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Posted Date: 9 April 2026

doi: 10.20944/preprints202604.0576.v1

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 doi:10.20944/preprints202604.0576.v1



*Article*

# Clinicopathological and Diagnostic Determinants of Surgical Approach in Breast Cancer: A Retrospective Comparative Study of Breast-Conserving Surgery Versus Modified Radical Mastectomy from A Tertiary Center

**Florin Bobirca [1,2], Dan Dumitrescu [1,2], Florentina Gherghiceanu [5], Anca Bobirca [3,4,*], Octavian Mihalache [1,2,*], Cristina Alexandru [3], Dragos Serban [1], Amalia Calinoiu [7], Raluca Boboc [2], Maria Sutu [2], Sabin Botea [2], Bogdan Socea [1,9], Bogdan Mastalier [1,8], Cristian Botezatu [1,8], Laura Bolovaneanu [6], Alberto Dulmagiu [2] and Traian Patrascu [1,2]**

[1] Surgery Department, Carol Davila University of Medicine and Pharmacy, 050474 Bucharest, Romania
[2] Surgery Department, Dr. Ion Cantacuzino Clinical Hospital, 011437 Bucharest, Romania
[3] Internal Medicine and Rheumatology Department, Dr. Ion Cantacuzino Clinical Hospital, 011437 Bucharest, Romania
[4] Internal Medicine and Rheumatology Department, Carol Davila University of Medicine and Pharmacy, 050474 Bucharest, Romania
[5] Marketing and Medical Technology Department, Carol Davila University of Medicine and Pharmacy, 050474 Bucharest, Romania
[6] Department of Infectious Disease, "Victor Babes" Clinical Hospital for Infectious Diseases, 030303 Bucharest, Romania
[7] Internal Medicine Department, "Prof. Dr. Agrippa Ionescu" Clinical Emergency Hospital, 011356 Bucharest, Romania
[8] General Surgery Clinic, "Colentina" Clinical Hospital, 020125 Bucharest, Romania
[9] Department of Surgery, Sf. Pantelimon Clinical Emergency Hospital, 021659 Bucharest, Romania
* Correspondence: anca.bobirca@umfcd.ro (A.B.), octavian.mihalache@umfcd.ro (O.M.); Tel.: +40-726157827 (A.B.), +40-723298893 (O.M.)

## Abstract

**Background/Objectives**: The main objective of the study was to determine the frequency of patients who underwent breast conserving surgery (BCS) and those with modified radical mastectomy and to compare the clinical-paraclinical parameters between these groups. **Methods**: We conducted an observational, retrospective study, which included 101 patients diagnosed with breast cancer that had surgical interventions between January 2024 and April 2025. **Results**: The BCS category was represented by 36.6& cases, while 63.4% were in the mastectomy subgroup. Hemoglobin at the time of admission had an average of 13 g/dL, the difference between the 2 categories of patients being statistically significant. (13.7 vs 12.7, p=0.010). **Conclusions**: Although it has been a hotly debated topic in recent years, the choice of surgical technique for breast tumors still presents novelties and interest in surgical specialties. Selection criteria such as disease stage, histopathological subtype, and the intervention chosen by the surgeon may vary and oncological results may be comparable.

**Keywords:** breast cancer; sentinel lymph node biopsy; mastectomy; general surgery

 doi:10.20944/preprints202604.0576.v1



# 1. Introduction

## *1.1. Epidemiology*

Breast cancer is the most common female malignancy and a major public health challenge, with over 2 million new cases and approximately 670,000 deaths annually worldwide [1]. Recent epidemiological data from Romania place breast cancer in first place among female malignancies (26.8% of all cases), confirming its dominant role in oncological morbidity and justifying the importance of continuous optimization of therapeutic strategies [2]. Recent studies state that tumor stage, molecular subtype and hormone receptors, together with demographic and lifestyle factors, influence mortality in breast cancer, while multimodal treatments (surgery, radiotherapy, chemotherapy and targeted therapies such as trastuzumab) contribute to improving prognosis [1]. Also, advances in molecular pathogenesis and screening techniques such as digital breast tomosynthesis, magnetic resonance imaging, and artificial intelligence-assisted approaches open new perspectives towards the development of personalized therapies and precision preventive strategies [3].

