

OPTIMIZATION OF CT/MRI FUSION AS A QUALITY STRATEGY IN RADIOTHERAPY

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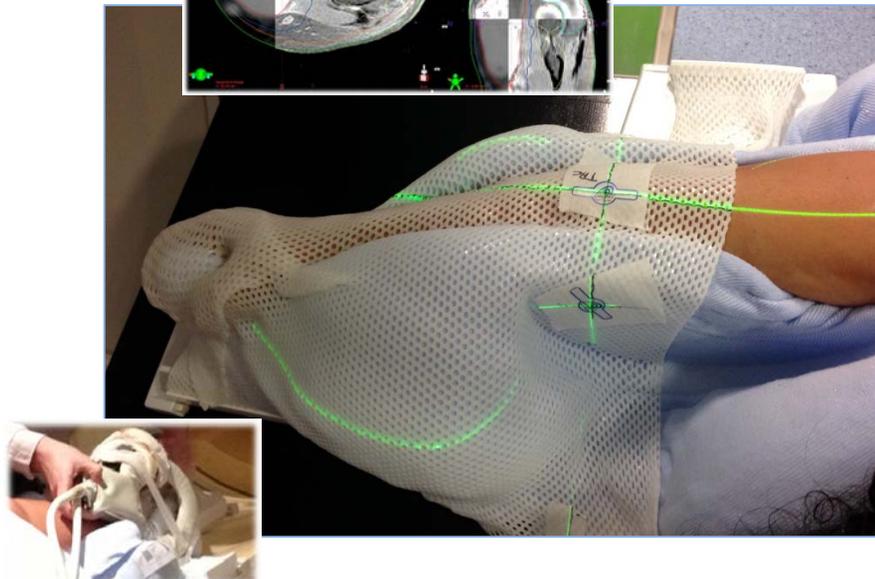
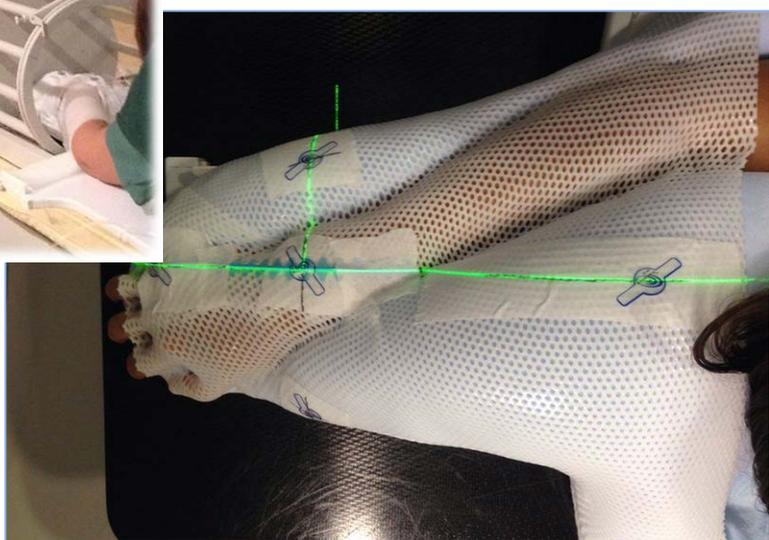
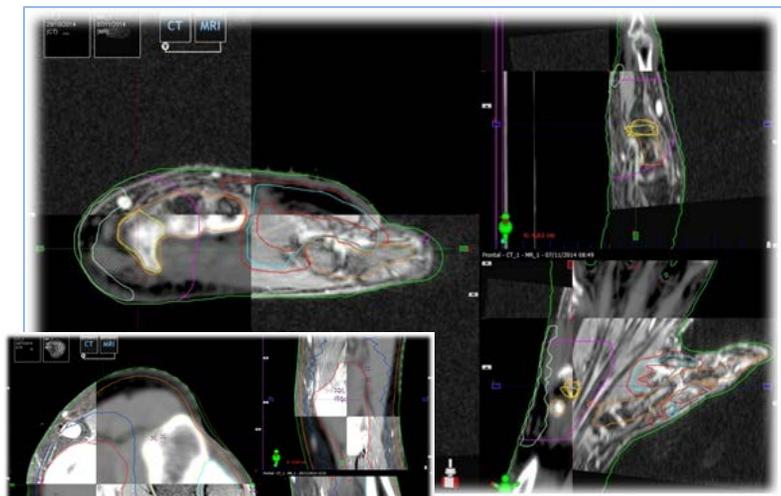
OBJECTIVES

Planification of soft tissue lesions in radiation therapy is conditioned by the difficulties in contouring these structures in CT images, especially after surgical manipulation. It associates higher prescription volumes and more toxicity.

We developed a planification strategy for superior extremity soft tissue lesions based on an immobilization system which allows reliable CT/MRI fusions in soft tissue lesions treatments.

MATERIAL AND METHODS

We designed an immobilization system composed by a customized patient immobilizing brace (Moldcare® Alcare) with a thermoplastic mask. Due to the devices plasticity, the system adapted with high precision to the extremity anatomy, and allowed the placement and fixation of the MR antennas to obtain the images. The materials did not conduct the electricity, so we used the same devices in CT and MRI simulation. We obtained 2 mm thickness images, and fused it with 2 mm T1 contrast fat suppression MRI images in similar conditions. The placement was established with diary IGRT and the treatment was imparted with archotherapy.



RESULTS

The immobilization system was employed in three patients. All patients presented excellent tolerance. The diary placement variability remained under 0.5 cm. We did not register any grade IV toxicity (CTCAE v.4.03).

CONCLUSIONS

Optimization of CT/MRI fusion supposes an effective tool in the design of radiation therapy treatments of soft tissue lesions and allows more conformed plans with less toxicity.