TITLE: Range guided ion beam therapy
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TECHNOLOGY: Medical Devices
UTSD: 3032

SUMMARY: This is a method of online quality assurance for ion beam treatment (including proton and heavy ions). Ion beam therapy plans precise spots of high radiation dose to the tumor volume. The spot position is very sensitive to the path that the beam travels, and the treatment anatomy of the patient may be different from the planned anatomy. Therefore, the spots may shift outside of the tumor, resulting in ineffective dosing to the tumor and/or damage to sensitive tissues. Additional variability in planned spot positions is introduced due to the uncertainty in estimating the stopping power ratio from the CT images. This technology uses planned mid-plane spots as probing beams to detect the in-vivo range of the beam to ensure accurate delivery as planned. The locations of these spots can be measured using PET imaging or other range measurement methods. The detected beam range is then used to adjust delivery of the remaining spots.

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