recurrence. A score of 1 (best) to 3 (worst) was given for each of 3 predictors (tumor size, margin status, and pathologic classification). The scores were totaled to give an overall score ranging from 3 to 9.333 patients with DCIS treated with breast conservation therapy (BCT) seen from 1972–July 1995, were analysed; 195 of these patients were treated with excision only and 138 were treated with excision plus radiation therapy (RT). There was no statistical difference in the 8-yr. disease-free survival (DFS) in patients with a score of 3 or 4 regardless of whether or not they received RT (100% vs 97%). Patients with scores of 5, 6, or 7 received a statistically significant 17% DFS benefit when treated with RT (85% vs 68%) ($p = 0.02$). Patients with scores of 8 or 9, although showing the greatest relative benefit from RT (33% vs 0%), experienced local recurrence rates in excess of 60% at 6 years. Patients with DCIS and a PI score of 3 or 4 can be considered for treatment with excision only. Patients with intermediate scores (5, 6, or 7) benefit from RT if their breast is to be preserved. Patients with PI scores of 8 or 9 exhibit unacceptably high local recurrrence rates and should be treated with mastectomy.

PP-2-3 Risk Factors and their Importance in Complications after Breast Surgery

J. Hørby*, T. Jørgensen, B. Pilsgaard. *Surgical Department K, Bispebjerg Hospital, University of Copenhagen, DK-2400 Copenhagen NV*

Purpose: To identify risk factors for postoperative complications after breast surgery.

Methods: From June 1994 to November 1995 187 patients underwent breast surgery for cancer. Forty three patients had mastectomy, 97 mastectomy with axilliary dissection and 47 lumpectomy with axilliary dissection. Age, bodymass index, alchohol and tobacco consumption, operative technique, duration of the operation, area of the wound surface and charge of the surgeon were recorded. Postoperative endpoints, i.e. seroma, number of seroma punctures required, hematoma/or rebleeding, infections, epidermolysis or skin necrosis were recorded. Statistical tests were multiple logistic regression analysis. Level of significance: 5%.

Results: Formation of seromas was significantly associated with increasing age ($p < 0.05$) and total drainage volume ($p < 0.05$). Haematomas were significantly associated with use of electrocautery rather than scalpel and/or scissors ($p < 0.05$). Infections were significantly associated with tobacco consumption ($p < 0.05$), low charge of the surgeon ($p < 0.05$) and the number of drainage days ($p < 0.01$). Epidermolysis was significantly associated with peroperative blood loss ($p < 0.05$) and intake of NSAID ($p < 0.05$). Skin necrosis was significantly associated with tobacco consumption ($p < 0.05$) and the presence of haematoma/or rebleeding ($p < 0.05$).

Conclusions: It is possible to identify risk factors related to breast cancer surgery, especially surgical technique and tobacco consumption.

PP-2-4 Diagnosis of Intramammary Recurrences of Breast Cancer after Conservative Treatment

V. Distante*, S. Ciatto, M. Rontini, R. Simoncini, A. Manetti, F. Falli, L. Cataliotti. *Istituto Clinica Chirurgica I, viale Morgagni 85, 50134 Florence, Italy*

The prognosis of promptly treated recurrences in the conserved breast is excellent and thus every effort should be performed to achieve early detection of such events. The Authors describe the results of different diagnostic tests on a consecutive series of 143 intramammary relapses observed after conservative treatment, 1984 to 1994. Disease free interval after surgery was 3.7 years on the average (3.9 for patients receiving radiotherapy vs. 3.1 without). The patients have been followed-up on a regularly basis: clinical examination every 4 months in the first 2 years and every 6 months after, mammography annually; employing US and cytology only in cases of suspicious lesions. Clinical test, mammography, cytology and US suspected the recurrence in 75%, 64%, 81% and 77% of the cases, respectively. Mammographic false negatives were likely to be ascribed to the masking effect of surgical scars and distortion. Most failures at cytology were caused by inadequate sampling: when sampling was adequate, cytology exhibited the highest sensitivity (97%). In all, combined palpation + mammography, palpation + cytology, and palpation + mammography + cytology, diagnosed correctly 97%, 98%, and 100% of cases, respectively. Palpation should be always combined with mammography in the follow-up of the conserved breast, but US and aspiration cytology should be performed in case of every clinico-radiologic abnormality carrying even a minimal risk of recurrence.

