

RATIONALE OF EXACTRAC

Efficient and Precise Image Guidance

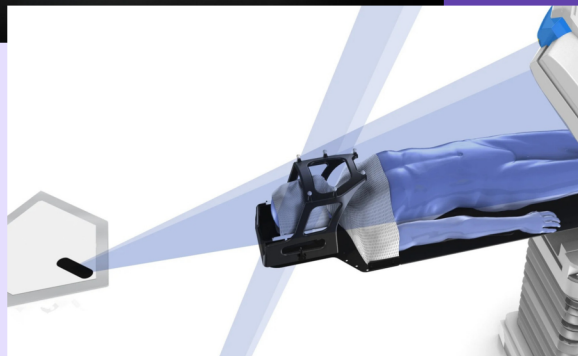
The ExacTrac image guidance system utilizes two X-ray sources on the floor and two image receivers on the ceiling to quickly capture X-ray images from different angles for positioning and correction. It achieves multi-angle imaging without the need to rotate the gantry, significantly saving treatment time, especially in stereotactic radiation therapy where re-imaging is required for each treatment angle. ExacTrac not only provides high-precision positioning but also reduces patient movement or errors caused by prolonged treatment times.

Real-time Sub-millimeter Precision Tracking

After immobilization, we install a black positioning frame, which is equipped with several infrared-reflective beads. The infrared system receives signals from the beads and is able to track the real-time position with an accuracy of less than one millimeter during treatment. If any deviation is detected, the system automatically pauses the treatment.

EXACTRAC IMAGE-GUIDED SYSTEM

ExacTrac is an advanced image-guided radiation therapy (IGRT) system that combines infrared marker tracking with a stereoscopic X-ray imaging system. It enables real-time tracking of the position during radiation therapy, ensuring sub-millimeter precision for stereotactic radiosurgery (SRS) and stereotactic radiation therapy (SRT).



EXACTRAC ADVANTAGES



Stereoscopic X-ray Imaging Aids in Localization

The ExacTrac system uses two X-ray tubes to capture three-dimensional internal images, which clearly visualize the position of the treatment region. These high-resolution imaging helps to ensure accuracy.



Real-time Detection of Motion

During treatment, the ExacTrac system can detect movements in real time, like a significant shift of the chin or head rotation. This prevents treatment errors and ensures that radiation accurately targets the tumor.



Precise Positioning of the Treatment Couch

With the six degrees of freedom (6 DoF Couch), the system automatically adjusts the patient's position based on any minor errors detected in the imaging. This precise adjustment improves treatment accuracy.



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