Radioguided Seed Localisation for Non-Palpable Breast Cancer in Breast Conserving Surgery

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National breast cancer screening programs increased the incidence of non-palpable radiological suspect lesions up to 25%.1,2 At present three different techniques are used for intraoperative localisation of non-palpable breast cancer lesions: wire-, ultrasound, and radioguided localization.1 Wire guided localisation is known to have drawbacks as a localisation marker considering both the cosmetic outcome and the rate of irradicality.2 Radioguided occult lesion localisation (ROLL) using 99mTc-MAA was the first radioguided technique with reliable results for breast conserving surgery.3 Radioactive seed localisation (RSL) was introduced as an alternative for ROLL and is used since 1999 with increasing popularity worldwide.4–6 RSL is based on the implantation of an Iodine-125-seed (I125-seed) in the centre of the tumour. This allows intraoperative localisation guided by a gamma probe and the emission of gamma rays. A major advantage of the I125-seed as localisation marker over the ROLL procedure is that the I125-seed is a point source appropriate for both radioguided localisation and visualization by mammography. A second advantage is that the half-life time of 60 days of I125 allows time between implantation and surgery, and therefore, time for further diagnosis or neo adjuvant chemotherapy.7,8 During surgery the surgeon resects the tumour including the I125-seed guided by count rates indicated by a I125-gamma probe. In an evaluation of the literature we identified 18 articles published about the performance of RSL. The general conclusion states that RSL is a save and reliable alternative for other localisation techniques. However, there are certain aspects of this technique that require additional attention. There are strict regulations considering the use of sealed sources and the handling of excised I-125 seeds. Furthermore, a considerable number of patients undergo a (wide) local excision in combination with a sentinel lymph node biopsy (SLNB). A SLNB uses a radioactive tracer, Technetium-99m nanocolloid (Tc-99m-nanocol), which has due to Compton scatter overlap with the I125 energy window. This overlap should carefully be evaluated before implementation in the clinic and potentially a two-day SLNB protocol should be incorporated.

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