



## TWENTY-YEAR ANALYSIS OF AGE AND TYPE OF SURGICAL TREATMENT IN A WOMAN WITH BREAST CANCER IN UNIVERSITY HOSPITAL DUBRAVA: A RETROSPECTIVE STUDY

MARINA PLANTAK<sup>1</sup>, IVAN MILAS<sup>2,3</sup>, JOSIP JAMAN<sup>1</sup>, KREŠIMIR GRGAT<sup>2</sup>,  
FILIP MIKULIĆ<sup>4</sup> and RADO ŽIĆ<sup>1,2</sup>

<sup>1</sup>Department for Plastic, Reconstructive, and Esthetic Surgery,  
Dubrava University Hospital, Zagreb, Croatia

<sup>2</sup>Department of Oncoplastic Surgery, University Hospital for Tumours,  
Sestre milosrdnice University Hospital Center, Zagreb, Croatia

<sup>3</sup>School of Medicine, Catholic University of Croatia, Zagreb, Croatia

<sup>4</sup>University Hospital Centre Zagreb, Zagreb Croatia

### Summary

**Introduction:** According to the World Health Organization, breast cancer remains a pervasive global health problem, affecting millions of women each year and posing significant challenges to health systems worldwide. Understanding epidemiology and therapeutic methods, especially in regional contexts such as Croatia, is key to optimizing patient care. The etiology of the disease is unknown, but there are risk factors such as family history, hormonal influence, lifestyle, and exposure to radiation and certain chemicals. Early diagnosis, through regular mammography examinations, is crucial in successful treatment and survival.

**Objective:** To retrospectively analyze age and types of surgical treatment.

**Methods:** The research was conducted at the Dubrava Clinical Hospital. Patients surgically treated at Dubrava Clinical Hospital with breast cancer in the period from January 1, 2004, to December 31, 2023, were analyzed.

**Results:** 3710 patients were analyzed. The mean age is  $57.41 \pm 13.04$  (95% CI 56.99 – 57.83). The median age is 57 years. There were 1728 breast-conserving surgeries, 1015 mastectomies without reconstruction, 363 mastectomies with body tissue breast reconstruction, and 604 mastectomies with direct-to-implant reconstruction.

**Conclusion:** The hypothesis that the average age of patients operated on with a diagnosis of breast cancer is between 35 and 55 years was rejected, and the hypothesis that more breast-conserving than radical surgical procedures were performed was rejected. The hypothesis that the number of direct-to-implant reconstructions is greater than the number of reconstructions with autologous tissue has been accepted.

**KEYWORDS:** *breast cancer; mastectomy; breast reconstruction*

### INTRODUCTION

According to the World Health Organization (WHO), breast cancer remains a pervasive global health problem, affecting millions of women each year and posing significant challenges to health systems worldwide. This malignant transformation of breast tissue, triggered by genetic, hormon-

al, and environmental factors, develops over time, often without symptoms in the early stages. Al-

**Corresponding author:** Ivan Milas, Department of Oncoplastic Surgery, University Hospital for Tumours, Sestre milosrdnice University Hospital Center, Ilica 197, 10000 Zagreb, Croatia and School of Medicine, Catholic University of Croatia, Zagreb, Croatia. e-mail: imilas.dr@gmail.com

though the exact etiology of breast cancer remains unknown, several risk factors have been identified, including age, family history, hormonal influences, lifestyle habits, and exposure to radiation and certain chemicals. Breast cancer can be classified into several types based on various factors, including the type of cells involved in the cancer, the presence or absence of certain receptors, and specific genetic characteristics. Early diagnosis, through regular mammographic or ultrasound examinations, and breast examinations alone, is crucial in successful treatment and survival(1).

In the last few decades, advances in research, diagnostics, and therapeutic modalities have significantly improved outcomes for patients. However, understanding epidemiology and therapeutic methods, especially in regional contexts such as Croatia, is crucial for optimizing patient care. According to the National Program, mammography examinations are performed every two years at the age of 50-69, but the response rate is 60%(2).

