

AbstractID: 4485 Title: Normalized data for the estimation of fetal radiation dose from radiotherapy of the breast

There can be several reasons why a pregnant patient may receive a radiological examination. It could have been a planned exposure or the exposure may have resulted from an emergency when a thorough evaluation of pregnancy was impractical. Sometimes the pregnancy was unsuspected at the time of the examination and with younger women being diagnosed with breast cancer, the likelihood of this will increase in the radiotherapy departments. Whatever the reason, when presented with a pregnant patient who has received a radiological examination involving ionizing radiation, the dose to the fetus should be assessed. However, a major source of uncertainty in the estimation of fetal absorbed dose is the influence of fetal size and position as these changes with gestational age. We have investigated doses to the fetus from radiation therapy of the breast of a pregnant patient using an anthropomorphic phantom. Data for estimating fetal dose that takes into account the size and depth within the maternal abdomen for different treatment techniques have been provided. The data indicate that fetal dose is dependent on both depth within the maternal abdomen and gestational age and hence these factors should always be considered when estimating dose. The data shows that fetal dose can be underestimated up to about 10% or overestimated up to about 30% if the dose to the uterus is assumed instead of the actual fetal dose. It can also be underestimated up to about 23% or overestimated up to about 12% if a mean depth of 9cm is assumed, instead of using the actual depth of the fetus within the maternal abdomen.