## *1.2. Pathology of Breast Cancer*

The pathogenesis of breast cancer is governed by a complex network of molecular and cellular processes that reflect the heterogeneity of the disease. Genetic abnormalities, together with activation of oncogenic signaling, contribute to uncontrolled proliferation, cell survival, and distant metastasis. At the same time, mitochondrial dysfunction and alterations in energy metabolism, including perturbations of oxidative phosphorylation and production of reactive oxygen species, are implicated in the evolution and aggressiveness of breast tumors [4,5]. Ultimately, these disparities in the tumor microenvironment and the ability of cells to evade immune responses determine both clinical variability between subtypes and different therapeutic responses [3].

## *1.3. Histopahology*

Histopathological diagnosis is the foundation of breast neoplasm classification, allowing the identification and differentiation of subtypes with prognostic and therapeutic relevance [6]. Breast cancer is an epithelial adenocarcinoma that can be initially classified, from a histopathological point of view, into neoplastic lesions in situ and invasive carcinoma, depending on the presence or absence of breast stromal invasion.

Different in situ lesions include:

-ductal carcinoma in situ (DCIS) is characterized by atypical proliferation of epithelial cells located in the ducts without penetration of the basement membrane. DCIS is considered a potential precursor to invasive cancer, and the grade and architectural type may influence the risk of progression.

-Lobular carcinoma in situ (LCIS) is characterized by atypical proliferation limited to the terminal lobules, constituting a risk marker rather than a cancer itself.

In the invasive carcinoma category, the following subtypes predominate:

-invasive ductal carcinoma of nonspecific type (NST), which represents the majority of invasive tumors

-invasive lobular carcinoma, recognized by malignant discohesive cells and characterized by loss of E-cadherin.

In addition to these main entities, there are a large number of special histological types, for example: tubular, mucinous, papillary or metaplastic carcinoma, each with distinct morphological features and specific prognostic implications [7].

Immunohistochemistry (IHC) is an essential method in the characterization of invasive forms of breast cancer. It is based on the identification of the expression of specific proteins on tumor cells by

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the use of labeled antibodies, providing information with prognostic and predictive value [8]. Immunohistochemical markers currently used include:

-estrogen receptor (ER),

-progesterone receptor (PR),

-human epidermal growth factor 2 (HER2)

-Ki-67 index

ER and PR are receptors involved in the regulation of hormone-dependent cell proliferation, and their presence indicates a favorable response to endocrine therapy, therefore, a better prognosis. In contrast, HER2 expression is associated with a more aggressive behavior but offers the option of targeted therapy. An increased Ki-67 index reflects accelerated tumor proliferation and is associated with a poorer prognosis [9,10].

The differential expression of receptors is the basis for the molecular classification of breast cancer into four main subtypes:

1. Luminal A is characterized by ER/PR positive, HER2 negative and low proliferation, being associated with a favorable prognosis.
2. Luminal B maintains positive ER/PR hormonal expression, but exhibits increased proliferation and/or HER2 positivity, having a more aggressive biological behavior.
3. HER2-enriched is defined by overexpression of HER2 in the absence of hormone receptors.
4. Triple-negative is characterized by the lack of ER, PR and HER2 expression, being associated with a more reserved clinical evolution [10].

### *1.4. Evolution of Breast Cancer Surgery*

The evolution of breast cancer surgical treatment illustrates the progressive transition from extensive interventions to de-escalation strategies adapted to tumor biology. At the end of the 19th century, the Halsted radical mastectomy represented the therapeutic standard, involving en bloc excision of the mammary gland, pectoral muscles, and axillary lymph nodes, according to the theory of progressive locoregional dissemination. Although this approach ensured rigorous local control in an era without adjuvant therapies, it was associated with considerable morbidity, including lymphedema and functional deficit of the upper limb [11].

