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In Vivo Dosimetry with MOSFET Detector during Radiotherapy

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In Vivo dosimetry is a method to evaluate the radiotherapy; it is used to find the dosimetric and mechanical errors of radiotherapy unit. In this study, on-line In Vivo dosimetry was enabled by measuring the skin dose with MOSFET detectors attached to patient's skin during treatment. MOSFET dosimeters were found to be reproducible and independent on beam directions. MOSFET detectors were positioned on patient's skin underneath of the dose build-up material which was used to minimize dosimetric error. Delivered dose calculated by the plan verification function embedded in the radiotherapy treatment planning system (RTPs), was compared with measured data point by point. The dependency of MOSFET detector used in this study for energy and dose rate agrees with the specification provided by manufacturer within 2% error. Comparing the measured and the calculated point doses of each patient, discrepancy was within 5%. It was enabled to verify the IMRT by using MOSFET detector. However, skin dosimetry using conventional ion chamber and diode detector is limited to the simple radiotherapy.

Keywords : MOSFET Detectors, In Vivo Dosimetry, Treatment Plan Verificaiton