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Preliminary study *in vivo* CT dosimetry Using Optically Stimulated Luminescence Detector (OSLD)

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Optically stimulated luminescence nanoDot dosimeters (OSLD) have been used to measure single point dose distribution along the superior-inferior position at the surface (skin) and in depths, analogous to organ depths. A customized acrylic phantom of 46 cm length, 20 cm diameter was fabricated and used for the experimental measurements using CT (Computed Tomography) beam. The CT dose profile along the surface and the centre of the phantom, as a function of scan field, were measured. The measured dose due to the primary radiation was quantified and compared with the theoretical dose profile using conventional 100 mm pencil CT ionization chamber. The OSLD responses at the center axial and the surface were found to be similar with the dose profile from CT ionization chamber. In this study, the dose at the center axial was found higher than the surface dose up to 28.13%. The dose at the diagonal center was found to be the highest compared to the surface dose up to 61.13%. The result of this work has revalidated the potential use of OSLD in CT dosimetry as an alternative to TL-dosimetry.

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