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Sentinel node biopsy in breast cancer clinical implementation

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Key words: Breast Neoplasms; Sentinel Lymph Node Biopsy; Diagnostic Techniques and Procedures

Surgical treatment of breast cancer has suffered radical changes in the last ten years with the introduction of sentinel node biopsy concept with omitting dissection of axillary node in standard clinical practice, as well as development of oncoplastic and primary reconstructive procedures' method after mastectomy with skin preservation. Most of the centers treating breast cancer have introduced sentinel node biopsy as a routine procedure in this period, while oncoplastic and primary reconstructive surgery have mostly been developed in larger centers which could provide adequate training for their surgeons in this field or which have already employed trained surgeons.

Introduction of sentinel node biopsy, except for a very short education of surgeons (around 2-3 months) who already perform breast surgery, requires little resources for purchasing of equipment (interoperable manual gamma camera – counter) and continuous securing of both contrasts (lymphotropic colours and radio markers). If possible, it would be ideal if a surgical institution which is planning to introduce this procedure, except for providing education in centers which already have introduced the procedure, would provide education in the institution itself by engaging experts who have considerable experience in this field. Adequate education of pathologists is also very important in preparation analysis, as well as in issuing reports.

In order to provide accurate and safe histopathological report of SN, this method should be performed by using double contrasts from the very beginning with the aim of minimizing the percentage of false negative reports. In that way, omitting of dissection of other axillary node on the basis of identification of absence of metastatic deposits in SN, which is the final aim of this procedure, has a full meaning and enables precise estimation of disease stage and the program of therapy after the surgical treatment.

Although the sentinel node biopsy method is simple for introducing and performing, it still contains a whole range of possible restraints that can disown the whole procedure, reduce its accuracy and have negative reflection on a certain number of cases in a series of consequences that can result from it.

If the method is performed by recommendations which were established ten years ago, a clinician who performs the biopsy should focus only on special cases, in order to obtain total accuracy of 97% - 98%.

Regarding the choice of contrast, radio markers as well as colour, we can choose among several types, but they should all be officially recognized and registered, totally valid, and if we respect the producer's instructions, contrasts could not be the reason for mistakes that may occur. Initially, it is important that contrasts we have chosen (they have to be double) apply onto adequate place in breast, in adequate way, at adequate depth and in adequate time. A radio marker can be applied one day before surgery (within 16 -18h), but activities that are applied have to be recalculated, i.e. adequately enlarged in order to be at satisfactory level at the beginning of surgery. If we choose later application of radioisotopes (radiotracers) it is possible to apply them not later than 2 h before the surgery, but the activity should also be many times reduced. In that way, except keeping accuracy, security from radiation is provided for the patient as well as for her environment and the team performing the procedure. A colour application is performed 10 min – 30 min before the surgery, practically in the identical way as the radio marker.

Activity measurements, to be performed at the beginning of surgery, should be performed in 4 standard spots (axillary, parasternally, supra and infraclavicular). It is useful for further statistical analysis to record measured activities. Spots that show the highest activity are also useful to mark on skin before the surgery begins.

Extirpation of SN, if possible, should also be performed before extirpation of primary breast cancer.

After starting the section being marked as spot with the highest activity, it is usual to follow to SN, but this overcoloration can fail, as well as overcoloration of the very SN. In that case identification of SN must be performed only on the basis of radioactivity repeated measurements over lymphonode, which are often necessary during work. This happens more often with extirpation of SN from the group of internal mammary plexus.

There is also an inverse possibility that SN was adequately overcolored, but accumulation of radiotracer did not happen, so we extirpate all ovecolored lymphonode. In rare cases we could register that none of the contrasts accumulated in any of the predilected spots and that situation has not been specified by the procedure (should the axilla be dissected or omitted?).

Considering the experience we have gained in these cases at the Oncology Institute of Vojvodina, we do not perform obligatory dissection, as we have found out that whenever we dissected axilla we always found reactive lymphonode without metastases. If there are changes in histopathological report of SN on paraffin preparation (with initial absence of metastatic deposits on a fast frozen preparation during surgery), our attitude is that axilla should then be dissected with a new surgery, except in case of micrometastases. This problem is also controversial because it is well known that SN are even up to 40% the only positive lymphonodes, and other lymphonodes which do not contain secondary deposits are removed by dissection.

The extirpation of SN internal mammary group makes sense when specifying stage of the disease, and it could have even greater significance if such report would be the basis for determining the need for parasternal radiotherapy, which is performed under valid protocols with all breast cancers of medial localizations. Dilemma about biopsy of SN from this group is even greater, because with presence of the highest activity in this region, a lower activity in the axillary region is registered. The question is, if, in that case, besides biopsy of SN in internal mammary group, SN from axillary region should be identified and extirpated.