### **Epidemiology of breast cancer**

Globally, breast cancer is the most common malignancy diagnosed in women with incidence rates that vary by region and population. According to the WHO, it is estimated that over 2 million new cases of breast cancer are diagnosed annually, making it the fourth leading cause of malignancy-related mortality among the population worldwide. According to WHO data for 2022 in Europe, breast cancer is the leading malignancy in terms of incidence among women(10). According to data from the SEER (Surveillance Research Program) of the National Cancer Institute of America, the median age of women when diagnosed with breast cancer is 62 years(3).

Data from 2018 reveal a clear correlation between breast cancer incidence rates and the Human Development Index. According to data from 2020, breast cancer incidence rates peaked in high development index countries, in contrast to rates in average and low human development index countries, which were more than 150% lower(3). These patterns indicate risk factors and the availability and effectiveness of mammography, which consequently affects breast cancer detection. Furthermore, in high-income countries, breast cancer is often identified in the early stages, resulting in a generally more favorable prognosis. In contrast, in low- and middle-income countries, breast cancer

is often diagnosed at later stages, resulting in lower survival rates(4).

Unlike incidence rates, mortality rates vary between regions, with higher mortality rates often seen in low- and middle-income countries due to limited access to early cancer detection and treatment services(5). Mortality rates also differ among breast cancer subtypes, with HER2-positive disease showing a higher mortality rate, followed by triple-negative breast cancer, luminal A, and luminal B subtypes(4).

### **Epidemiology in Croatia**

In Croatia, breast cancer is the leading type of cancer in women with an average annual incidence of 2,810 cases during the period between 2014 and 2018. According to the latest data from the Croatian National Cancer Registry, 2,845 new cases of breast cancer were recorded in 2018, which accounts for 24% of all new cancer diagnoses in women. In 2020, breast cancer caused the death of 722 women, resulting in a mortality rate of 34.7 per 100,000(6). More than 90% of patients with breast cancer have a chance of being cured if the disease is diagnosed at an early stage and adequately treated. In these cases, the five-year survival rate reaches 96%. As part of the breast cancer screening program, 60% of newly diagnosed breast cancer cases are identified at a localized stage. The screening response rate varies between counties, with a range between 45 and 80%. Međimurje, Požega-Slavonska, Bjelovar-Bilogorska, and Krapina-Zagorska counties record the highest turnout, which ranges between 70 and 80%(8). There is an increase in the number of breast cancer cases detected in an early, localized stage thanks to the introduction of mammographic screening, while the number of cases with regional and distant metastases is decreasing(9). This is one of the reasons for the decrease in mortality from breast cancer in the Republic of Croatia, along with the continuous improvement of diagnostics and therapeutic approaches for this disease. According to the estimates of the European Cancer Information System (ECIS) for 2020, Croatia ranked 19th among the countries of the European Union in terms of breast cancer incidence and 16th in terms of mortality rate(7). Breast cancer also ranks as the third leading malignant cause of death among women in Croatia, behind lung cancer and colon cancer. However, a contin-

uous decrease in the number of women dying from breast cancer has been recorded for four years in a row(9).

### Treatment

Treatment of breast cancer requires a multidisciplinary approach, and the modality of treatment depends on initial tumor size, biology, and stage of disease. Treatment can begin primarily with surgery or with neoadjuvant chemo/immunotherapy(10). Currently, there are two basic surgical methods for removing malignant breast tissue. In breast-conserving surgery, the tumor is removed while preserving the rest of the breast tissue, often with the use of plastic surgery techniques of filling the resection site with residual tissue known as oncoplasty(8). To perform breast-conserving surgery, several conditions must be met: clear margins of tumor while preserving an acceptable cosmetic result, the patient must be a candidate for adjuvant radiotherapy(11). A radical surgery in any form removes the entire breast tissue(8). It is performed when the tumor infiltrates the mamilla, in multicentric tumors, T3 and T4 tumors, high-risk patients. To assess the extension of disease in the naïve axilla, sentinel node biopsy is performed. If the sentinel node is positive, then dissection is performed(5). For patients undergoing radical surgery, different options are available for the procedure, including mastectomy, skin-sparing mastectomy, and skin and nipple-sparing mastectomy(12). Mastectomy involves the removal of the breast parenchyma, and nipple-areola complex, leaving only enough skin to close the incision. On the other hand, skin-sparing mastectomy was developed to facilitate direct reconstruction. It involves the removal of the breast parenchyma and the nipple with the areola, while the skin is preserved as a natural sheath for the placement of silicone prostheses, tissue expanders, or autologous flaps(10).

