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An Intra-operative Compact Gamma Imager for Radio-guided Cancer Surgery : Evaluation for Sentinel Node Localization

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In addition to intra-operative probes, compact gamma cameras are very attractive to provide more efficient radio-labeled tumors localization. In this context, our group has developed a high resolution intra-operative imager, POCI (Per-Operative Compact Imager) dedicated to nuclear medicine purposes. The current POCI prototype is based on a 40 mm diameter intensified position sensitive diode coupled to a gamma head module. The imaging performances at 140 keV gamma energy are a spatial resolution of 2.3 mm FWHM and a corresponding detection efficiency of 10.7 cps/µCi. This camera is now the subject of a hospital program for a clinical research (clinical protocol N° P040417) including 200 patients in collaboration with the Tenon hospital (Paris). POCI is currently evaluated in sentinel node detection protocol for breast cancers staging. Preliminary results, obtained both in nuclear medicine department and theater block, already demonstrate that the imaging performances of POCI suit intra-operative imaging conditions as far as compactness, exposure time and spatial resolution are concerned. Overall imaging performances and first clinical evaluations will be extensively presented and discussed.

Author: Dr PITRE, Stephanie (IMNC, Orsay, France)

Co-authors: Dr GRAHEK, Dany (Department of Nuclear Medicine, Hôpital Tenon, Paris, France); Dr BARRANGER, Emmanuel (Department of Gynecologic and Breast Cancers, Hôpital Tenon, Paris, France); Dr DUBERNARD, Gil (Department of Gynecologic and Breast Cancers, Hôpital Tenon, Paris, France); Dr KERROU, Khaldoun (Department of Nuclear Medicine, Hôpital Tenon, Paris, France); Dr MENARD, Laurent (IMNC, Orsay, France); Dr DUVAL, Marie-Alix (IMNC, Orsay, France); Dr SIEBERT, Rainer (IMNC, Orsay, France); Prof. UZAN, Serge (Department of Gynecologic and Breast Cancers, Hôpital Tenon, Paris, France); Prof. CHARON, Yves (IMNC, Orsay, France)

Presenter: Dr PITRE, Stephanie (IMNC, Orsay, France)

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