Later, the modified Madden radical mastectomy preserved the pectoral muscles while maintaining axillary dissection, thus reducing morbidity without compromising oncological radicality, becoming for many decades the standard procedure in operable disease, a fact also reflected in current clinical practice, where it remains an option used in selected cases [12].

Advances in the understanding of tumor biology and the results of clinical trials led to the introduction of the sentinel lymph node biopsy technique, which allows the assessment of axillary status by analyzing the first tumor-draining node. (Figures 1 anfd 2) This method significantly reduced the need for complete axillary dissection in patients without clinical nodal involvement, marking a major paradigm shift: from systematic radical surgery to a conservative, individualized and morbidity-reducing approach without compromising oncological safety [12–14].

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**Figure 1.** - Sentinel lymph node identification with ICG.


**Figure 2.** – Axillary sentinel lymph node.

Mastectomy – Breast conserving surgery indications

At present, breast-conserving surgery (BCS) refers to multiple surgical procedures including lumpectomy, quadrantectomy, segmental mastectomy or partial mastectomy. The definition of breast-conserving surgery includes removing cancer or any present abnormal tissue from the breast and a tissue excision with a safe margin while preserving the rest of the breast [15,16].

Quadrantectomy procedure involves an excision of the quadrant in which the tumor is decompressed, including a 2 to 3-cm margin, pectoralis fascia and the overlying skin. Lumpectomy consists of a tissue excision with a 1-cm safe margin [16,17].

The indications for breast-conservative surgery include:

- Early stages of breast cancer;

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- Refusal of mastectomy due to near-disappearance of the tumor after neoadjuvant chemotherapy [18].

Lumpectomy is commonly recommended for DCIS/Tis and T1 and T2 tumors as long as it doesn't imply other contraindications to adjuvant radiation. (Figure 3)

**Figure 3.** – Ex-vivo sentinel lymph node.

Most recent studies have addressed the role of breast conserving surgery referring to neoadjuvant chemotherapy for lesions that are greater than 5 cm. Neoadjuvant chemotherapy is showing comparable rates of overall survival and disease-free survival when comparing to adjuvant breast cancer therapy. Patients with large tumors could be converted for breast conservation therapy [19].

The surgical procedure that is designed to remove all breast tissue is mastectomy. Simple mastectomy refers to the excision of all breast tissue, the nipple-areolar complex and skin.

A simple mastectomy is generally indicated for breast cancer patients where conservation therapy is contraindicated or it is the patient's preference. The indications for simple mastectomy include:

- Multifocal ductal carcinoma in situ
- Invasive breast cancer
- Prior radiation history to the breast or chest wall
- Prophylactic breast removal
- Involvement of the chest wall or skin
- A large tumor relative to breast size, making breast-conserving surgery unfeasible
- Persistent positive margins despite multiple surgical excisions
- Choosing to forego radiation therapy
- Palliative treatment for locally advanced breast cancer
- In the context of treating gender dysphoria [20].

A modified radical mastectomy implies the breast tissue removal with the dissection of axillary lymph nodes for the treatment of specific types of breast cancer with lymph node involvement.

The indications for modified radical mastectomy for breast cancer include:

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- Anaplastic (high-grade) invasive carcinoma
- Clinically positive lymph nodes
- Presence of more than 3 positive sentinel lymph nodes
- Regional recurrence in the axillary lymph nodes
- Contraindications to radiation
- Failure to identify the sentinel lymph node[20].

Postoperative complications

Historically, mastectomy was the primary surgical treatment of choice [21]. Although mastectomy is still an option, breast-conserving therapy (BCS plus radiotherapy) is now recognized as an effective option, achieving comparable long-term survival in carefully chosen patients [22]. Multiple randomized trials and long-term cohort studies have confirmed equivalent overall and disease-free survival outcomes for BCS and mastectomy in early-stage disease [23].