### Breast reconstruction

After a mastectomy, patients can undergo primary or secondary reconstruction to restore the shape and contour of the breast. Primary breast reconstruction is performed in the same surgical procedure as mastectomy, while secondary breast reconstruction is performed several months or years after mastectomy. Two-stage primary breast reconstruction involves the use of a tissue expand-

er during mastectomy, with subsequent replacement with implants or autologous tissue at the end of treatment(13).

Breast reconstruction includes two main methods: breast reconstruction using implants or IBBR (implant-based breast reconstruction) or autologous breast reconstructions, ABR (autologous breast reconstruction). The type of reconstruction is determined by several factors such as the stage of the disease, size of the tumor, skin infiltration, concomitant diseases, smoking, size and shape of the breasts, previous procedures due to scars, and patient preference(6).

The main advantages of DTI (direct-to-implant) reconstruction include shorter duration of surgery, faster recovery, and patient satisfaction, as well as avoiding complications at the donor site(15).

On the other hand, ABR provides superior long-term performance, and a natural look and feel(12). Using tissue from the patient's body, including different types of tissue flaps such as deep inferior epigastric perforator (DIEP), transverse rectus abdominus myocutaneous (TRAM) flaps, latissimus dorsi (LD) muscle flaps, and autologous fat. The first TRAM flaps were made as a pedicle rotary flap. The TRAM flap has a greater chance of developing postoperative ventral hernia at the donor site, and the perforator flap DIEP and SIEA flap are preferred. The most common complication is thrombosis of the artery and vein, in which case implants are placed depending on the space (expander or implant)(5). Microsurgical procedures are performed in two surgical teams and require knowledge of microsurgical techniques. The LD flap is performed as a free or an axial flap and can be combined with an implant.

### RESEARCH OBJECTIVE

The objective of the research is to retrospectively analyze the age and types of surgical treatment in patients operated on for breast cancer at the Dubrava Clinical Hospital from January 1, 2004, to December 31, 2023.

### HYPOTHESES

The average age of patients operated on with a diagnosis of breast cancer in the period from 2004 to 2023 is between 35 and 55 years.

In the period from 2004 to 2023, a greater number of breast-conserving breast surgeries were performed than the number of radical surgeries.

In the period from 2004 to 2023, the number of surgical procedures for direct-to-implant breast reconstruction is greater than the number of surgical procedures for breast reconstruction with autologous tissue.

## METHODS

### Ethics

Before conducting the research, the approvals of the Ethics Committee of the Dubrava Clinical Hospital under the number: 2023/0612-025 and the Croatian Catholic University of Zagreb, CLASS: 602-04/23-11/050, UR NO: 498-15-06-23-003, were obtained.

### Type of research

This is a retrospective observational study conducted in one institution. The study included the population of female patients surgically treated at the Dubrava Clinical Hospital diagnosed with breast cancer in the period from January 1, 2004, to December 31, 2023.

### Unit of analysis

Inclusion criteria were:

- Female gender
- Confirmed diagnosis of breast cancer pathohistologically under ICD code C50, C50.0, C50.1, C50.2, C50.3, C50.4, C50.5, C50.6, C50.7, C50.8, C50.9
- Surgery performed in the period from January 1, 2004, to December 31, 2023.

