lower number of useless axillary lymphoadenectomies is mainly due to the increased operative use of sentinel lymphonode biopsy.

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Gene therapy with proangiogenic plasmids to enhance vascularity of pedicled transverse rectus abdominis myocutaneous flaps in a rat model

T. Majewski[1], E. Towpik[1], M. Malecki[2], P. Janik[2], B. Wozniewicz[3]. [1]*Cancer Centre Warsaw, Dept of Breast Cancer and Reconstructive Surgery, Warsaw, Poland;* [2]*Cancer Centre Warsaw, Dept of Cellular Biology, Warsaw, Poland;* [3]*Cancer for Child's Health, Dept of Pathology, Warsaw, Poland*

Background: The vascularity of pedicled transverse rectus abdominis myocutaneous (TRAM) flaps used for breast reconstruction may be unreliable. We assess the value of gene therapy with proangiogenic plasmids encoding vascular endothelial growth factor, VEGF165 (pVEGF) and basic fibroblast growth factor, bFGF in a rat model of TRAM flap.

Material and Methods: TRAM flap island (2.5 × 6 cm) was incised over the right rectus abdominis muscle of Lewis rat, and raised to the midline from left side and to the lateral margin of rectus muscle on the right. Both left and right superior epigastric vessels, and left inferior epigastric vessels were divided, thus leaving the entire flap vascularized by the right inferior epigastric pedicle alone. The muscle was left in situ in its sheath.

Six groups of Lewis rats (7 animals in each group) were used. TRAM flap in group I was injected with pVEGF intramuscularly (i.m.), in group II – with pVEGF intradermally (i.d.). Group III received bicistronic plasmid (pVIF) encoding VEGF165 and bFGF i.m., group IV – pVIF i.d., group V – double dose of pVIF i.d., and group VI served as a control.

Rats were sacrificed on day 7. TRAM flaps were photographed and drawn on a transparent foil, with exact marking of necrotic area. The drawing was scanned, and the area of healthy (no macroscopic signs of necrosis) part of skin island was assessed in percentages by a graphic computer program.

Results: Mean area of healthy skin island in the control group was 48%. Best results were obtained by injecting pVEGF i.m. – 79% of healthy skin, and pVIF i.d. – 67.1%. Injection of pVEGF i.d and pVIF i.m. resulted in obtaining 56.6% and 56.1%, respectively. Double dose of pVIF i.d. gave no effect: 48.6%; histopathology examination showed signs of intense fibrogenesis in this group, indicating competitive stimulation of fibroblasts against epithelial cells.

Conclusions: Gene therapy is very promising in enhancing the vascularity of experimental pedicled myocutaneous island flaps. Further experiments are needed to assess it's potential value in clinical application.

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Skin sparing mastectomy with conservation of the nipple-areola-complex and autologous reconstruction is an oncological safe procedure – an extended follow-up study

B. Gerber[1], M. Dieterich[1], A. Krause[1], G. Kundt[2], T. Reimer[1]. [1]*University of Rostock, Department of Obstetrics and Gynecology – Breast Unit, Rostock, Germany;* [2]*University of Rostock, Institute of Medical Informatics and Biometry, Rostock, Germany*

Background: The oncological safety of less radical surgical procedures like skin sparing mastectomy (SSM) and nipple sparing mastectomy (NSM) can not be evaluated by randomized trials. Therefore we investigated, if SSM and NSM with immediate autologous reconstruction are as safe in oncological terms as modified radical mastectomy (MRM) also in long lasting follow-up.

Material and Methods: Between 1994–2000 246 selected patients with an indication for MRM were treated with SSM, NSM, or MRM. Short term results were published 2003 [1]. After a mean follow-up of 101 (range 32–126) months 238 evaluable patients with SSM (N = 48), NSM (N = 60) or MRM (N = 130) were analyzed for local recurrence (LR), distant metastases (DM), breast cancer specific death (BCSD) and aesthetic results.

Results: LR occurred in 10.4% (SSM), 11.7% (NSM) and 11.5% (MRM) of all patients (p = 0.974). Also with regard to isolated DM (25.0%, 23.3%, respectively 26.2%; p = 0.916) and BCSD (20.8%, 21.7%, respectively 21.5%; p = 0.993) there were no significant differences between subgroups. There was a significant decrease of excellent aesthetic results over time (SSM after 59 months follow-up: 78.4% and after 101 months: 47.9%; p = 0.004; NSM: 73.8% to 51.7%; p = 0.025). An important risk factor for decreased cosmetic score was application of adjuvant radiotherapy.

Conclusion: Skin sparing mastectomy or nipple sparing mastectomy with immediate autologous reconstruction are oncologically safe techniques. But adjuvant radiotherapy decreases the aesthetic results even after a longer period of time.

