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Conserving Surgery - Balance between Good Cosmetic Aspect and Local Disease Control in Incipient Breast Cancer

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Rezumat

Chirurgia conservatoare - echilibru între un aspect cosmetic bun și controlul local al bolii în neoplasmul de sân incipient

Noile achiziții în studiul neoplasmului de sân, bazate pe mai multe studii retrospective și prospective, au dus, în ultimile decenii, la posibilitatea tratamentului conservator pentru cancerul de sân (breast conserving therapy - BCT) din stadii incipiente. Incepând din 1996, o singură echipă chirurgicală, pe lângă altele, din Institutul Oncologic Bucuresti, a practicat BCT la 497 paciente din totalul de 2256 bolnave cu neoplasm de sân tratate. Protocolul de lucru a constat în excizia tumorii în limite de siguranță-examen histopatologic intraoperator, recupe de pe toti peretii cavitatii restante, cu examen histopatologic intraoperator, limfadenectomie axilara, urmată obligatoriu de iradierea întregului san, cu sau fără tratament adjuvant sistemic sau hormonal. Am avut 38 de paciente care au dezvoltat o recidivă locală, din care 14 în primii 5 ani. În acest articol arătăm rezultatele obtinute prin BCT, ca suport în favoarea acestui mod de tratament adecvat pacientelor cu neoplasm al sânului în stadiile incipiente, cu rezultate estetice net superioare mastectomiei.

Cuvinte cheie: neoplasm de sân, tratament conservator, rezultat estetic

Abstract

New acquisitions in the study of breast cancer, based on several retrospective and prospective studies, have led over the past decades to the possibility of applying conserving methods of treatment for breast cancer (breast conserving therapy - BCT) in incipient stages. Starting with 1996, a single surgical team, among others at the Bucharest Oncology Institute, performed BCT in 497 patients out of the total 2,256 cases of breast cancer treated. Work protocol consisted of tumour excision with safety margins, intraoperative histology exam, samples from all the walls of the remaining cavity, with intraoperative histology exam, axillary lymphadenectomy, followed by mandatory irradiation of the entire breast, associated or not with systemic or hormonal adjuvant treatment. 38 patients developed local disease recurrences, 14 of which in the first 5 years. In this paper we present the results obtained through BCT, as a means of supporting this type of treatment adequate for patients with initial stage breast cancer, with cosmetic results visibly superior to those of mastectomy.

Key words: breast cancer, conserving treatment, cosmetic result

Introduction

Breast cancer, the most frequent neoplastic disease in women, represents a major health issue, having an incidence in the European Union of 109.8/100000 women per year and a mortality rate of 23.8% (1). The same situation can be found in Romania as well. At the end of the 19th century and for themost part of the 20th century treatment for breast cancer consisted of either broad excision of the lesion, or simple

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mastectomy. Local recurrence was extremely frequent, and survival very low.

The initial period was characterized by excessively radical surgery, based on the Halsted theory (2), according to whom cancer starts off as a local affliction, that extends directly, progressively and via the lymphatic pathways, but after having understood the biology of breast neoplastic disease, thanks to the studies of Bernard Fisher (3,4,5) and Umberto Veronesi (6), a new concept was embraced, that of conserving surgery (Breast Conserving Surgery - BCS). This implies excising the tumour, together with peritumoral tissues, up to the point of areas free of tumour invasion and axillary lymphadenectomy (7). At first controversial, this concept was applied in initial stages, but after analysing the results of numerous published studies it was extended to more advanced stages as well, in the context of complex breast cancer treatment associated with chemoradiotherapy. Thus, BCS has become the elective treatment for initial stage breast cancer (TNM stages I, II); this includes surgical excision of the tumoral mass with axillary lymphadenectomy, followed by mandatory radiotherapy (8,9,10,11), with chemo- and hormone therapy adding to the treatment plan according to indications; thus, the Halsted thesis has been replaced by a new model (12,13,14).

