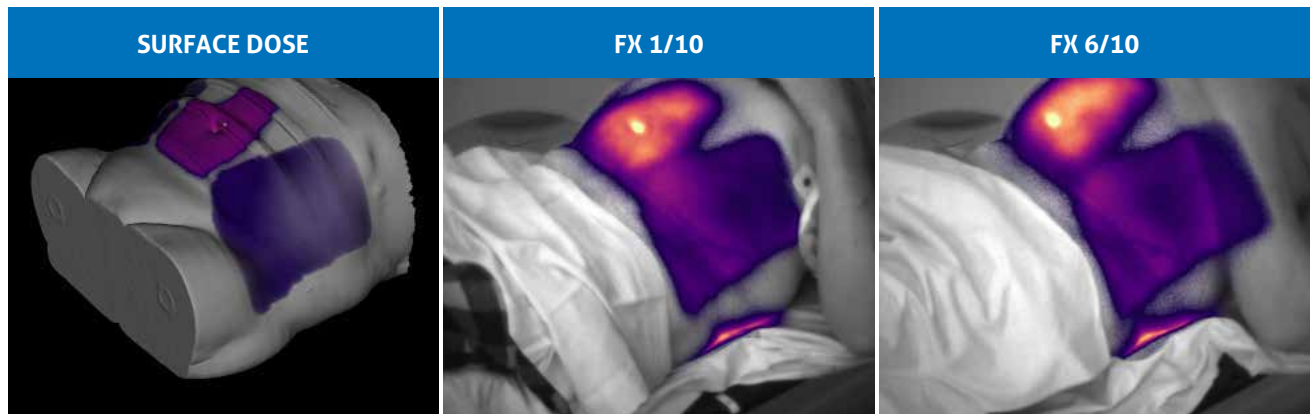


Unintended Exit Radiation Dose to Extremity Identified by Cherenkov Imaging.

PATIENT: This patient was treated to the sacrum for 10 fractions with a 3-field plan (AP, RPO, LPO), for a total prescription dose of 30 Gy (3 Gy/fx).

SUMMARY: Upon review of the Cherenkov images, it was found that his left arm received exit dose from the RPO field in 7/10 fractions. Physicist estimated from the treatment plan this led to a total exposure to the arm of 4.5 Gy.



DISCUSSION: The medical physicist determined that the dose to the exposed area of the arm was ~15% of the prescribed dose per fraction, or 45 cGy/fx, leading to around 3 Gy total dose to the arm across the 7 fractions. This information was presented to the physician, who was glad to be made aware of the finding. The result was not considered a significant dosimetric event by the clinical team, however, became a point of emphasis for training and QI.

KEY LEARNINGS: This issue was likely caused by lack of visibility of the exit field extant, which on the entrance side is achieved using the light field and highlights the ability of Cherenkov imaging to show these issues. Cherenkov imaging can reveal unexpected or improper patient alignment, especially of extremities. Additionally, movement of the limbs during treatment and after setup can be monitored.