Regarding the complications of these surgical procedures, commonly reported postoperative complications following breast cancer surgery for Ipsilateral Breast Tumor Recurrence (both repeat BCS and mastectomy), are represented by wound infections, hematoma, seroma, fat necrosis, skin flap and breast pain [24]. Severe complications are observed in 5.9% of patients undergoing breast surgery, and according to the GlobalSurg Collaborative, 36.1% of patients experience at least one postoperative complication. Most of the studies suggest that postoperative complications appear to be more frequent after mastectomy than after BCS [25].

Postoperative complications associated with breast surgery without reconstruction include infection, bleeding and seroma formation. These rates are low, ranging from 2% to 50%. They are more common when the procedure is performed in conjunction with axillary surgery and immediate breast reconstruction. Complications depend on multiple factors and risks: preoperative planning, use of prophylactic treatment, mitigation of patient-related risk factors and the surgical technique. Sentinel lymph node biopsy (SLNB) and axillary lymph node dissection (ALND) represent the two primary surgical approaches for axillary staging and management [26]. Postoperative complications associated with these procedures include seroma formation, infection, lymphedema, nerve injury, and morbidity affecting the shoulder and arm [27].

The main objective of the study was to determine the frequency of patients who underwent breast conserving surgery (BCS) and those with modified radical mastectomy and to compare the clinical-paraclinical parameters between these groups.

## 2. Materials and Methods

We conducted an observational, retrospective study, which included 101 patients diagnosed with breast cancer and were hospitalized for breast surgery in the Surgery Clinic of the Dr. I. Cantacuzino Clinical Hospital in Bucharest. The interval period in which patients was between January 2024 and April 2025.

Among the inclusion criteria we note: age over 18 years, histopathological diagnosis of a subtype of breast cancer, breast conserving surgery or radical (modified radical mastectomy). Depending on the surgery, the cohort was divided into two subgroups: BCS group and radical surgery group.

The exclusion criteria were: patients with distant metastases (M1), age under 18 years, patients with a performance status index that contraindicates general anesthesia.

Statistical analysis was performed using IBM SPSS Statistics 25 and Microsoft Office Excel/Word 2025. Quantitative variables were tested for distribution using the Shapiro-Wilk test and were expressed as means with standard deviations (or medians with interpercentile intervals, depending on the distribution) and categorical variables were expressed as absolute values or percentages (being compared between groups using the Fisher's Exact Test).

Quantitative variables with normal distribution were compared between study groups using the Student test (based on the equality of variances observed by the Levene test) and quantitative variables with non-parametric distribution were compared between study groups using the Mann-Whitney U test.

 doi:10.20944/preprints202604.0576.v1



The statistical significance threshold used in this study was $\alpha = 0.05$

It should be noted that all patients gave their consent for data processing after signing the informed consent and the approval of the ethics committee was obtained for the publication of the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of 5173 on 20th March 2026.

## 3. Results

A total of 101 patients were included; the general characteristics of the patients were analyzed in Table 1. The proportion of patients with BCS was 36.6% (N=37) while with radical surgery was 63.4% (N=64). The median age was higher in the conservatively treated group compared to the radical one (65 vs. 62.5 years), statistically insignificant difference (p=0.649)

The predominant environment of origin was the urban one (60.4% of cases), an aspect emphasized by both categories of patients. (67.6% vs. 56.3%). Also, regarding the gender of the patients, a single male case was described in the conservatively treated group, the rest of the group being female. (100 cases, 99%, p=0.366)

Another aspect taken into account was that of the histopathological exam. In both subgroups, the most common was that of invasive breast carcinoma of no special type, representing a total of 51.4% of cases, with subcategories 52.9% vs. 50.9% (conservative vs. radical), followed by invasive ductal carcinoma with 27.8% of cases (35.3% vs. 25.5%), invasive lobular carcinoma 15.3% of cases (5.9% vs. 18.2%), and invasive mucinous carcinoma 5.6% of cases. (5.9% vs. 5.5%) The laterality of the tumors revealed that they were distributed in equal proportions (49.4% vs. 50.6%), with a slight predominance on the left side in those treated conservatively (54.5% vs. 45.5%).