Exclusion criteria were:

- Male gender
- Incomplete or incorrectly completed operating protocol
- Secondary reconstructions
- Relapse

### Procedures

The operating protocols were reviewed from the database of the hospital information system of

the Dubrava Clinical Hospital. Data included the date and type of surgery, the patient's gender, the patient's date of birth, and the operative diagnosis. By reviewing the data, a system for labeling and grouping patients was developed. A database was created that included the following variables: year of surgery, type of surgery, and patient's age at the time of surgery expressed in years. Types of surgery are grouped into 4 groups: 1. Breast-conserving surgery; 2. radical surgery and breast reconstruction with autologous tissue; 3. radical surgery with breast reconstruction with silicone prostheses or tissue expander, and 4. mastectomy without reconstruction. Group 2 includes all types of subcutaneous mastectomy and mastectomy with breast reconstruction in the same act using autologous tissue. Group 3 includes all types of subcutaneous mastectomy and mastectomy with breast reconstruction in the same act using silicone prostheses or tissue expanders. All patient data processing was done in a secure environment and on protected data storage disks of the Dubrava Clinical Hospital. At the end of the data collection, a systematic analysis of the collected data was carried out, and correction of contradictory or non-existent values and contradictions between the operative diagnosis and the described surgical procedure.

### Statistical methods

Statistical analysis was performed using statistical software package MedCalc® Statistical Software version 22.014 (MedCalc Software Ltd, Ostend, Belgium; <https://www.medcalc.org>; 2023). A descriptive analysis of the age of the patients at the time of the surgery was performed. Also, an analysis of the type and time of surgery by observed years was done. Interference statistical analysis was used to compare average years by observed years and type of surgery. A P value of less than 0.05 was considered statistically significant. The normal distribution of the age of the patients was checked graphically with a histogram and a QQ plot. Analytical methods of checking the normality of the distribution due to sample size are not considered valid. The results of the same are shown in the table. To compare the age of the patients at the time of performing the surgery, the ANOVA statistical test was used, since the variances within the groups are equal according to

Levene’s test. To compare the age of the patients and the type of surgery, the Welch ANOVA statistical test was used, since the variances within the groups are different by Levene’s test. After the analysis, the normality of the numerical variable was checked with a graphical residual test. The Bonferroni test was used for post hoc analysis. Also in the case of a statistically significant result, the effect size was additionally calculated using the Cohen  $f^2$  test.

## RESULTS

This research included 3,710 patients operated on between January 1, 2003, and December 31, 2023, at the Dubrava Clinical Hospital. The average age of the patient undergoing surgery was  $57.41 \pm 13.04$  (95% CI 56.99 – 57.83). The median age in the mentioned period is 57 years. The average age and the number of patients per year can be found in the table (Table 1), and graphically (Figure 1).

Table 1.

*Average age and number of patients for each analyzed year. N – number of patients SD – standard deviation  
Min. – minimum Max. – the maximum CI – confidence interval*

	<b>N</b>	<b>Average</b>	<b>Median</b>	<b>SD</b>	<b>Min.</b>	<b>Max.</b>	<b>95% CI</b>	<b>Average <math>\pm</math> SD</b>
2004	111	58,07	56	12,54	23	87	55,71 – 60,43	58,07 $\pm$ 12,54
2005	133	53,77	53	12,7	25	83	51,58 – 55,95	53,77 $\pm$ 12,7
2006	145	55,08	54	12,16	21	87	53,07 – 57,08	55,08 $\pm$ 12,16
2007	182	56,57	56	12,5	24	89	54,73 – 58,41	56,57 $\pm$ 12,5
2008	179	55,33	57	12,01	29	84	53,55 – 57,11	55,33 $\pm$ 12,01
2009	128	55,96	57,5	13,94	25	84	53,52 – 58,4	55,96 $\pm$ 13,94
2010	198	57,42	57,5	11,97	30	85	55,74 – 59,11	57,42 $\pm$ 11,97
2011	193	58,19	59	13,93	26	88	56,2 – 60,17	58,19 $\pm$ 13,93
2012	171	59,18	58	12,25	31	90	57,32 – 61,03	59,18 $\pm$ 12,25
2013	244	57,79	58	12,42	22	84	56,21 – 59,36	57,79 $\pm$ 12,42
2014	279	55,77	56	13,58	24	87	54,16 – 57,38	55,77 $\pm$ 13,58
2015	212	58,28	59	14,14	28	91	56,36 – 60,21	58,28 $\pm$ 14,14
2016	230	58,02	58	13,09	29	86	56,31 – 59,73	58,02 $\pm$ 13,09
2017	200	58,17	58	12,77	24	86	56,38 – 59,95	58,17 $\pm$ 12,77
2018	215	57,64	59	12,89	31	88	55,9 – 59,38	57,64 $\pm$ 12,89
2019	240	57,49	56	13,29	29	87	55,79 – 59,19	57,49 $\pm$ 13,29
2020	148	56,69	55	13,46	28	88	54,5 – 58,88	56,69 $\pm$ 13,46
2021	78	60,09	59,5	12,75	29	88	57,21 – 62,97	60,09 $\pm$ 12,75
2022	202	59,12	60	12,92	27	89	57,32 – 60,92	59,12 $\pm$ 12,92
2023	222	59,14	60	13,61	26	87	57,33 – 60,95	59,14 $\pm$ 13,61