Biopsy of SN is gaining more recognition day by day because it is, above all, intended to be used in early stages of disease which, with precise imaging procedures, have growing presence in developed countries.

An entire surgical treatment is considerably shorter if dissection of other axillar node is omitted after SN report.

For over ten years, both extirpation and histological analysis of sentinel node have been a confirmed method in surgical treatment of breast cancer and under specific conditions they can help omitting dissection of axillar node in case of absence of metastases in it. The method is officially included in surgical treatment and when it is performed under the above mentioned conditions it is always expected to achieve the results which have confirmation (omitting dissection), and in perspective, to develop and improve its accuracy. By eliminating dilemmas that are still present, regarding details in its performance, its even simpler and quicker performance and higher quality results are expected in the close perspective.

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Reconstructive surgery in breast cancer treatment

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A breast cancer diagnosis can be frightening, confusing experience for the women with newly diagnosed disease, not only at the prospect of having a malignant disease but also by the possibility of a radical change in their appearance after mastectomy. Even when cancer treatment does not involve removal of the entire breast, its appearance may be adversely affected. The first priority is always survival and breast reconstruction is discussed after an initial diagnosis. Fortunately, most of the aesthetic changes created by such procedures as partial mastectomy, simple mastectomy or modified radical mastectomy can be corrected by breast reconstruction.

Breast reconstruction does not make a woman's body the same as it was before the surgery. The reconstructed breast, even when it looks completely natural, will not have the same sensation, but can move and feel to the touch like a soft natural breast.

Women who have had successful reconstruction are much closer to their original physical state than those who have not had a breast reconstruction. They are able to return to the lifestyles they enjoyed before being diagnosed with breast cancer.

The number of breast cancer patients treated with breast conservation is expanding. However, one should be sure to leave a normal appearing breast. Secondary reconstruction of breast deformity is best performed immediately after the partial mastectomy using an approach determined by the size of the breast and the defect. Small defects in large breasts need no reconstruction. For larger defects in larger breasts, breast reshaping (similar to reduction mammoplasty) is the best option. For medium sized or smaller breasts, with small to moderate sized defects, local flaps are very useful. If the defect is too large, or the breasts are too small for correction with local tissue, a latissimus dorsi or transversus abdominis flap, or silicon prosthesis combined with subcutaneous mastectomy, are usually the best choice. The oncologic surgeon by integrating plastic surgery techniques creates a so-called oncoplastic approach and can widen the indications for both partial mastectomy and reconstruction at the same time. However, contra lateral symmetrization is sometimes necessary and can be performed during the initial operation or can be delayed. Such an approach is compatible with preoperative chemotherapy and postoperative radio- and chemotherapy.

REFERENCES:

1 Robb PG. Simultaneous reconstructive surgery for radical mastectomy. *Breast Cancer Res*. 2005;7 Suppl. 1:910.
2 Kat CC, Darcy CM, O'Donoghue JM, Taylor AR, Regan PJ. The use of LD flap for immediate correction of the deformity resulting from breast conservation surgery. *Br J Plastic Surg*. 1999;52(2):99-103.
3 Matory WE Jr, Wertheimer M, Fitzgerald TJ, Walton RL, Love S, Matory WE. Aesthetic results following partial mastectomy and irradiation. *Plast Reconstr Surg*. 1990;85(5):739-46.
4 Hoffmann J, Walluwiena D. Classifying breast cancer surgery: a novel complexity based system for oncological, oncoplastic and reconstructive procedures, and proof of principle by analysis of 1225 operations in 1166 patients. *BMC Cancer*. 2009;9:108.
5 Rowland JH, Desmond KA, Meyerowitz BE, Belin TR, Wyatt GE, Ganz PA. Role of breast reconstructive surgery in physical and emotional outcomes among breast cancer survivors. *J Natl Cancer Inst*. 2000;92(17):1422-9.

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Role of radiotherapy in early breast cancer

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Key words: Breast Neoplasms; Early Detection of Cancer; Radiotherapy; Whole-Body Irradiation; Brachytherapy; Radiotherapy, Adjuvant

Through the 15 years, several single institutional trials in Europe and United States have been published with results that maintenin that the use of accelerated partial breast irradiation (APBI) yealds acceptable toxicity and comparable local control to standard breast-conservati.on therapy with whole-breast irradiation (WBI) (1). The follow up periods in theritorials range from 3 to 5 years and the numbers of patients included in those trials amount to a combined experience of several I hundred patients (2).

These trials have helped to provide the needed data to allow until definition of patient selection criteria and the development of basic relaps for treatment delivery and quality assurance for those physicians who choose to offer APBI in their clinical practice (3).