In this paper we are attempting to present the history, indications, contraindications, results and issues related to conserving treatment in breast cancer.

Several randomized studies, involving over 4,000 patients, spanning over 3 decades, have shown that BCS has similar results to mastectomy, in cases where it is indicated (15,16,17,18,19) (*Table 1*).

The aims of BCS are to offer a survival equivalent to mastectomy, a low local recurrence rate and an acceptable cosmetic aspect of the breast after treatment.

When discussing therapeutic options with patients, most require mastectomy in order to avoid, in general, the risks of disease progression; few can make a distinction between local recurrence and generalized disease. But mastectomy does not guarantee lack of local recurrence. The rate of local recurrence is indeed higher in BCS compared tomastectomy, but long-term survival is however the same (20).

The most important argument offered by opponents of conserving surgical treatment is that the risk of local recurrence is higher than in the case of mastectomies, but the association of radiotherapy, in the context of multimodal oncological treatment, brings significant improvement of the results, finally obtaining similar recurrence rates. Several retrospective studies have proved that local recurrence, in patients with association of BCS and irradiation is similar to that in the case of mastectomy (21,22,23,24,25) (*Table 2*).

Irradiation of the breast, after BCS, reduces the risk of local recurrence, metastases and mortality rate. EBCTCG meta-analysis (Early Breast Cancer Trialists Collaborative Group) of 9,000 patients with CBS compares the mortality due to breast cancer, which was reduced from 26% to 23% in patients with no lymph node invasion, and from 51% to 43%, in cases with positive lymph nodes (26,27,28,29). These studies have proved that post-BCS irradiation leads to disease cure in over 70% of patients with positive margins. Additionally, they have shown that local recurrence is a marker for metastases development risk, but is not and

Table 1.

TRIAL	No. patients	Maximum T size (cm)	Operation	Follow-up (years)	Survival		Local recurrence	
					5 years	10 years	5 years	10 years
NSABP B-06	1219	4	Lumpectomy	12	61%	60%	7.7%	12%
Milan I	701	2	Quadrantectomy	3-5	65%	65%	2%	4%
NCI	237	5	Wide sector	2-5	73%	75%	12%	20%
EORTC	874	5	Margin 1 cm	10	66%	65%	13%	20%
Inst. Gustav Roussy	179	2	Margin 2 cm	10	80%	80%	5%	7%

Legend: NSABP – National Surgical Adjuvant Breast and Bowel Project, NCI – National Cancer Institute, EORTC - European Organisation for Research and Treatment of Cancer

Table 2.

STUDY	No. patients	Operation	RT DT	boost	Local recurrence	
					5 years	10 years
Barr	411	Tumour excision	4600	yes	9	20
Calle	324	Tumour excision	5000	yes	8	
Clark	526	Tumour excision	4000	yes	8	16
Kurtz	1,593	Tumour excision	5000-6000	yes	7	4
Vicini	1,396	Tumour excision	4500-5000	yes	9	6

individual factor responsible for their occurrence (30). Some analyses have focused on the evolution of patients who did not undergo radiotherapy after BCS, but only chemo- or hormone therapy, the conclusion being that radiotherapy can be omitted without increasing the risk of local recurrence only in patients at very advanced ages (31). Radiotherapy destroys the microscopic cancer foci which can remain postoperatively; its effects have no influence over the risk of cancer in the future, so that the risk of developing a second breast cancer at the level of the treated breast is identical to the risk attributedto the contralateral breast. Randomized trials demonstrated that even in cases in which local recurrence rate is higher (lumpectomy without RT) survival remains the same (30).

Even if there are no major differences in terms of overall survival, patients with local recurrenceafter BCS have a poorer prognosis. This can be explained by the fact that local recurrence reflects the tumour's tendency to develop metastases, whichcan bemorelikely connected to tumour aggression rather than local recurrence. (32)

Progress made in the field of adjuvant treatment has led to a therapeutic strategy, which is composed depending on tumour sensitivity to hormone treatmentand recurrence risk, having to choose between chemo-, hormone therapy, monoclonal antibodies (transtuzumab) or combinations of the prior. (33).

