Comparison of the Effect of Metal Implants in Three Different Radiation Therapy Modalities; IMXT, Tomotherapy, and Proton Therapy

We compare and evaluate the calculated and measured dosimetric effect of metal implants in three different modalities, IMXT, Tomotherapy, and Proton therapy. Two sets of PMMA phantom without (Figure 1) and with titanium alloy orthopaedic implants (Figure 2, 3) have been constructed. The CT-scanned phantoms will be used in three different modalities (IMXT, Tomotherapy, and Proton therapy in passive scattering mode). A preliminary plan study for IMXT case is shown in Figure 4.

The comparison result will provide a guideline for the most suitable treatment modality in the presence of metal implants in various aspects.

Figure 1. A set of phantom without metal implants.

Figure 2, 3. A set of phantom with titanium alloy metal implants embedded.

Figure 4. A preliminary IMXT plan study of the phantom