Results: A total of 54 breast surgeons had responded to the survey. Of these, 40 surgeons (74.1%) had used absorbable mesh during breast surgery, with Vicryl mesh® being the choice of every surgeon and Interceed® having been used by 36 (90%) of the surgeons. In responding to the indications for mesh use, 26 surgeons (65%) indicated that mesh use was effective when a deformity was expected regardless of T stage. Contraindications for mesh use principally included existing patients' comorbidity such as a wound healing problem, diabetes mellitus and immunocompromised condition. Thirty one surgeons (77.5%) had experienced an infection in the mesh insertion site. However, on a case basis, only 39 of 843 cases (4.6%) had resulted in an infection. In the follow up after mesh use, 33 of the 37 responding surgeons (89.2%) used breast ultrasonography. Nineteen of the 38 respondents (50%) replied that the mesh was absorbed in 6 months and it did not confuse diagnostic imaging. The cited merits of mesh included maintenance of breast shape following surgery (n = 38/49, 77.6%) and ease of surgical use (n = 35/49, 71.4%). However, the high price of mesh was cited as a disadvantage by 33 of the 48 respondents (68.8%).

Conclusions: Although mesh is somewhat expensive and can develop a complication, there are some merits that it can be lead to keep good shape of breast after surgery and it is useful to do surgery easily. If we have good instruction about a way of using mesh, it is anticipated maximizing the various merits. Thereby, we suggest that a guideline for mesh use should be made in the near future.

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Intra-operative near-infrared fluorescent detection of breast cancer using indocyanine green

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Introduction: In 5−45% of breast cancer patients undergoing breast conserving surgery tumour margins are positive. Near-infrared fluorescence (NIRF) imaging is a new technique to intra-operatively visualize tumour tissue. NIRF offers a high and specific contrast up to several cm's deep. Currently, indocyanine green (ICG) is the only FDA and EU approved NIRF probe. Although ICG has no specific tumour-targeting properties, ICG could accumulate in tumours as a result of leaky neovasculature and poor lymphatic drainage, thereby facilitating NIRF detection. In this study, the ability of ICG to intra-operatively identify tumour tissue is tested in a syngeneic breast cancer rat model.

Material and Methods: To study the influence of serum proteins on the fluorescent properties of ICG, absorbance and fluorescence ware determined in vitro. Five female Wag/Rij rats (180–200 gr) were used. In each rat four breast tumours of the by our group developed syngeneic EMR86 rat model were orthotopically implanted. Once the tumour size reached 0.5−1 cm^3, ICG was i.v. injected (2.5 mg/kg in 200 μL) and fluorescence was determined up to 90 minutes after injection in the IVIS Spectrum (Caliper, USA) and a prototype NIRF intra-operative camera system.

Results: Binding of ICG to serum proteins resulted in a shift of the absorption from 780nm to 800nm and a threefold increase in fluorescence. All tumours (n = 15) could be identified after ICG injection. Ten minutes after injection of ICG, a tumour-to-background ratio (TBR) of 1.9 was measured (paired t-test, p = 0.03), which was followed by a linear decrease in contrast (15 min: TBR = 1.8, p = 0.05; 60 min: TBR = 1.3, p = 0.22). H&E staining and fluorescence microscopy identified the ICG in the stromal compartment of the tumours.

Conclusions: ICG allows detection of tumours in this syngeneic rat model. However, in its current application, the limited tumour-to-background ratio during the first 15 minutes is probably insufficient to guide surgery in order to decrease positive margins rate. Future investigation will be directed to alternative administration techniques, pre-binding to albumine and nanoparticle design.

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Early experience of contralateral myomammary nipple-areolar complex flap with modified radical mastectomy

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Background: Immediate breast reconstruction following breast conserving surgery has been developed as the most important part of surgical management in breast cancer. But the breast reconstruction cannot be applied like a formula in all cases, because tumor location and size, patient's body shape, breast size and surgeon's skills are always different. Although there are some limitations, many reconstruction methods have being performed even in cases when breast or nipple-areolar complex preserving was impossible in past because of nipple invasion or advanced stage.

