

What is TomoTherapy and why is it different?

TomoTherapy is a 6 MV linear accelerator combined with a helical CT scanner. Before every treatment the patient undergoes a brief CT scan. This scan is then used to precisely align the patient on the TomoTherapy couch at the time of treatment to the patient's original position at the time of the planning CT (the CT used to plan the radiation therapy). This ensures every treatment is given with submillimeter accuracy. The linear accelerator rotates in a circle as the patient moves through the machine. A thin slice of tumor is treated with every rotation. Multiple leaf collimators (thin strips of tungsten) move constantly to shape the beam of radiation and alter its intensity. This allows protection of the normal tissues!

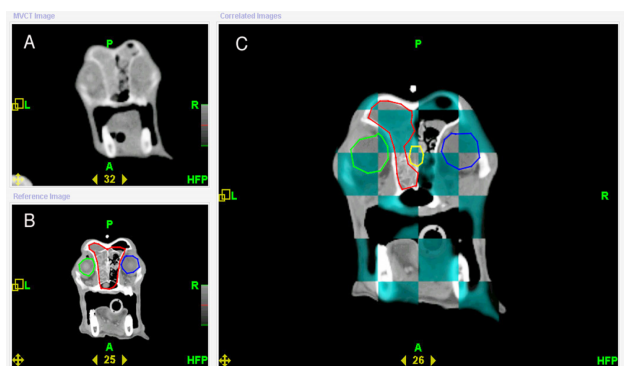
TomoTherapy was designed at the University of Wisconsin – Madison. The first patients treated with this technology were dogs from the Veterinary Medical Teaching Hospital. These client-owned dogs contributed to this technology becoming widespread in human radiation oncology. Given the spectacular results seen in these dogs and the contribution they made to medicine, the Veterinary Medical Teaching Hospital and University raised funds to have a TomoTherapy Unit and new Radiation and Physical Therapy Center built here in the Teaching Hospital.

The University of Wisconsin Veterinary Medical Teaching Hospital was the first veterinary facility to utilize TomoTherapy and is one of only two veterinary facilities in the world with this technology.

We are also extremely fortunate to have a medical physicist as part of our radiation therapy team. Our physicist brings extensive experience and a wealth of knowledge and problem solving abilities from the human



The UWVC TomoTherapy Machine



Upper left grey image is a CT scan obtained with the TomoTherapy machine. The lower left image is a diagnostic CT used to plan the radiation treatment. The image on the right shows the TomoTherapy CT (aqua) overlying the diagnostic CT. Adjustments are made to ensure precise positioning.

radiation therapy field that we can apply to our veterinary patients. The role of the physicist is to ensure all radiation treatments are delivered as planned and to ensure the TomoTherapy unit performs exactly as expected. Additionally, our medical physicist performs quality assurance (QA) on all plans. QA measures where the radiation dose is delivered in a “Phantom” (tissue equivalent material) before the treatment is given. Just another measure which ensures that the radiation therapy is given exactly where needed.