PP-2-5 Immediate Breast Reconstruction after Mastectomy for Cancer

A. Ringberg*, I. Tengrup. *Departments of Plastic Surgery and General Surgery, Malmö University Hospital, Lund University, 205 02 Malmö, Sweden*

Mastectomy (ME) with immediate breast reconstruction (IBR) has become an accepted procedure in the treatment of breast cancer. Between 1980 and 1994 79 IBR:s were performed in Malmö. Median age at operation was 50 years. Since 1985 IBR has been performed in 20% of mastectomies among patients $\leq$ 65 years. Median follow-up was 43 months. Oncological, surgical and cosmetic results and a patient questionnaire were evaluated.

18 patients had pure in situ carcinoma, 35 patients TNM stage I carcinomas and 15 TNM stage II, 9 of which were N+. The mamilla was removed in 67/79 patients. The most common indication for ME with IBR was extensive in situ carcinoma $\pm$ multifocal invasive growth. 4 patients developed loco-regional recurrence. In 61 cases permanent implants were used and in 18 expanders. Median volume of the permanent implants was 225 ml compared with 380 ml in cases where expanders were used. 24% of the patients had postoperative complications such as hematoma (4 cases), infection (3 cases) and necrosis (4 cases). After introduction of the expander technique no necrosis requiring explantation has occurred. 85% of the patients with necrosis were smokers compared with 47% of the patients in the total material. 71% of the patients receiving radiotherapy (RT) developed capsular contracture. 63% of the patients had a satisfying or very satisfying cosmetic result. 8% were judged to have a Baker III-IV contracture. 74% were judged as soft compared to that 85% of the patients were satisfied with the softness of the reconstructed breast. 76% stated the result to be in accordance with their expectations.

We find IBR after ME a safe operation with results comparable to those after late reconstruction and without increased risk for recurrence. As the cosmetic results after RT are inferior in our study, IBR is not recommended in cases where RT may be necessary.

PP-2-6 Chest Wall Resection in 44 Patients with Recurrent Breast Cancer: Indications and Results

E.J.Th. Rutgers*[1], I.F. Faneyte[1], F.A.N. Zoetmulder[1], A. te Velde[2]. [1] *Department of Surgery,* [2] *Department of Biostatistics, The Netherlands Cancer Institute/Antoni van Leeuwenhoek Ziekenhuis, Amsterdam, The Netherlands*

Aim: To analyze the indication for and morbidity from CW resection for recurrent breast cancer in relation to survival.

Method: The clinico-pathological and outcome data were recorded from 44 pts, who underwent a CW resection for recurrent breast cancer. CW reconstruction consisted of steel wire (n = 9), vycril® (n = 12), Marlex® (n = 20). Soft tissues were closed primarily (n = 10), transposition of omentum (n = 31), the contralateral breast (n = 30, LD-flap (n = 2) and with split skin graft (n = 28).

Results: Mean age at primary diagnosis was 47 yrs and at CW resection 51 yrs. Overt distant disease was diagnosed in 27%. Previous therapy consists of mastectomy (all), radio- (n = 39), chemo- (n = 10), on hormonal therapy (n = 4). Complications were seen in 25% (omentum necrose n = 1, infection n = 7, pulmonary n = 8). Thirty pts were rendered *tumor free* (no distant disease, tumor free margins): 18 had recurrence; one isolated local recurrence, 12 distant recurrence and 5 combined. The median survival was 8.9 yrs with an actuarial 5 yrs survival of 62%. After *palliative* resection in 14 pts, the median survival was 2.3 yrs and the 5 yrs actuarial survival 21%.

Conclusion: CW resection for recurrent breast cancer may result in a good local control with limited morbidity and a 5 yrs survival of 63% in completely resected and of 21% after palliation. This treatment option should always be considered in women with locally recurrent breast cancer.