**Table 1.**

| Parameter | Total | Conservative | Radical | p |
|---|---|---|---|---|
| **N, %** | 101 (100%) | 37 (36.6%) | 64 (63.4%) | - |
| **Age (Median (IQR))** | 63 (54.5-69) | 65 (54.5-68) | 62.5 (54.25-70 | 0.649* |
| **Environment (Urban) (No., %)** | 61 (60.4)% | 25 (67.6%) | 36 (56.3%) | 0.297** |
| **Sex (Female) (No., %)** | 100 (99%) | 36 (97.3%) | 64 (100%) | 0.366** |
| **Length of hospitalization (Median (IQR))** | 6 (4-9) | 4 (2-6) | 7 (5-10) | **<0.001*** |
| **Diagnosis (No., %) (N=72)** | | | | |
| **Invasive ductal carcinoma** | 20 (27.8%) | 6 (35.3%) | 14 (25.5%) | 0.648** |
| **Invasive lobular carcinoma** | 11 (15.3%) | 1 (5.9%) | 10 (18.2%) | |
| **Invasive carcinoma NST** | 37 (51.4%) | 9 (52.9%) | 28 (50.9%) | |
| **Invasive mucinous carcinoma** | 4 (5.6%) | 1 (5.9%) | 3 (5.5%) | |
| **Laterality (No., %) (N=87)** | | | | |
| **Right** | 43 (49.4%) | 15 (45.5%) | 28 (51.9%) | 0.660** |
| **Left** | 44 (50.6%) | 18 (54.5%) | 26 (48.1%) | |

Table 2 presents the medical history and comorbidities of the examined patients. Previous breast surgery was present in 14 cases, 7 in each subgroup. (p=0.370) The most common cardiovascular diseases were represented by hypertension in 56.4% of cases (59.5% vs. 54.7%), followed by atrial fibrillation in 5.9% of cases, stroke in 5% of cases, respectively ischemic cardiomyopathy with 4% of cases. Among the metabolic disorders, type II Diabetes Mellitus was noted, present in 11.9% of cases. (8.1% vs. 14.1%, p=0.528)

 doi:10.20944/preprints202604.0576.v1



**Table 2.**

| Comorbidities (No., %) | Total | Conservative | Radical | *p* |
|---|---|---|---|---|
| **Hypertension** | 57 (56.4%) | 22 (59.5%) | 35 (54.7%) | 0.681** |
| **Diabetes mellitus** | 12 (11.9% | 3 (8.1%) | 9 (14.1%) | 0.528** |
| **Obesity** | 19 (18.8%) | 7 (18.9%) | 12 (18.8%) | 1.000** |
| **Atrial fibrillation** | 6 (5.9%) | 2 (5.4%) | 4 (6.3%) | 1.000** |
| **Stroke** | 5 (5%) | 3 (8.1%) | 2 (3.1%) | 0.353** |
| **Ischemic heart disease** | 4 (4%) | 0 (0%) | 4 (6.3%) | 0.294** |
| **Previous Neoplasia** | 15 (14.9%) | 8 (21.6%) | 7 (10.9%) | 0.159** |
| **Surgical interventions** | 51 (51.5%) | 18 (50%) | 33 (52.4%) | 0.837** |
| **Breast surgery** | 14 (13.9%) | 7 (18.9%) | 7 (10.9%) | 0.370** |

Table 3 highlights both the particularities related to laboratory tests and imaging exams. Hemoglobin at the time of admission had an average of 13 g/dL, the difference between the 2 categories of patients being statistically significant. (13.7 vs 12.7, p=0.010) Also, the level of tumor marker specific to breast tumors CA 15-3 is lower in patients treated conservatively than in those with radical treatment. (15.3 vs. 20.8, p=0.085)

