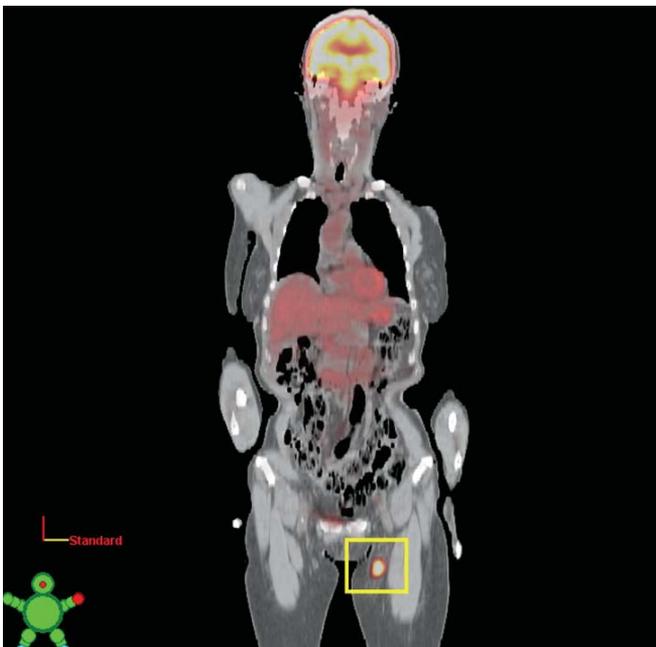


Virtual Simulation and Field Setup

With Eclipse, virtual simulation and treatment planning are integrated in one comprehensive system. Virtual simulation and planning processes are accelerated through excellent segmentation software with clinical protocol templates, hot-keys, automatic field positioning, automatic field aperture shaping, and a flexible interactive user interface. Efficiency is improved throughout the simulation and planning processes when Eclipse is integrated with the Acuity™ treatment planning, simulation and verification system, the PortalVision™ MV imaging system, and the On-Board Imager® kV imaging system (OBI) from Varian.

Versatile Image Management

Accurate patient modeling for treatment planning is critical. Eclipse can create 3D patient models from any DICOM 3.0-compliant image set, including CT, MR, and PET. Using image fusion, the clinician can precisely define targets and critical structures.

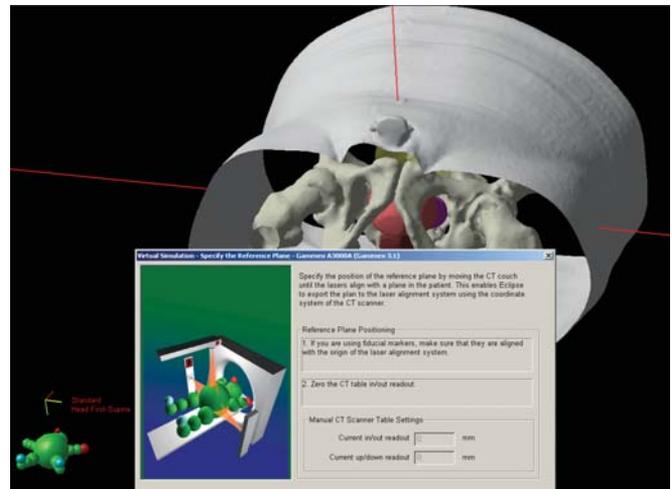


Inguinal nodes are targeted more precisely using fused CT/PET images.

To verify patient positioning, digitally reconstructed radiographs (DRRs) are generated in Eclipse and compared with setup images. To adapt to clinical changes in patient anatomy and position on a day-to-day basis, the clinician can adjust the patient's treatment plan based on cone-beam CT images taken on the accelerator. To account for organ motion during respiration, 4D and maximum intensity projection (MIP) images can be imported into Eclipse.

