

The work reported here aims to test the calculation approach and verification measurement technique that will be used in testing a new, in-vivo calculational method for radioactive stents with various radionuclides as the source material. Electroplated ^{198}Au radioactive stents were the sources used in this project. The process involved importing intravascular ultrasound (IVUS) images of a stent implanted during an angioplastic procedure into Pinnacle, a treatment planning program. From the IVUS slices, the individual struts of the stent in an image slice were identified and marked as a "source". The source characteristics were modeled in MCNP and input into Pinnacle using TG-43 style data variables. The resulting dose curves formed a complete dose map of the stent. The Monte Carlo calculations were verified using Virtual Water phantoms and GafChromic film. Film measurements were taken of a ^{198}Au stent at 0mm, 1mm and 4mm and then compared to Monte Carlo calculations of an identical setup. There was good correlation between measured and calculated except at 0mm, where the two differed by 25%. Possible reasons are: film saturation, poor film resolution and the electron energy dependence of the film. These possibilities are being investigated. This work performed the described method and created a dose map of an implanted radioactive stent.