Indications for conserving surgical treatment:
- T1,T2 < 4 cm, N0, N1, M0, so stages I, II;
- T2 > 4 cm in case of large breasts;
- Clinically and mammographic single tumour.

Absolute contraindications of conserving surgery are:
- impossibility of obtaining free margins after several tries (re-sampling with extemporaneous histology exam), due to infiltrative forms;
- presence of two or more tumours in different quadrants, or diffuse microcalcifications with malignant features, extensive DCIS;
- tumour infiltrating the skin (permeation nodules);
- priorirradiation of the region (according to personal history), with a dose that added to the 50 Gy dose necessary for postoperative radiotherapy would lead to a total of > 70 Gy;
- first months of pregnancy, as irradiation is strictly forbidden;
- carcinomatous mastitis;
- tumours larger than 5 cm, before neoadjuvant therapy;
- presence of a collagenosis, like scleroderma or erythematous lupus, due to post-irradiation fibrosis;
- women < 35 years old in premenopausal period, known to be BRCA1/2 mutation carriers;
- the patient's wish (28).

Relative contraindications:
- presence of multiple tumours, but all in the same quadrant;
- microcalcifications with uncertain significance;
- localization in the central quadrant, requiring resection of the areola-nipple complex;
- cosmeticresult compromised by the volume of the excised piece; this inconvenience can be overcome through good collaboration with the oncoplastician surgeon;
- large breast, with ptosis, in which classic irradiation does not guarantee homogeneity of the dose (28).

The following do not represent contraindications of conserving surgery:
- bilateral breast cancer;
- retractions of the skin, nipple or areola;
- palpable axillary lymphadenopathies, with or without metastasis confirmation;
- increased risk of metastases at a distance or presence of such;
- family breast cancer history with no confirmation of BRCA1/2 mutation (28,34).

Material and Methods

The present paper presents the results of a study conducted on a group of patients operated on by the same surgical team, between 1996-2012 at the Bucharest Oncology Institute, following a protocol developed at Krankenhaus Gerresheim Dusseldorf, Germany (35). This work protocol consists in organ conserving surgery (wide resection of the tumour within oncological safety margins) and axillary lymphadenectomy (or determining the sentinel lymph node), followed by mandatory radiotherapy. The surgical steps are tumour excision, together with approximately 1 cm of peritumoral tissues, with intraoperative histology exam to confirm malignancy, samples from the tumour subjacent layer, also with intraoperative histology exam to determine any microscopic invasion and resampling from areas with possible presence of carcinomatous infiltration (36,37,38,39,40,41) followed by axillary lymphadenectomy of I and II Berg groups (for a correct staging of the axillary region at least 10 lymph nodes need to be examined) (42,43,44,45,46).

Tumorectomy is considered the initial surgical approach, appropriate for patients that are to benefit from conserving surgery. Important surgical factors, in order to obtain the best oncological and cosmetic results, are tumour size and localization, breast /tumour volume ratio, incision length, adequate excision of the tumour, margin evaluation, conduct with regards to the remaining cavity and to axillary evaluation (36,37).

At present, wide excision is accepted as elective treatment in tumours of the breast under 2.4 cm in diameter (47). Intraoperative histopathology exam is crucial, as the pathologist determines possible multifocality and presence of free margins (no tumour process present). Afterwards, samples are taken from the remaining cavity walls; an inadequate margin or one with tumour invasion requires re-excision with new histology exam, until healthy tissues are determined (39,40,41,48,49).