**Table 3.**

| Laboratory parameter (Median (IQR) | Total | Conservative | Radical | *p* |
|---|---|---|---|---|
| **Hemoglobin** | 13 (12.3-14.1) | 13.7 (12.6-14.2) | 12.7 (12.1-13.5) | **0.010*** |
| **Leukocytes** | 7.3 (5.8-9.05) | 7.58 (6-8.9) | 6.73 (5.7-9.1) | 0.343* |
| **Platelets (Mean ± SD)** | 262.4 ± 68.5 | 267.6 ± 69.3 | 259.4 ± 68.5 | 0.565*** |
| **INR** | 1.05 (1.01-1.09) | 1.06 (1-1.09) | 1.05 (1.01-1.09) | 0.933* |
| **CA 15-3** | 18.4 (13.3-27.5) | 15.3 (11.1-29.1) | 20.8 (16-27.2) | 0.085* |
| **CEA (Mean ± SD)** | 3.24 ± 1.85 | - | 3.24 ± 1.85 | - |
| ***Imaging exam (No., %)*** | | | | |
| **Ultrasound (N=92)** | 64 (69.6%) | 31 (93.9%) | 33 (55.9%) | **<0.001**** |
| **Mammography (N=92)** | 58 (63%) | 23 (69.7%) | 35 (59.3%) | 0.373** |
| **MRI (N=92)** | 21 (22.8%) | 8 (24.2%) | 13 (22%) | 0.802** |
| **CT (N=93)** | 72 (77.4%) | 17 (51.5%) | 55 (91.7%) | **<0.001**** |
| **Right breast BIRADS (Median (IQR))** | 4.5 (2.75-5) | 4 (3-5) | 5 (1-5) | 0.552* |
| **Left breast BIRADS (Median (IQR))** | 4 (1.5-5) | 4 (1.5-4.5) | 5 (1.25-5) | 0.095* |

Breast ultrasound was the most frequently used imaging investigation in this study, with 69.6% of cases being evaluated by this procedure, the difference between the 2 subgroups being statistically significant. (93.9% vs 55.9%, p<0.001) Likewise, in the case of computed tomography it was noted that it collected the most cases (77.4% of the total), with a significant difference between the conservatively treated group and the radically treated one. (51.5% vs 91.7%, p<0.001). The following investigations, mammography collected a percentage of 63% of the entire group (58 cases), while breast MRI was used the least. (22.8%, 21 cases).

Tumor staging was another important point in the analysis of this study, being presented in detail in Table 4. Histological grading highlighted the fact that in the conservatively treated group there was an equal distribution of the 3 categories, each represented by 33.3%. In contrast, the radically treated patients were mostly classified as G2 (53.1% of cases), followed by G3 (30.6%), respectively by G1. (16.3%). Within the TNM classification, stage T2 was the most common (72.2% of cases), followed by T3 (16.7%), respectively T1 and T4 (each with 5.6%).

 doi:10.20944/preprints202604.0576.v1



**Table 4.**

| **Histologic grade (N=58)** | Total | Conservative | Radical | p |
|---|---|---|---|---|
| **G1** | 11 (19%) | 3 (33.3%) | 8 (16.3%) | 0.442** |
| **G2** | 29 (50%) | 3 (33.3%) | 26 (53.1%) | |
| **G3** | 18 (31%) | 3 (33.3%) | 15 (30.6%) | |
| **TNM stage (N=18)** | | | | |
| **T1** | 1 (5.6%) | 1 (20%) | 0 (0%) | 0.299** |
| **T2** | 13 (72.2%) | 4 (80%) | 9 (69.2%) | |
| **T3** | 3 (16.7%) | 0 (0%) | 3 (23.1%) | |
| **T4** | 1 (5.6%) | 0 (0%) | 1 (7.7%) | |
| **N0** | 13 (72.2%) | 4 (80%) | 9 (69.2%) | 0.299** |
| **N1** | 3 (16.7%) | 0 (0%) | 3 (23.1%) | |
| **N2** | 1 (5.6%) | 1 (20%) | 0 (0%) | |
| **N3** | 1 (5.6%) | 0 (0%) | 1 (7.7%) | |
| **TNM stage – M0 (N=18)** | 18 (100%) | 5 (100%) | 13 (100%) | - |
| **ER + (N=48)** | 40 (83.3%) | 9 (100%) | 31 (79.5%) | 0.322** |
| **PGR + (N=45)** | 33 (73.3%) | 7 (87.5%) | 26 (70.3%) | 0.419** |
| **HER2 + (N=49)** | 15 (30.6%) | 3 (37.5%) | 12 (29.3%) | 0.687** |

