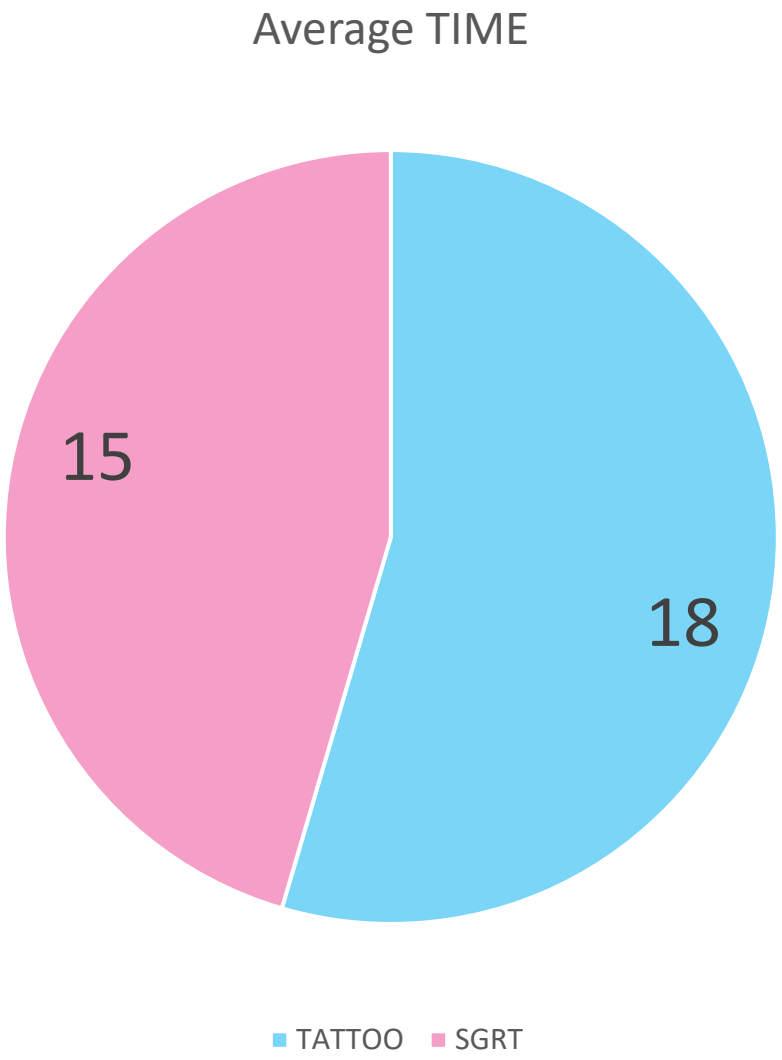
SGRT < Tattoo set-up BY 3min
From patient entrance until treatment is finished



# Results

## Accuracy

AlignRT tracks a patient's skin surface in real-time with sub-millimetric† accuracy.

## Time consuming

reduces in-room time and treatment slot compared to setup with tattoos.

## Improved patient experience

AlignRT can eliminate the need for permanent tattoos, therefore increase patient comfort during treatment journey

**In RT breast & CW**

**The average RMS and SD in SGRT are smaller than those aligned with tattoo set-up in both 3D Rotational and 3D Translation shift**

## Reduce IGRT

AlignRT helps in Reducing the frequency of routine Image guided radiotherapy (IGRT)

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# THANK YOU