The axillary lymph nodes are the main collectors of the breast, receiving lymph fluid from all quadrants. Axillary lymph node involvement remains the most important prognostic factorin cases of breast cancer, and survival is dramatically influenced by the presence of lymphatic metastases. A patient with T1N0 tumour has a 5-year survival rate

of at least 96%, compared to one with invasion in 1-3 lymph nodes, whose survival is under 86% (43,50). The rate of positive lymph nodes depending on the diameter of the tumour is up to 15%, for tumours under 1 cm (T1b), 33% for T1c and over 45% for tumours larger than 2 cm (T2). Despite the theory according to which breast cancer is a systemic disease from the very moment of its clinical detection, there is strong proof that indicates that a local control of the disease, including axillary lymphadenectomy, influences survival (18,45,46).

The tendency towards a less aggressive surgical therapy ("less is more") has also extended to the attitude towards the axilla, so that recently a shift has been made from extended lymphadenectomy included in the Halsted operation, to two stations and, even more recent, to sentinel lymph node biopsy technique. Irrespective of the technique employed, complete axillary lymphadenectomy or sentinel node biopsy, lymph node evaluation is recommended in cases of initial stage breast cancer, with conserving surgery indication. For clinically suspicious axillary lymphadenopathies and for those after preoperative chemotherapy, axillary lymphadenectomy is mandatory. The conclusion of protocol is that, although lymph nodes remain a prognosis standpoint, they represent an aspect of metastatic dissemination, but metastases occur through simultaneous blood and lymphatic dissemination, and there is no optimum moment for performing lymphadenectomy in order for it to prevent metastases.

During the last decades,in centres with adequate infrastructure, the technique for detecting the sentinel node, with intraoperative histology exam and completion of lymphadenectomy in case of lymph node involvement can be used. This concept is based on the fact that the sentinel node is the first node through which lymph drained from the tumour passes and, therefore, it could be the first one invaded by tumour cells. Metastasis presence in sentinel nodes requires lymphadenectomy to be performed (34,42,51,52,53). Absence of metastases eliminates the necessity of lymphadenectomy.

Postoperative complications

Immediate postoperative complications included: bleeding from the surgical lesion, with hematoma development, requiring reinterventionin 7 cases (1.4%), with clot evacuation and haemostasis completion. In 16 cases (3.2%) suprainfection of the surgical wound occurred in the first 2 weeks postoperatively, one case requiring surgical reexploration, with resection of a necrotized circular skin region, all the other cases responding to antibiotic treatment.

Among late complications, the most specific to conservatory surgery is breast oedema. This develops in the first postoperative weeks, in various degrees, with extreme manifestation after radiotherapy and reduction of the breast volume after at least one year post-irradiation. Small volume oedema was observed in 261 patients, but unfortunately it is discrete and masked by the volume of excised tissue. Medium-sized oedema was recorded in 58 patients, and in 28 cases severe oedema was registered, with enlargement of the breast volume, oedema of the skin with "orange skin" aspect in 6 cases. All these patients were investigated by ultrasound, mammography and MRI; in 11 of these we performed a puncture of the hard regions, with negative result, and in 5 patients with nodular oedema we performed surgical excisions, also negative. Without being able to state a rule, we observed that oedema appears more frequently in obese patients with macromastia, and after radial incisions. The cause of occurrence of this complication seems to be due to interception of the lymph vessels on their trajectory towards the axilla and due to the extension of the lymphadenectomy performed. Aggravation of the oedema, once radiotherapy is initiated, is in our opinion due to local inflammatory phenomena caused by high energies.

Another complication, additionally encountered after mastectomy as well, is oedema of the arm. This complication developed in 53 patients, in various degrees, 7 presenting very severe forms. Oedema occurrence was more frequent in patients with positive lymph nodes, who did not respect the recommendation to avoid physical efforts or who suffered trauma at this level, the oedema being preceded in these cases by an erysipelas. Treatment of this complication is difficult and with mediocre results.

Adjuvant therapy

After surgical cure, irradiation of the entire breast was associated in all cases with a boost on the tumour bed, especially in young patients. Exceptionally, for patients unable to be submitted to radiotherapy, the treatment can be completed by hormone therapy. Postoperative irradiation, after BCS, reduces local recurrence by over 70% and increases survival by over 5%. Association with adjuvant systemic treatment, before radiotherapy, has been proven to reduce the risk of metastases at a distance, associated or not with hormone therapy (28,33,48,49,54,55), depending on the immunochemistry.