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Local recurrence following breast conservation surgery with 5-mm target margin and 40-Gray breast radiotherapy for invasive breast cancer

S. Liau[1], M. Cariati[1], D. Noble[1], C. Wilson[1], G.C. Wishart[1]. [1]*Addenbrooke's Hospital, Cambridge Breast Unit, Cambridge, United Kingdom*

Background: The risk of ipsilateral breast tumour recurrence (IBTR) following breast conservation surgery (BCS) is dependent on treatment- and tumour-related variables. Treatment-related variables include surgical margin status and postoperative radiotherapy. Tumour-related factors include size of tumour, histological grade and tumour biology. In our unit, we have performed BCS with a target radial margin of 5-mm for invasive breast cancer (IBC) combined with fractionated 40-Gy breast radiotherapy postoperatively since 1999. The aim of the current study is to identify risk factors that are predictive of local recurrence in a cohort of patients who underwent our treatment regime for IBC.

Methods and Results: Between 1999 and 2004, 563 patients who underwent BCS for IBC were identified. Women received adjuvant chemotherapy or hormonal therapy as clinically indicated. After a median follow-up of 58 months, 5 of the 563 (0.9%) patients developed IBTR. The 5-year actuarial IBTR rate was 1.1%. In terms of distant disease recurrence (DDR), 29 of the 563 (5.20%) had DDR during follow-up, giving a 5-year actuarial DDR rate of 5.4%. Multivariate analyses identified Nottingham prognostic index (NPI) as the only significant independent prognostic factor for IBTR (p = 0.018).

Conclusion: The 5-year IBTR rate after BCS with 5-mm target margin and fractionated 40-Gy breast radiotherapy is low at 1.1%. NPI may be useful in stratifying patients who are at greater risk of IBTR.

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Predictive factors of nipple areolar complex invasion in breast cancer patients with mastectomy

M.H. Park[1], S.K. Yun[1], H.S. Kim[1], J.H. Yoon[1], S.H. Jung[2], H.J. Youn[2]. [1]*Chonnam National University Hwasun Hospital, General Surgery, Hwasun Chonnam, Korea;* [2]*Chonbuk National University Hospital, General Surgery, Jeonju, Korea*

Background: Skin-sparing mastectomy with nipple areolar complex (NAC) preservation improves aesthetic outcome for breast cancer patients. This study was performed to investigate predictive factors of NAC-base neoplastic involvement to define the indications for NAC preservation.

Materials and Methods: A retrospective analysis of 198 mastectomy patients was conducted to determine the frequency of malignant NAC invasion. The association between NAC involvement and predictive factors, including tumor size, axillary nodal status, nuclear grade, hormone receptor status, tumor multiplicity, tumor location, tumor nipple distance (TND), and lymphovascular invasion (LVI), was evaluated.

Results: The overall frequency of malignant nipple involvement was 19 of 198 (9.6%). Significant differences were found in tumor size, axillary nodal status, tumor nipple distance, TND, and LVI. According to this study, clinical contraindications for NAC preservation include tumors >2.4 cm, positive axillary lymph node, TND < 4 cm, and positive LVI.

Conclusions: NAC preservation can be possible in selected patients if we consider the possibility of pre or intraoperative measurement, tumor size, axillary nodal status, TND, and LVI evaluation.

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Breast conserving surgery in locally advanced breast cancer treated with primary chemotherapy: experience at Istituto Nazionale Tumori

A. Conti[1], M. Zambetti[2], S. Govi[2], E. De Benedictis[2], L. Lozza[3], P. Mariani[2], P. Valagussa[2], R. Giovanazzi[1], G. Scaperrotta[4], L. Gianni[2]. [1]*Istituto Nazionale Tumori, surgery, Milan, Italy;* [2]*Istituto Nazionale Tumori, medical oncology, Milan, Italy;* [3]*Istituto Nazionale Tumori, radiotherapy, Milan, Italy;* [4]*Istituto Nazionale Tumori, radiology, Milan, Italy*

Background: The aim of present report is to evaluate the applicability of breast conserving surgery (BCS) after primary systemic chemotherapy (PSC) in women with locally advanced breast cancer (LABC) and to assess the sufficiency of the a priori criteria adopted to select tumors amenable to BCS.

Material and Methods: In this retrospective analysis patients with LABC consecutively treated at the Istituto Nazionale Tumori in Milan from February 1986 to September 2007 were considered. The therapeutic program consisted of PSC (single agent anthracycline or high dose chemotherapy [HDS] or taxanes-containing regimens) followed by surgery and radiotherapy (chest wall or residual breast ± homolateral