bigger number of cases with longer follow-up period is needed to validate statistically the oncology safety of the NSM performed by us. The early results convinced both surgeons and patients in the esthetic benefits of NSM with immediate reconstruction versus modified radical mastectomy (MRM) or skin-sparing mastectomy (SSM). This intervention increases patient's quality of life and satisfaction of the treatment results, and could be a reasonable alternative of classical mastectomy in selected patients.

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Pain and analgesic consumption after breast cancer surgery − a prospective study

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Background: Pain after breast cancer surgery is not very well studied. Our aim was to study the severity of pain and oral analgesic consumption in patients in the week following surgery for breast cancer.

Materials and Methods: In an ongoing prospective audit, women undergoing breast cancer surgery were asked to record the severity of pain daily using a visual analogue scale (range 0–100) for a period of one week starting the day after the operation. They were discharged home on oral analgesia and also kept a record of oral analgesic consumption during this period.

Results: Among 81 patients studied so far, 66 had breast conserving surgery, 13 had mastectomy, and 2 had axillary clearance only. The median pain score on the first post-op day was 18 (0−87) and on 7th post-op day 2 (0−34). Ten (8%) patients have stopped taking oral analgesia by day 1, and 47 patients (58%) by day 7. We noted that patients who recorded highest pain scores often did not take the recommended daily maximum of oral analgesia.

Conclusions: Breast cancer surgery is not associated with significant pain in the post-operative period and the severity of pain decreases steeply in the week following surgery. Only about 40% of patients require oral analgesia beyond a week. It may be appropriate to discharge patients with a week's supply of take-home analgesia. This would reduce cost and unwanted side-effects as some patients would aim to complete the prescribed course of analgesia even if they are not in pain. Those who require analgesia for a longer period could obtain it at the follow-up breast clinic visit, or from their general practitioner. Encouraging patients that it is safe to take the maximum recommended daily dose of oral analgesia may further improve pain control post-surgery.

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10-year results of breast conserving treatment using perioperative brachytherapy boost and delayed boost after whole breast irradiation in material of Maria Sklodowska-Curie Memorial Cancer and Institute of Oncology in Warsaw, Poland

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Background: Comparing results of treating patients with breast cancer at whom we applied boost with perioperative brachytherapy (BRT) HDR Ir-192 or after irradiation of entire breast from external fields (WBI).

Materials and Methods: In years 1997–2003 we included 115 patients with breast cancer in the stage T0−2 N0−1 whom we applied the boost with BRT method; in 40 cases − perioperative (group I), in 75 − after the teleradiotherapy (group II). No statistical difference (age, diameter of tumor size, pTNM) between these two groups was observed. In group I we applied boost in the dose of 10 Gy/1 fr, and then WBI in the dose of 50 Gy/25 fr or 42.5/17 fr. In group II after operation we performed WBI, and then after 5 days BRT in the dose of 10−15 Gy/1 fr.

Results: Median of the time of observation was 125 months. The volume of irradiated of breast tissue in group I was 8−75 cm^3 (24.3 cm^3), in group II 10−56 cm^3 (36 cm^3) $p < 0.001$. Distant metastases were observed in 3 patients (7.5%) in group I and 6 (8%) in group II. In group I we observed 1 (2.5%) local recurrence, in group II − 3 (4%). Also a statistical difference in DFS wasn't observed ($p = 0.77$). Also a statistical difference wasn't shown ($p = 0.812$) in the evaluation of the cosmetic effect between both groups.

Conclusions: Applied sequence perioperative BRT is comparable to the traditional sequence of treatment.

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Direct monitoring by Cook-Swartz Doppler − a study of 7 years in Free-Flaps operations; macro, micro and re-exploration results in regard to breast reconstructive surgeries

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Background: After establishing the microvuscular techniques for blood vessels anastomosis of free-flaps operations, began the phase of enhancement an accurate and precise methods to minimize the failure of free-flaps, most frequently on account of venous disturbance and occlusion. This necessity promoted invention of several techniques trying to predict and prevent this unfortunate outcome. A variety of devices have been mentioned in the literature, however none had the ability to fulfill the basic requirements that can be applied to all kinds of free-flaps surgeries. The Cook-Swartz Doppler is a 20 MHz Ultrasonic device, invented and modified the past 2−3 decades, which is placed distal to the microvascular anastomosis. A silicone cuff circulates the vein examined, from this probe; a wire leads continues signals to the device being place near the patient bed. These audio signals are being monitored routinely by medical personnel.

Methods: In a retrospective study (1997–2007), tracking the admission and usage of the implantable Doppler probe, since 2000 in the microsurgical unit, we evaluated all parameters mentioned further from 523 consecutive patients, underwent 608 microsurgical procedures, 77 of them had Breast reconstructive surgeries. The data in this research was taken from several sources: patients' medical files, surgery reports and implanted Doppler reports. From these documents we retrieved the medical files of patients who underwent secondary surgery (revision) due to blood flow obstruction.

In this research we examined:

1. The efficacy of this modality, in Macro and in Micro aspects: each of the branched microsurgical divisions, emphasized Breast reconstructive unit opposing to other sub-divisions, comparing results of overall success and failure rates to the control group monitored in traditional means.
2. Re-exploration operations: time taken place, finding outcomes, sensitivity and specificity of this modality.
3. Learning curve of the medical staff.

Results:

1. The overall success rates are promoted by this device, from 90.62% to 95.33%. Prominent effectiveness found in Breast reconstruction division (94.6% vs. 77.5%), with statistical significant ($P < 0.05$).
2. Higher rate of microsurgical revisions monitored by implantable Doppler versus the control group (12.84% vs. 8.54%). Nevertheless, achieved tremendous success rates (87.9% vs. 46.6%), especially due to earlier detecting time of blood interference/occlusion (1–1.18 days vs. 2.5−2.7 days). In Breast reconstructive surgeries, we tracked a considerable high rate of free-flap salvage success rate (83.33% vs. 42.85%); and an average of rapid detection time which quickly brought the patient to a re-exploration at the theatre (1 vs. 2.571 days), with statistical significant ($P < 0.05$). 100% Sensitivity and 91.6% specificity for this modality.
3. Conspicuous learning curve (reducing operation time by an average of 3 hours and one hour shorter for revisions).

Conclusions: The implantable Doppler is valuable and predictable monitoring device. It was found to be safe and easy to use, reliable in time and accuracy and most beneficial in Breast reconstruction division. In divisions with no or less success, we suggest cutting costs and transferring this modality to recommended divisions.

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Nationwide survey of the use of absorbable mesh in breast surgery in Korea

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Background: It is known that many physicians have been using mesh on breast surgery recently but, there is no information for this practice. The aim of this study is to investigate the present use of mesh at breast surgery in Korea.

Methods: We conducted a survey from members of Korea Breast Cancer Society by phone, E-mail, and notice on the website from 6th to 20th April 2009.

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.