PP-2-7 Pattern of Lymphatic Dissemination in Breast Cancer

B.A.E. Kapteijn, O.E. Nieweg, J.L. Peterse, E.J.Th. Rutgers*, B.B.R. Kroon. *Department of Surgery and Department of Pathology, The Netherlands; Cancer Institute, Amsterdam, the Netherlands*

The aim of the study was to examine the hypothesis that lymphatic dissemination in breast cancer occurs in a sequential fashion. Twenty-two patients with clinically localized adenocarcinoma were studied. Patient blue dye was administered into the tumour at the beginning of modified radical mastectomy. In the removed specimen, blue stained lymphatic channels were dissected from the primary tumour to the first draining lymph nodes.

These first-echelon nodes (sentinel nodes) were examined separately for presence of metastatis. In one patient with a primary tumour in the medial upper quadrant, no sentinel node was found in the axilla. Based on the direction of the lymphatic channel, drainage was presumed to have occurred to the internal mammary chain. Thirty-five first-echelon nodes were identified in the remaining 21 patients. In eleven of these patients, the first-echelon nodes and all other axillary nodes were free of disease. In four patients, metastatic tumour was found in a first-echelon node and in one or more other nodes as well. A first-echelon node was the only metastatic node in the remaining six patients. The likelihood of such a distribution of tumour-positive nodes occurring by chance is less than 0.001 (chi-square test).

This study indicates that lymphatic dissemination occurs initially to the first node on the direct drainage pathway. When confirmed *in vivo*, these data may lead to a substantial reduction of the need for axillary node dissection without compromising survival and regional control, and without loss of prognostic and staging information.

PP-2-8 Axillary Lymphadenectomy Prepared by Fat Aspiration Versus Functional Axillary Lymphadenectomy (FAL): Preliminary Results of a Prospective Randomized Trial

S. Giard*, J.C. Laurent, A. Dron. *Department of Surgery, Centre Oscar Lambret, Lille, France*

From 01/01/1995 to 31/01/1996, 200 consecutive patients with operable breast cancer were randomized to either FAL only or FAL prepared by fat aspiration. The average number of seromas was significantly lower with fat aspiration in the group of obese patients (8/25 vs 21/34, $p < 0.05$) and in the group with total mastectomy (17/37 vs 28/39 $p < 0.05$).

The importance of post-op stage, drainage duration, shoulder stiffness was lower in the group with fat aspiration, but the difference was not significant. FAL prepared by fat aspiration preserves anatomic structures and reduces seromas, specially in high risk patients.

POSTER PRESENTATIONS

PP-2-9 Conservative Approach in Subareolar Breast Cancers: A Series of 37 Patients

E. Bussières*, F. Guyon, P. Tribondeau, L. Thomas, A. Faucher, M. Durand. *Institut Bergonié, Regional Cancer Center, 33076 Bordeaux, France*

A breast conservation in 37 patients (pts) with an operable and subareolar breast cancer < 35 mm is reported.

From 01-01-1987 to 12-31-1994, 37 pts were referred for tumors in the subareolar area, with a median tumor size of 20 mm. The nipple areolar complex (NAC) was clinically infiltrated in 12 pts, retracted without infiltration in 24, and without modification in 1. Thirty pts underwent a first-line conservative surgery, 5 were first-treated with chemotherapy and 2 with tamoxifen. The tumor was removed with a total resection of the NAC in 21 pts, with a partial resection of the NAC in 9, and without any resection of the NAC in 7; an additional intraoperative tube implantation allowed the delivery of an Iridium boost irradiation of 15 Gy in 8 pts. Axillary dissection was performed in all 37 pts. All pts received an external radiation therapy of 50 Gy, with an external electron boost of 10 to 15 Gy in 13 pts; 14 pts were treated with adjuvant tamoxifen, and 2 with adjuvant chemotherapy.

With a median follow-up of 49 months, 1 pt experienced a local failure and 4 pts a metastatic failure. Five-year actuarial overall survival and disease-free survival rates were 97% and 75%, respectively. Cosmetic results were considered as excellent in 3 pts, good in 25, and poor in 7.

Finally, in pts with a breast cancer in the subareolar area, with a tumoral size < 35 mm, a conservative treatment is possible and safe; however, a partial or a complete resection of the NAC may be necessary, and the application of some principles of plastic surgery could improve the cosmetic result.

