

A Virtual Reality Solution Promotes High Quality SRS/SBRT in China

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Abstract

Objectives: In China, the biggest challenge of the new technique application comes from clinical staffs' training. This paper will develop a cost effective and flexible training platform covering whole SRS/SBRT workflow based on virtual reality technology to promote the clinic implement of SRS/SBRT technique. We established a virtual reality SRS/SBRT environment (VRSRT).

Methods: In the VRSRT environment, all the equipments were modeled with the same function and visual effect mimic real time practice. A case library was built by a SRS/SBRT expert team, within the library, all detailed patient seniorors were prepared elaborately containing three NSCLC SBRT cases and three oligometastatic brain lesions. Users of VRSRT can play these cases to learn the details of SRS/SBRT techniques in an oncologist or medical physicist or therapist perspective. VRSRT environment provided users the ability of implementing whole workflow of SRS/SBRT and customized the visualized results of their actions. VRSRT was also designed with a recording and back-play function, so users can record their actions and back-play their historical records.

Results: VRSRT gives us a visual education platform. Clinical and physical aspects of international recommendations of SRS/SBRT can be transformed from words to visual illustration. Besides contouring and plan evaluation, oncologists can learn the Linac quality assurance and multi-modalities imaging procedures in an interesting interaction manner. Medical physicists can follow the expert guide, practice every step of measurements exclusively belongs to SRS/SBRT. Therapists can easily catch the key concepts of SRS/SBRT in clinic and physics and get a standardized operation training. Through the record and back-play function, users as different roles can easily correct their operations referring to expert's guide and have an efficient self-learning. Teacher group get all aspects of students learning status by playing students' records. In training phase meeting, teachers can explain the common mistakes and moderate a discussing around key knowledge.

Conclusions: VRSRT furnished a suitable platform for advanced radiotherapy technique training. All roles involved in SRS/SBRT can get an effective practice in VRSRT and team work between roles was enhanced through the process. VRSRT as a useful tool could promote high quality practice of SRS/SBRT in China.

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