Breast irradiation after conserving surgery is mandatory. This is performed at high energy, through 2 tangential fields, after virtual simulation CT so that the dose administered be homogenous, with minimum involvement of the organs at risk (heart, lung). Standard dosage is 50 Gy TD, 2Gy a fraction, 5 days a week, for 5 weeks. After this dose,irradiation is supplemented by 10-18 Gy at the levelofthe tumour bed (the resection cavity and 2 cm of safety margin). In well-equipped centres, intraoperative irradiation of the tumour bed can be performed (43,48,49,55).

Adjuvant systemic treatment is applied depending on:

1. Tumour sensitivity to hormone treatment
2. Recurrence risk categories:
   - low risk–age <35 years, pT<1.5 cm, G1, ER+, PgR+, HER 2 negative, no peritumoral angiolymphatic invasion;
   - medium risk - pN0, age >35 years, pT>2 cm, G2/3, ER-, PgR-, HER2 positive, peritumoral angiolymphatic invasion or pN1, ER+, PgR+, HER2 negative;

- high risk - pN1, HER positive or pN1, ER-, PgR- or pN2 or pN3. (56,57,58,59)

Indication for adjuvant treatment, depending on HER2 status and endocrine receptors, is described in *Table 3* (T - Trastuzumab). (60,61,62)

Indication for adjuvant treatment, depending on the risk category (*Table 4*).

Adjuvant chemotherapy leads to a decrease in recurrence and death risk,being indicated in patients at high and medium risk.

Adjuvant hormone therapy is recommended in patients with positive ER and PgR, irrespective of age, lymph node invasion with or without adjuvant chemotherapy. (60,61,62)

Results

Between 1996-2012 we performed conserving surgical treatment in 497 patients out of a total of 2,256 patients with breast cancer, all treated by the same surgical team at the Bucharest Oncology Institute.

TNM staging was the main parameter used for case selection (*Fig. 1*): 134 were stage I (26.96%), 327 stage II (65.78%) and 36 stage III (7.24%).

In terms of T the study group is non-homogenous, approximately 65% of patients presenting with T2 tumours (*Fig. 2*). In descending order these are followed by T1c, T3 and T1b.

The great majority of patients treated did not present palpable lymphadenopathies at the time of examination (N0) – 343, representing approximately 70% (*Fig. 3*). N1 was encountered in 136 cases, N2 in 17, anda single patient presenting with N3.

In terms of tumour localization within the breast, 328 were at the level of the SE quadrant (66%), 82 at the level of the SI quadrant (16.5%), IE 44 (8.85%), II 25 (5%), and CC 18 (3.6%).

The surgical interventions performed were mostly limited resections, operation chosen in 421 cases (84.7%). Quadrantectomies (13, representing 2.6%) and hemimastectomies, in 63 cases (12.67%) were also performed.

Axillary lymph node status evaluation was performed in each case and varied from identifying and excising the sentinel node (11 cases), inferior axillary lymphadenectomy (32 cases), I and II Berg stations (407 cases), to complete axillary lymphodissection (stages I-IV, 47 cases).

In terms of histopathology types, invasive ductal carcinoma was encountered in approximately 70% of cases. Mucinous, cribriform, medullary, invasive lobular carcinoma, in that order, were also recorded (*Table 5*).

With regards to number of lymph nodes invaded in the study group, there were pN0 - 303 cases; pN1(<4 nodes) - 139; pN2 (>4 nodes) - 55.

In terms of differentiation grade we encountered G1 in 77 cases (15.5%), G2 in 291 cases (58.55%); G3 – 129 (26%).

The study, by immune-histo-chemistry, of intraoperative samples revealed a relatively homogenous stratification from the perspective of HER status, 201 being HER+, and 296

Table 3.