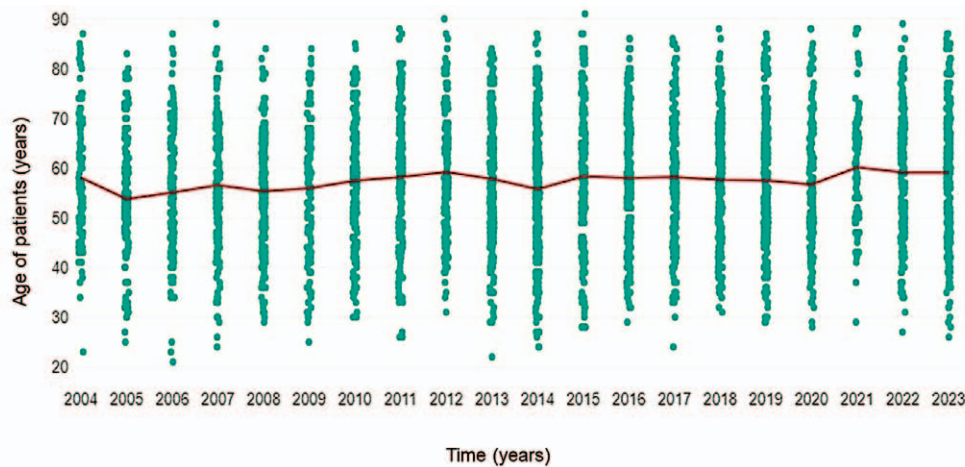


Figure 1. The average age of patients per each analyzed year

Table 2.

The average age for each type of surgery O – Type of surgery: 1 – breast-conserving surgery; 2 – radical surgery with autologous reconstruction; 3 – radical surgery with primary reconstruction with prosthesis; 4 – mastectomy; N – number of patients SD – standard deviation Min. – minimum Max. – the maximum CI – confidence interval

O	N	Average	Median	SD	Min.	Max.	95% CI	Average ± SD
1	1728	57,88	58	11,36	22	87	57,34 – 58,41	57,88 ± 11,36
4	1015	64,99	66	12,95	21	91	64,2 – 65,79	64,99 ± 12,95
3	604	49,69	49	10,74	24	82	48,83 – 50,56	49,69 ± 10,74
2	363	46,84	47	9,58	23	69	45,84 – 47,83	46,84 ± 9,58

