Effect of immobilization/support devices on skin doses for stereotactic body radiotherapy

To evaluate the effects of different buildup material on the skin dose for stereotactic body radiotherapy treatment with abdominal compression, we measured the doses at depth varying from surface to dmax for field sizes 4×4 and 10×10 cm² with parallel plate chamber and grafchromic EBT2 films in water phantom. Relative dose curves for both 4x4 (Fig. 1) and 10x10 (Fig.2) cm² field show a large surface dose increase comparing to no buildup case.
Air gap between the buildup materials and the surface reduces the surface dose (Fig.3 and 4) for both fields. To get a better skin sparing, a relative large air gap could help to achieve the object.

Fig. 1 Relative doses for 4x4 cm² field with different buildups

Fig. 2 Relative doses for 10x10 cm² field with different buildups.
Fig. 3 Relative doses for 4x4 cm$^2$ field with same buildups (couch plus body frame) but with different air gaps.

Fig. 4 Relative doses for 10x10 cm$^2$ field with same buildups (couch plus body frame) but with different air gaps.