Also, postoperative complications were mentioned in 10.1% of cases, being more common in the radical treated group compared to the conservatively treated group (14.3% vs. 2.8%, p=0.088). In the case of hospitalization period, a longer period was noted in the radical treated group compared to the conservatively treated group, 7 vs 4 days, a statistically significant difference. (p<0.001)

## 4. Discussion

The choice of the surgical intervention between modified radical mastectomy and breast-conserving technique has been a topic of intense debate in the literature for several decades. A first criterion related to this aspect is that of age, a study from Denmark that divided the patient group into age groups highlighted the fact that the 55-64 year old group is the most numerous (17,533 cases, 30.05%), [28]. as well as a Dutch study conducted over a period of over 10 years with a group of 37,207 patients showing that the 50-69 age group accumulated 41% of the cases with radical treatment, respectively 58% of the cases treated conservatively,[29]. a result that is confirmed in our study with a mean age of 63 years.

Depending on the histopathological subtype, a predominance of the invasive ductal carcinoma subtype (95.6%) was noted in the literature in a study published in 2021 in China,[30]. different from what we obtained in the present work, 27.8% of cases, but without a statistically significant value. (p=0.601) On the other hand, another work with a group of 16522 patients suggests a predominance also in the direction of invasive ductal carcinoma in both conservatively treated and radically treated cases (92.7% vs. 89.8%, p<0.001), but with a laterality comparable to the study carried out by us (51.0% vs. 49.0% in the mastectomy group, 50.1% vs. 49.9% in conservative interventions) [31].

Cardiovascular diseases in patients with breast cancer were studied by I. Engebretsen in a study based on a group of 27,535 patients with an average age of 62 years, comparable to the present study, determining arterial hypertension in 11.61% of cases, respectively atrial fibrillation in 4.80% of cases [32].

The preoperative level of hemoglobin is presented in a study conducted on a group of 2,123 patients who had surgical interventions for breast tumors, also divided into 2 subgroups with radical

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and conservative interventions, respectively, the result being that 99.2% of the tumors in which mastectomy was performed had hemoglobin below 12g/dL, unlike the cases proposed for breast conserving surgery which were in a percentage of 0.7% [33].

Another aspect taken into account in this pathology was the tumor grading, Marissa C van Marren and collaborators noting that in the group evaluated over 10 years in patients with breast cancer, the G2 subtype was predominant 41% vs 40% in both types of interventions, a result superimposable with the present work in which the same category was represented in a proportion of 33.3% vs. 53.1%, but without statistical significance. (p=0.442) [29].

The HER 2 receptor status was carefully emphasized in the work of Christiansen P, thus it was observed that 12% of the cases treated by Breast conserving surgery were positive, respectively 24% of those with mastectomy, a conclusion that differs from our results 37.5% vs 29.3%. If we also consider Estrogen Receptor (ER) then we notice a smaller difference between the 2 studies, 74% vs. 83% in the Danish study compared to 100% vs. 79% in our study, differences that are not statistically significant. (p=0.687, p=0.322) [28]. Likewise, in a study conducted on a cohort of 5335 patients with breast cancer in which the same 2 categories of interventions are compared, a result of 44.6% vs 46.5% for positive ER, between BCS vs Mastectomy, with statistical significance is noted. (p<0.0001) [34].