However, it must be recognized that the concept of APBI challenges the present standard treatment paradigm for early-stage breast cancer ant introduces new treatment concepts thal include target volume reduction, to a partial breast target and the intensification of the treatment-fractimations scheme to deliver the total dose in five days (4).

To fundly uderstand the impact of these new concepts and the role of APBI in the menagement of early breast cancer, additional data are needed (5-7).

This additional information can only be obtained through properly designed clinical trials and a joint effort by all physicians in supporting these trial (8).

The National Surgical Adjuvant Breast and Bowel Project (NSABP) jountly with the Radiacion Oncology Group (RTOG) subsequently opened a 3000-patient, phase III trial in the United States this trial will also compare standard whole-breast radiotherapy to APBI utilizing multicatheter brachytherapy.

The primaru objective in trial is to deremine if local control is equivalent between APBI and and WBI (whole breast iradiation, after breast conserving surgery)(9-10).

The management of early-stage breast cancer remains an area of active research. Standard breast-conversation therapy is now established but the logistics of tradional whole-breast adjuvant irradiation limit the widespread use of breast conservation. A modern review of clinical and pathologic data suggests that adjuvant radiation of the entire breast is unnecessary and indicates that partial breast therpy may be appropriate, thus opening the possibilities of APBI. With more than 10 years experience, definitive data regarding "role" of APBI have not yet been generated. The GEC-ESTRO multicenter phase III trial now underway in Europe and the NSABP B39/RTOG 0413 open in the United States are two, multi-institutional phase Hi trials constructed to deliver the answers to the many questions that remain. It is the role of these phase III trials to further define and potentially expand the patient selection criteria, elucidate which dosimetric parameters are critical to success and clarify which APBI techique is appropriate in which situation (11-13).

REFERENCES:

1 American Society of Breast Surgeons (2005) Consensus statement for accelerated partial breast irradiation. American Society of Breast Surgeons, Columbia, MD. Available from http:/www.breast-surgeons.org/apbi.shtml
2 Arthur D. Accelerated partial breast irradiation: in treatment paradigm for early stage breast cancer. *J Surg Oncol*. 2003;84:185-91.
3 Arhur DW, Vicini FA, Kuske RR, et al. Accelerated partial breast irradiation: an updated report from the American Brachytherapy Society. *Brachytherapy*. 2002:1;184-90.
4 Athur DW, Koo D, Zwicker RD, et al. Partial breast brachytherapy after lumpectomy: low-dose-rate and high-dose-rate-experience. *Int J Radiat Oncol Biol Phys*. 2003,56:681-9.
5 Edmundson GK, Vicini FA, Chen PY, et al. Dosimetric characteristics of the ManfmoSite RTS, a new breast brachytherapy applicator. *Int J Radiat Oncol Bioi Phys*. 2002;52:1132-9.
6 King TA, Bolton JS, Kuske RR, et al. Long term results of wide-field brachytherapy as the sole method of radiation therapy after segmental mastectomy for T (is, 1,2,) breast cancer. *Am J Surg*. 2000;180:299-304.
7 Lawenda BD, Taghian AG, Kachnic LA, et al. Dose-volume analysis of radiotherapy for TINO invasive breast cancer treated by local excision and partial breast irradiation by low-dose-rate interstitial implant. *Int J Radiat Oncol Biol Phys*. 2003;56:671-80.
8 Polgar C, Sulyok Y, Fodor J, et al.Sole brachytherapy of the tumor bed after coservative surgery for Tl breast cancer: five-years results of a phase 1-11 study and initial findings of a randomiyed phase III trial. *J Surg Oncol*. 2002;80:121-9.
9 Silverstein MJ. An argument against routine use of, radiotherapy for ductal carcinoma in situ. *Oncology (Huntingt)*. 2003;17:1511-42.
10 Strnad V, Polgar C. Phase III multicenter trial-interstitial brachytherapy alone versus external beam radiation therapy after breast conserving surgery for low risk invasive carcinoma and low risk duct carcinoma in situ (DCIS) of the female breast. Study protocol, European Brachitherapy Breast Cancer GEC¬ESTRO Working Group; 2004.
11 Vicini Fa, Kestin L, Chen P, et al. Limited - field radiation therapy in the management of early-stage breast cancer. J Natl Cancer Inst. 2003;95:1205-10.
12 Vicini F, White J, Arthur D, et al. NSABP protocol B39/RTO protocol 0413; A randomized phase III study of conventional whole breast irradiation (WBI) versus partial breast irradiation (PBI) for women with stage 0, I, or 11 breast cancer. 2004.
13 Wazer D, Berle L, Graham R, et al. Preliminary result of a phase I/II study of HDR brachytherapy alone for Tl/T2 breast cancer. *Int J Radiat Oncol Biol Phys*. 2002;53:889-97.