First Experiences with Navigated Radio-Guided Surgery Using Freehand SPECT.

Abstract:
Sentinel lymph node biopsy (SLNB) in melanoma using one-dimensional gamma probes is a standard of care worldwide. Reports on the performance are claimed by most groups to successfully detect the SLNs during the surgical procedure in almost 100% of the patients. In clinical practice, however, several issues remain which are usually not addressed: the difficulty of intraoperative detection of deeply located nodes, SLN detection in obese patients or in the groin and the impossibility to make a scan of the entire wound after SLN resection to avoid false negative testing for eventually remaining SLNs. The concept behind freehand SPECT is to combine a gamma probe as used for conventional radio-guided surgery with a tracking system as used in neurosurgical navigation. From this combination and a proper algorithm framework the 3D reconstruction of radioactivity distributions and displaying these intraoperatively is possible. In summary, the feasibility of freehand SPECT could be shown and provides an image-guided SLNB and a truly minimally invasive and optimized surgical procedure.
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