HER 2	ER, PgR positive	ER, PgR negative
Negative	HT + CHT	CHT
Positive	HT + CHT +T	T + CHT

Table 4.

Risk category	Endocrine responsive	Uncertain	Endocrine non-responsive
Low	HT	HT	
Medium	HT+CHT	CHT+HT	CHT
High	CHT+HT	CHT+HT	CHT

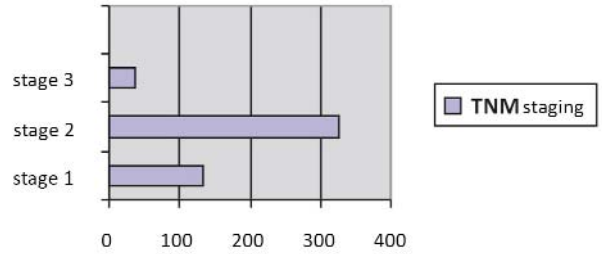

Figure 1. *Distribution of treated cases, according to TNM staging*

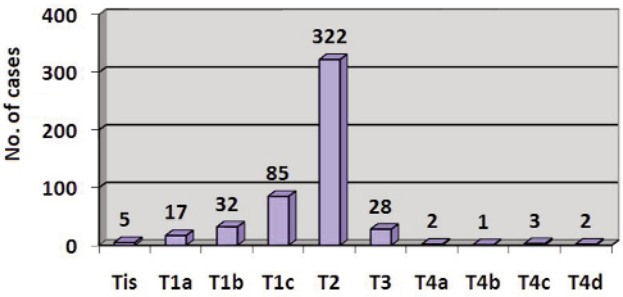

Figure 2. *Distribution of cases according to T*

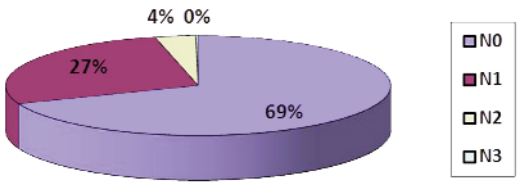

Figure 3. *Distribution according to N*

Table 5.

IHC	<35 years	35-50	>50 years
RE	106	140	251
RP	97	157	243

HER-. In *Table 5* the distribution of cases based on presence of oestrogen and progesterone receptorscan be observed.

Hospitalization period was in approximately 75% of cases under 3 days. A period of up to 5 days was encountered in 103 cases (20.7%), and over 5 days in only 5 patients.

Immediate postoperative mortality was 0. Follow-up was possible in 405 patients up to 5 years, in 373 to 10 years and in 216 to 15 years. Death due to disease progression was recorded in 61 patients.

Table 6.

Diameter (cm)	Recurrence (%)
0-1 cm	21%
1.1-2 cm	8%
2.1-3 cm	13%
3.1-4 cm	17%
4.1-5 cm	4%

Tumour recurrence

Patient follow-up was done on a trimester basis in the first 2 years, every 6 months over the following 3 years, and then annually. During the entire follow-up period clinical exam was completed by ultrasound every 6 months, annual mammography and in case of detection of dubious areas, an MRI of the breast is recommended, together with CT (head, thorax, abdomen, pelvis), bone scintigraphy, CA 15-3, puncture-biopsy with histopathology exam and even lesion excision.

If in terms of survival there are no differences between mastectomy and BCS, local tumour recurrence is more frequent in thecase of conserving surgery. Any lesions developed in the vicinity of the postoperative scar is considered a local recurrence (49). Locoregional failure is a poor prognosis factor, almost half of patients dying as a result of the neoplastic disease. Local recurrence is not responsible for the development of metastases, but recurrence development precedes the latters in most occasions.

Risk factors for local recurrence are: age under 35 years old (associated with a higher frequency of local recurrences after BCS, but also with a more reduced survival, in the same manner as mastectomies), BRCA1 and 2 mutations (recurrence risk is high, but patients are also at risk of developing a new cancer).

Local recurrence depending on tumour diameter (*Table 6*) (63).