The present study reflects a predominance of cases of advanced disease, respectively of less favorable anatomical conditions, highlighting the fact that radical interventions prevail over BCS. (63.4% vs. 36.6%) Another argument in this regard is represented by more detailed imaging investigations, such as CT, being more often used in the case of patients who were selected for radical intervention compared to the other subgroup. (91.7% vs. 51.5%, p<0.001) These results confirm the specialized literature where mastectomy is indicated for multifocal tumors, or in bulky tumors reported to the remaining breast volume.

The shorter hospitalization period associated with the BCS group (4 vs. 7 days, p<0.001) translates into a better postoperative recovery, in a shorter time. The relevance of this result can be interpreted as a faster social reintegration of patients, a lower use of medical resources, as well as a lower surgical trauma.

Likewise, the higher rate of postoperative complications in the radical treated group (14.3% vs. 2.8%) correlates with a higher morbidity, associated with a more aggressive dissection in the lymph node region of this lymph basin. This aspect confirms the current trend of de-escalation of axillary surgery, especially when the SLNB technique begins to have more indications, being associated with a lower rate of complications, without altering the results from an oncological point of view.

The difference in hemoglobin levels between the 2 subgroups is statistically significant (13.7 vs. 12.7, p=0.010), indicating that patients with tumors operated through BCS had a lower systemic impact, consistent with the literature that associates disease at a more advanced stage with a degree of anemia.

Although the results present relevant information for surgical practice, their analysis will be based on the methodological limitations of the study. A first idea in this regard is the retrospective nature of the study, along with the lack of randomization and prospective control over the variables.

Also, the small size of the group may lead to an underestimation of statistically significant results, respectively a decrease in the robustness of the final results.

The study being based on the experience of a single surgery clinic, a potential institutional bias can be interpreted, suggesting local particularities of the experience of the surgical teams or access to adjuvant therapies.

The lack of follow-up is another important limitation, without the detection of distant relapses, survival analysis, the work being limited to perioperative and immediate postoperative results.

## 5. Conclusions

The present study emphasizes that the choice between BCS and a radical technique is based on the staging of the disease, respectively on factors specific to each patient.

 doi:10.20944/preprints202604.0576.v1



Conservative techniques were associated with a lower complication rate, as well as a shorter duration of hospitalization, being an additional argument for this option in selected cases. These observations reiterate that conservative treatment is more popular due to the lower associated morbidity, with the mention that it respects oncological criteria.

At the same time, it should be emphasized that mastectomy is still an option worth considering, especially in cases that present contraindications to radiotherapy, advanced or large tumors in relation to the breast.

Another idea that must be taken into account is represented by the decision of a multidisciplinary team that takes into account both the parameters of the disease and the clinical context of the patient, the result being the expression of the therapeutic option by all team members.

However, the limited nature of the group, the retrospective type of the study, and the lack of patient follow-up require that these techniques and this treatment algorithm be validated by multicenter, prospective studies that would better define the choice between conservative or radical treatment in breast cancer.

**Author Contributions:** Conceptualization, F.B. and D.D.; methodology, A.B.; software, O.M.; validation, T.P., F.B. and D.D.; formal analysis, F.G. and C.A.; investigation, L.B. A.C.; resources, D.D., R.B.; data curation, B.M., M.S., A.D; writing—original draft preparation, C.B., S.B.; writing—review and editing, D.D.; visualization, D.S., R.B; supervision, T.P., B.S.; project administration, O.M.; All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Clinical Hospital Dr. I. Cantacuzino (5173 / 20.03.2026).

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** The data presented in this study is available in the article. .

**Conflicts of Interest:** The authors declare no conflicts of interest.

## Abbreviations

ALND – axillary lymph node dissection
BCS – breast conserving surgery
DCIS - ductal carcinoma in situ
ER – estrogen receptor
HER 2 - human epidermal growth factor 2
IHC - Immunohistochemistry
LCIS - lobular carcinoma in situ
NST - invasive ductal carcinoma of nonspecific type
PR - progesterone receptor
SLNB – sentinel lymph node biopsy

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