PP-2-10 Radical Mastectomy by Means of a Periareolar Incision Followed by Immediate Reconstruction

Antonio S.S. Figueira Fo., João E. Beltrão, Eulina Helena Souza, Murilo L. Brito, Yvson Cavalcanti, Rossano Araujo, Ana Leide Santos. *Department: Discipline of Mastology, Faculty of Medical Sciences of Pernambuco, Recife, Brazil*

Summary: The authors present five cases of radical mastectomy (MADEN) performed by means of a periareolar incision, demonstrating that with this incision it is possible to safely remove the entire mammary gland and dissect the axilla at the three levels.

The reconstruction of the breast is carried out with dermomuscular flaps from the musculus rectus abdominis or latissimus dorsi.

The great advantage of this type of incision is the cosmetic aspect, since it leaves no scars.

The disadvantages and difficulties of this technique are discussed in the paper.

PP-2-11 A Prospective Randomized Trial of Short Versus Long Hospital Stay after Surgery for Breast Cancer

J. Bonnema*, A.N. van Geel, A. van Wersch, J.F.A. Pruyn, Th. Wiggers. *Department of Surgical Oncology, University Hospital Rotterdam/Daniel den Hoed Cancer Center, Rotterdam, The Netherlands*

The effects of reduced hospital stay after breast cancer surgery on the quality of care, incidence of surgical complications, well-being of patients and total costs of treatment were studied in a prospective randomized trial. All patients had complete axillary dissection and segmental or total mastectomy. The 'short stay' group (n = 62) received early discharge with drains in place, while the 'long stay' group (n = 63) remained in the hospital until the drains were removed. Mean length of stay was 4.1 and 9.0 days respectively. Research data were collected from 3 questionnaires and daily and weekly diaries. Results showed that the 'short stay' group was more satisfied with the length of stay. There were no medical or psychosocial disadvantages of early discharge and it offered a greater opportunity for social support within the family. The integral costs including the costs of home care were significantly lower for the 'short stay' treatment ($ 3444 vs. $ 4848, $p = 0.0001$).

It is concluded that early discharge after surgery for breast cancer is a cheap and safe alternative for post-operative hospital care with higher patient satisfaction and better psychosocial outcome.

PP-2-12 Axillary Lymphadenectomy by Lipolysis and Liposuction: A Pilot Study

J.L. Brun*, M. Briex, E. Rousseau, G. Belleannée, G. Brun. *Clinique Gynécologique, Hôpital Saint-André, 33075 Bordeaux Cédex, France*

The trend toward less radical surgery in breast cancer led us to perform axillary lymphadenectomy prepared by lipolysis and lymph nodes suction.

22 patients with clinically uninvolved axillary nodes were included from July 1995 to March 1996. Lipolysis was performed by injection of 300 ml of cold bicarbonate serum. Suction was performed with a Karmann nozzle ch. 8 with a pressure of 1 Bar. 11 mastectomies (group M) and 11 lumpectomies (group L) were performed. Axillary dissection was assisted by endoscopy after CO2 insufflation and controlled by a 3 cm incision in conservative surgery. Axillary drains were removed when produced less than 20 ml per day.

The mean duration of the dissection was 90 mn (range, 30–150) in the group M and 130 mn (range, 60–180) in the group L. No vessel, muscle or motor nerve was injured during the procedure. The mean number of lymph nodes removed was 14 (range, 8–19): 2 (range, 0–8) by aspiration, 6 (range, 1–15) by endoscopy (group L) and 6 (range, 2–11) by incision (group L). 6 patients (27%) had positive lymph nodes. The mean quantity of lymphorrhea was 410 ml (range, 40–1170) in the group M and 275 ml (range, 45–675) in the group L. The mean duration of drainage was 6 days (range, 2–11) in the group M and 5 days (range, 2–8) in the group L. Lymphoceles were detected in 2 cases (group M) and required subsequent punctures. All patients, except 3 (group M) had abduction and antepulsion of the arm over 9° one month later. Axillary lymphadenectomy prepared by lipolysis and lymph nodes suction is an effective, reliable and well tolerated procedure. Further studies could define the place of endoscopy in breast conservative surgery.