Other factors influencing the risk of local recurrence are: tumour size over 5 cm (even in the case of patients submitted to preoperative chemotherapy) (*Table 6*), multicentricity (reason for which this is one of the indications for conserving surgery), extensive intraductal component, margin status (if limits of minimum 2 mm of healthy tissue are not respected) (*Table 7*) (64), lack of postoperative radiotherapy (*Table 8*) (65), tumour differentiation grade, presence of metastases in the axillary lymph nodes, type of surgical intervention (tumorectomy presents a higher risk of recurrence than quadrantectomy, but irradiation and chemotherapy erase this difference). Thus, conserving surgery, in the absence of post-operative radiotherapy, is submitted to a higher risk of local recurrence; chemotherapy decreases the risk of metastasis development as in the case of mastectomies and, to some extent, delays the development of local recurrence (54).

Factors known to be associated with local control after conserving treatment are presented in *Table 9* (55).

In the study lot there were 38 patients (7.64%) who developed local recurrence, out of which 14 in the first 5 years, 19 in the first ten years and 5 patients in up to 15 years. This complication was recorded in 27 patients (5.43%) who, for various reasons, were not submitted to radiotherapy, the remaining 11 completing the radiotherapy cycle. Regarding tumour size, recurrence occurred in 5patientswith T1, 12 patients with T2 and 21 with T3. TNMstage distribution was: 9 patients stage I or II and 29 patients stage III. In terms of histologic type: invasive ductal carcinoma in 27 patients, medullary carcinoma in 9 patients and 2 presenting with invasive lobular carcinoma. One shouldmention that in 28 patients included into the study group histopathologic type

Table 7.

Study	No. of patients	Follow-up (years)	LR in pac. with neg. margins (%)	LR in pac. with no safety margin (%)	LR in pac. with positive margins (%)
Borger	1,206	5	2	6	16
Dewar	757	10	6	-	14
Freedman	1,262	5/10	4/7	7/14	5/12
Park	340	8	7	7	14/27
Anscher	259	5	2	-	10
Smitt	289	10	2	16	0/9
Peterson	1,021	8	8	17	10
Wazer	498	12	5	9	17
Pittinger	211	5	3	2.9	25
Cowen	152	5	-	-	20
Obedian + Haffty	984	10	2	2	18
Vicini	607	12	9	6	18/24

Legend: LR –local recurrence

Table 8. *(EBCTCG study - Early Breast Cancer Trialists' Collaborative Group) (69)*

Recurrence	**BCS**	**BCS + RT**
Ggl (-)	29.2	10.1
Ggl (+)	46.5	13.1
Mortality	**BCS**	**BCS + RT**
Ggl (-)	31.2	26.1
Ggl (+)	55	47.9

wasof medullary carcinoma, 9 of these subsequently developing local recurrence (32.15%, compared to the general percentage of local recurrence in the group, 7.64%!!!). Axillary lymphadenopathy with metastases was recorded in 14 patients with less than 3 lymph nodes invaded, 24 presented more than 3 nodes with metastases and/or capsular effraction, and only one patient had no lymph node invasion.

Reintervention was performed in all these cases, with recurrence excision, histopathology exam and subsequent radical mastectomy adjusted for completion in 28 patients; 10 patients refused mastectomy, remaining under observation and benefiting from irradiation, 4 of these ultimately developing a second recurrence in the following years. All patients were submitted to a new plan of chemo- and hormone therapy, the latter depending on hormone receptor status.

In this study lot developing local recurrence, 30 patients presented secondary lesions and unfavourable evolution, despite treatment.

Unfavourable disease evolution, in the entire lot of 497 patients, which led to death was seen in 61 patients (12.3%), out of which more than half had presented with local recurrence.

