

**H. Van der Poel, (Nederland Cancer Institute, Amsterdam)**

“Multimodality imaging in surgery” (25’)

Surgical management has long been dependent on the surgeons interpretation of preoperative imaging and his or her ability to find the anatomical structures intraoperatively by cognitive projection of the preoperative imaging. This archaic approach to surgery has long halted further improvement in performance. Development in imaging modalities, both pre- and preoperatively, have changed extensively in recent years and the cognitive approach to surgery seems a thing of the past. The challenge now is to select those technological improvements that suite surgeons requirements and make smooth an rapid transition into daily practice. The options are manifold but implementation of novel techniques into the surgical arena meets ethical, technical, and financial hurdles. A carefully laid out plan is essential but the plan should also be flexible enough to allow for unexpected findings and technical improvements. Many studies in the field of image guided surgery have been proof-of-principle pilot analyses. To convince a larger portion of the medical professionals studies with clinically relevant endpoints have to be designed. A careful interaction between technological improvements and clinical needs therefore is important.

During the presentation some examples will be shown where tracer development has led to a change of setup of image-guided surgery and eventually patient outcome. Often the clinical benefits take longer to become apparent at a patient level. Studies need to be developed that address a specific clinical need and still allow technical improvements to be implemented during the trial if needed.

The sentinel node (SN) is the first node draining an organ and potentially the first location of seeding cancer cells through the lymphatic system. Identifying these nodes improves diagnosis of nodal metastases and potentially improves outcome. The SN biopsy (SNB) has shown clinical benefit in breast cancer and melanoma. Although technetium containing radioactive tracers were successfully applied to pre and intraoperatively map SN, optical recognition of SN for some indications could facilitate intraoperative resection. For this purpose a bimodal tracer was developed containing both technetium and and indocyanine green (ICG). When injected into the target organ such as the prostate, the draining lymph nodes can both be visualized preoperatively using SPECT/CT as well as intraoperatively using near-infrared tracing of ICG. A more extensive nodal removal may have let improved biochemical outcome as observed in retrospective data in men that underwent prostate removal using prostatectomy in combination with SNB and nodal dissection as compared to men that only underwent prostatectomy and routine nodal dissection. We are currently designing prospective clinical trials to prove benefit of image-guided surgery in men with localized prostate cancer. For this purpose a close collaboration between clinicians and basic scientists is mandatory. The Medima meeting is such a platform were synergism between pre- and clinical scientist could boost the field of image-guided surgery.