Comprehensive Virtual Simulation

With Eclipse installed in a CT simulation room, clinicians can do real-time or off-line simulation with or without contouring. Isocenter and field parameters are transferred to multiple laser systems such as LAP and Gammex for easy patient marking. The isocenter position can be located relative to the simulation isocenter with user-definable coordinates. Virtual simulation information is saved in the Eclipse database and can be accessed from any Eclipse workstation located in the department for other planning tasks.

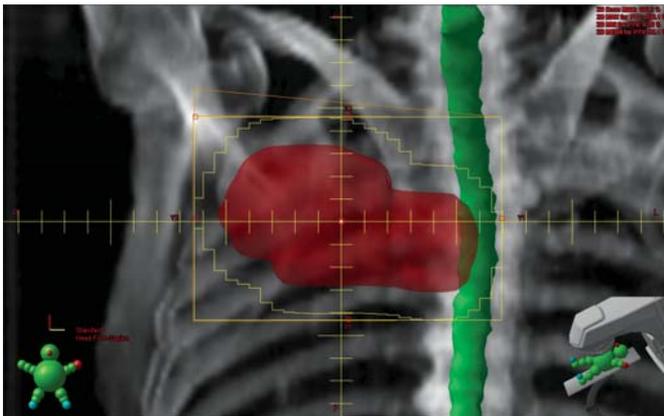


The isocenter and field entrance positions are exported to the moveable laser system for marking the patient.

The contouring step of the virtual simulation process is easy and efficient with Eclipse. A wide range of automatic, semi-automatic, and manual tools simplify the segmentation task and match any drawing preference. For example, a segmentation wizard contours some structures with a single click of the mouse. Intelligence is built into even the simplest tools so the oncologist spends less time meticulously outlining each organ of interest. For different perspectives, the oncologist can pan and zoom with the mouse and contour in coronal, sagittal, and axial planes.

Eclipse™ Treatment Planning System

Generating DRRs is an important aspect of virtual simulation. Eclipse updates the DRR image in real-time whenever the beam geometry is changed. From a library of customizable parameters, multi-channel DRRs highlight airways, soft tissue, and bony structures in the same image. To support virtual fluoroscopy, Eclipse calculates real-time DRRs with structure, graticule, field aperture overlays, and graphical field design functions.



Virtual fluoroscopy is easy using volume rendering of structures in conjunction with DRRs in a BEV.

Efficient Field Setup

Clinicians can set up fields during the simulation process or at a later time anywhere in the department. The clinician can define fields graphically in planar, beam's eye (BEV), or 3D model views. The isocenter can be relocated, the beam geometry adjusted, and field apertures defined all with the mouse. Field parameters are displayed in a spreadsheet-like manner for easy entry or editing. Hot-keys and single-click functions simplify multi-step tasks. After the field arrangement is modified, clicking a single button reshapes all field apertures to fit to the target volume.

Eclipse clinical protocol templates increase planning efficiency and clinic-wide standardization of treatment techniques by tying together everything from physician's intent to plan review preferences in a single location. For virtual simulation, these protocol templates apply prescription information, define structure sets, center treatment fields, conform field apertures, and set calculation model options.



Two images of a thorax patient are compared. On the left, soft tissue is enhanced while bony anatomy is suppressed, and on the right, bony anatomy is enhanced.

The clinician can modify stored templates. Any existing plan can be converted into a clinical protocol template and conveniently organized into custom folders ready to be applied to subsequent patients.

Unmatched Data and Process Integration

Virtual simulation and treatment planning are integrated in Eclipse. For example, emergency plans can be created and doses calculated in the simulation room, saving precious time. Data integration eliminates the need for a separate virtual simulation database. All patient information is stored in one central database, eliminating transfer of data from one application to another. DRRs generated in Eclipse are readily available as reference images for pre-treatment verification on Acuity and for daily imaging using PortalVision and OBI.

A treatment plan can be electronically approved in Eclipse, preventing modification and ensuring plan integrity. When Eclipse is part of the Varian Inspiration™ integrated oncology environment, the approved plan immediately becomes available for treatment. With extensive support of the DICOM standard, treatment plan information can be accessed by multiple vendor devices.

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