SourceCheck detector yielded consistent results within 1% when a rotation of 180° or positional error of up to 0.5 cm was introduced in any direction. Using a PTW SourceCheck, calibrated for each plaque type using EBT3 film (or the PTW diamond detector) may offer an efficient and robust method for routinely verifying Ru-106 plaques.

EP-1375
Non linear response of TLD-100 irradiated by an Intra Operative Radiation Therapy accelerator
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Purpose/Objective: Intra Operative Radiation Therapy (IORT) is a treatment modality which delivers a large single radiation dose (about 8-23 Gy) during a surgery procedure. Accelerators specifically designed for IORT are characterized by outputs rate (about 3-12 cGy/pulse) several times higher than conventional accelerators (0.1-0.6 cGy/pulse). Because a very high dose values in a single fraction is delivered, a check between the planned dose and the delivered dose is mandatory by using in vivo dosimetry. Thermoluminescent dosimeters (TLDs) are widely used for in vivo dosimetry on patients during conventional radiotherapy treatment. Aim of the present study is to evaluate the potential of TLDs as in vivo dosimeters during an IORT treatment. The characterization of TLDs' response to a 6 MV low dose-per-pulse photon beam from a conventional clinic linear accelerator as well as to a 9 MeV high dose-per-pulse electron beams from an IORT device, in the range 0-10 Gy, was carried out.

Materials and Methods: The TLDs used were LiF:Mg,Ti (TLD-100, Harshaw Chemical Company) chips. TLDs were irradiated with a 6 MV photon beam in an equivalent water phantom in reference conditions (100 cm from the source, depth of 5 cm, beam size of 10x10 cm²). The readout of TLDs was performed by a Harshaw model 3500 manual TLD reader, at 300 °C using a heating rate of 10 °C/s. After being processed, TLDs were calibrated for each plaque type using EBT3 film (or the PTW 3000 diamond detector) may offer an efficient and robust method for routinely verifying Ru-106 plaques.

Results: The studied TBI involved a combination of multileaf collimator defined fields and wide-open diamond fields of 6 MV x-ray beams delivered at 350 cm SSD. A PMMA spoiler in front of the patient minimized the build-up region in the patient. No cerrobend lung blocks were used. The treatment planning was performed using Eclipse v. 11 (Varian Medical Systems, USA). About 2 Gy were delivered per fraction. Fiber-coupled dosimetry was based on

Conclusions: In this work, we investigated the response of LiF:Mg,Ti (TLD-100) when irradiated by a 6 MV photon beam and for the first time by a 9 MeV electron beam in the range 0-10 Gy. The results confirm the linear behaviour of TLD-100 irradiated by a conventional photon beam in this range of doses. Furthermore, they suggest that the response of TLD-100 irradiate by a high dose per pulse rate electron beams is better described by a quadratic function of the absorbed dose. We suggest the use of TLD-100 for in vivo dosimetry, in the range 0-10 Gy, also in an IORT surgery, in which a high dose per pulse beam is used, taking into account the quadratic behaviour of the response of TLDs to the absorbed dose.

EP-1376
Alanine and fiber-coupled luminescence dosimetry for commissioning of total body irradiation treatments
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Purpose/Objective: The objective of this work is to report on the development of a general-purpose tool kit that can be used for dosimetric commissioning of new treatment modalities in radiotherapy. Alanine measurements in anthropomorphic phantoms are used for establishing traceability to a primary standard and fiber-coupled luminescence dosimetry with small inorganic crystals or organic plastic scintillators are used for time-resolved measurements in phantoms or in vivo. We demonstrate and discuss the use of the tool kit on the basis of a phantom-based commissioning of a new procedure for total body irradiation (TBI).

Materials and Methods: The studied TBI involved a combination of multileaf collimator defined fields and wide-open diamond fields of 6 MV x-ray beams delivered at 350 cm SSD. A PMMA spoiler in front of the patient minimized the build-up region in the patient. No cerrobend lung blocks were used. The treatment planning was performed using Eclipse v. 11 (Varian Medical Systems, USA). About 2 Gy were delivered per fraction. Fiber-coupled dosimetry was based on