Discussions

Conserving surgery was one of the most important progresses made in the treatment of breast cancer. The beginnings of this concept were seen over 30 years ago, as an alternative to radical interventions. At the basis of the first studies on conserving treatment for breast neoplastic disease stood 3 aspects: failure of surgical and radiotherapies in advanced stages; high-quality diagnostic methods, allowing for the discovery of initial stage lesions; understanding of breast cancer biology, showing that prognosis is in connection with presence or absence of occult metastases and less with locoregional treatment. The aim of locoregioanltreatment in breast cancer is to obtain long-term control of the disease, with minimum morbidity. Patients presenting with small tumours and those discovered through screening are candidates to BCS.

The major advantages of conserving surgery are represented by net superior cosmetic appearance, anxiety and postoperative depression reduction. (28,66)

Conserving surgery implies tumour excision, within oncological safety margins, axillary lymphadenectomy and radiotherapy for the remnant tissue, with similar results on the long run from a survival point of view with mastectomy, but with clearly superior cosmetic result and a more enthusiastic acceptance from many patients. (67)

Long-term follow-up results have demonstrated the efficacy and safety of conserving breast treatment, consisting in BCS, with tumour excision with free margins (confirmed by intraoperative histology exam), axillary lymphadenectomy and then irradiation of the entire breast.

The major factor influencing the rate of local recurrence in BCT is complete tumour excision and obtaining free margins.

In lack of irradiation, notwithstanding the cause, the risk of local recurrence is greater. Conserving surgery, together with hormone treatment, is an option for patients at a very advanced age, with positive receptor status and no lymph node invasion.

Irradiation after conserving surgical treatment reduces by over 70% the risk of local recurrence and increases life expectancy. After whole-breast irradiation, a "boost" dose on the tumour bed is recommended. Absolute and relative contraindications of BCT must be taken into account.

It is still unclear whether free margin size must be greater than 2 mm, determining reexcision requirement. Other factors that must be taken into account are patient's age, tumour immunotype, tumour size and use of preoperative chemotherapy, but these shouldn't exclude BCT.

Adjuvant systemic treatment leads to decrease of the risk for metastasis at a distance and local recurrence, when

Table 9.

Recurrence risk	**Patient**	**Disease**	**Treatment**
High – indication for mastectomy	Pregnancy, scleroderma, active SLE or other situations contraindicating irradiation	Diffuse microcalcifications, multicentric disease, inflammatory form of breast cancer	No irradiation; impossibility to obtain negative margins
Intermediary-conserving intervention – acceptable	BRCA ½ mutation, age under 35 years old	High Oncotype Dx score, unfavourable molecular expression profile, metaplastic histology	Systemic therapy success, impossibility to perform "boost" irradiation of the tumour bed, margin under 2 mm or focal positive margin.
Low – does not influence the decision of BCS	Ethnicity of the patient, family history	Lobular histologic type, nuclear grading, oestrogen/ progesterone receptor status, HER2/new status.	

associated with radiotherapy.

If a patient submitted to conserving surgical treatment also requires systemic adjuvant treatment, irradiation will-follow chemotherapy, and hormone therapy will be last.

The first criterion for choosing BCT, in cases that have indication for it, is the patient's wish, followed by obtaining a satisfying cosmetic result.

The most important factor influencing the cosmetic result is the ratio of tumour/breast volume, removal of more than 10% of breast volume usually being associated withpoor results. In these cases collaboration with the oncoplastician doctor is recommended.

Satisfying cosmetic result (see pictures) leads to fewer psychological effects, associating less anxietyand depression, with good self-esteem.

Conclusions

Limited breast reduction in breast cancer is an alternative to mastectomy in stages I and II, obtaining similar survival rates, but with better cosmetic results and superior psychological comfort.

Conserving surgery in malignant breast tumours is defined as breast tumour excision, together with free peritumoral tissues, associating mandatory lymph node status evaluation, thus obtaining data regarding the prognosis factors, which will determine the following stages of the multimodal oncological treatment.

An important factor, thatconserving surgery indication is dependant on, is the tumour/breast volume ratio.

All patients will be submitted to postoperative radiotherapy, and depending on the prognostic factors to chemo- and/or hormone therapy.

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