Authors report the initial experience of contralateral myomammary nipple-areolar complex flap based on contralateral pectoralis major myomammary flap which showed good results in patients with breast ptosis.

Material and Methods: The retrospective review of ten patients who undergone contralateral myomammary nipple-areolar complex flap with modified radical mastectomy for breast cancer was done. The criteria was determined when the patient refused radiation therapy following breast conserving surgery or had breast ptosis, and the case which is contraindication of nipple-areolar complex preservation because of advanced tumor stage or nipple invasion. The patients who had poor medical condition such as uncontrolled diabetes or long-period smoking history were excluded. The flap is composed of contralateral pectoralis major muscle and half of nipple-areolar complex with supply! ing vessels. The flap should be harvested without any injuries of perforating branch of internal thoracic artery and passed through median tunnel between both breasts. The cosmetic result was assessed based on four-point scoring system of breast cosmetics by patient herself.

Results: In postoperative complication, seroma formation and partial necrosis of nipple-areolar complex occurred in 2 cases each. The cosmetic result showed good in 2 patients, fair and poor in 6 and 2 patients, respectively.

Conclusion: The contralateral myomammary nipple-areolar complex flap is feasible for obtaining satisfactory cosmetic outcomes and oncologic safety when breast or nipple-areolar complex conserving surgery is almost impossible with advanced tumor stage, nipple invasion or severe breast ptosis.

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Intercostobrachial nerve(s) must be preserved during axillary lymph node dissection for breast cancer

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Background: The aims of surgical therapy for breast cancer are loco-regional control and staging. Axillary lymph node status is the most important prognostic indicator and is currently achieved by sentinel node dissection or axillary dissection (AD). The morbidity associated with AD is well recognized and part of it is determined by the sacrifice of the intercostobrachial nerve(s) (ICBN). We want to determine the feasibility and benefit of ICBN preservation to prevent the sensory and functional disability of AD.

Materials and Methods: A case–control study was performed on a consecutive series of patients who underwent AD with (ICBN+; n = 104) or without (ICNB−; n = 86) ICBN preservation. Sensitive and functional outcomes were evaluated with the Breast Sensation Assessment Scale (BSAS) after surgery to assess the prevalence and severity of sensations and the resulting level of distress. An evaluation of arm mobility and lymphedema and a neurological objective examination with a measure of the distressing area were also performed.

Results: The ICBN+ and ICBN− groups were well balanced with regard to age (58 years), BMI (25.88 vs 26.69), type of breast surgery (conservation 49.6% vs 50.4%; mastectomy 37.3% vs 62.7%) and mean number of lymph nodes removed (19.57 vs 19.72). There was no difference in the duration of surgery in the ICBN+ vs ICBN− groups (mean time = 70.47 vs 71.78 minutes, respectively). The incidence of arm lymphedema, measured by comparing the diameters of the two arms at 10 cm above and 5 cm below the olecranon, was greater in the ICNB− than in the ICBN+ group (mean arm swelling = 13.55 mm and 14.07 mm vs 6.31 mm and 6.57 mm, respectively; p = 0.013). ICBN preservation caused less sensory disability, with 85.7% of the patients reporting no sensory loss in the ICBN+ group as compared to 14.3% in the ICBN− group (p = 0.0001), as well as a smaller extension of the area of ipo-anesthesia in the axilla and inner aspect of the arm (5.4 cm^2 vs 20.5 cm^2; p = 0.001). Finally, the subjective "distress" of AD, evaluated with a five-point scale questionnaire administered to the patients, confirmed that ICBN preservation is associated with a significant advantage (p = 0.02).

Conclusions: Preservation of ICBN is associated with a lower sensory disability, does not affect the duration and oncological safety of AD and may be associated with reduced arm lymphedema.