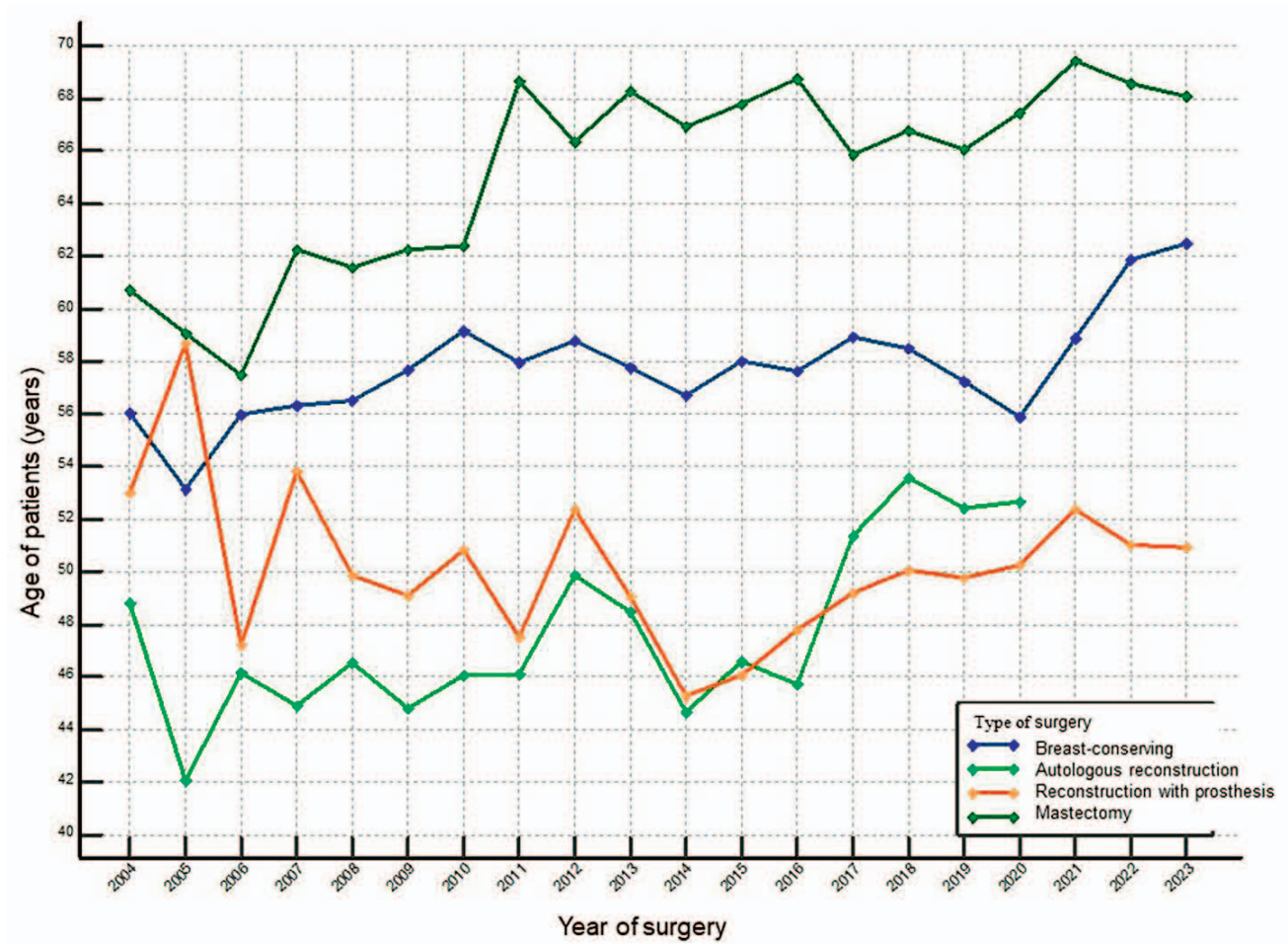


Figure 2. Linear representation of the average patient age by operation type over observed years.

In the period from 2004 to 2024, 1,728 breast-conserving surgeries were performed, 1015 mastectomies without primary reconstruction, 363 radical surgical procedures with primary reconstruction with autologous tissue, and 604 radical surgical procedures with primary reconstruction with prosthesis. The average age and number of patients for each type of surgery can be found in the table (Table 2), and graphically (Figure 2).

By comparing the average age of patients by observed years, a statistically significant difference was verified in patients operated on in 2005 and 2022 ( $53.77 \pm 12.7$  (95% CI 51.58 – 55.95) vs.  $59.12 \pm 12.92$  (95% CI 57.32 – 60.92);  $p$  0.046). Also, a statistically significant difference was verified between patients operated on in 2005 and 2023 ( $53.77 \pm 12.7$  (95% CI 51.58 – 55.95) vs.  $59.14 \pm 13.61$  (95% CI 57.33 – 60.95);  $p$  0.03). The size of the ef-

fect, or  $f^2$ , is 0.01. Only statistically significant results of the Benferroni post hoc test are presented in Table 3.

By comparing the average age of patients by type of surgery, a statistically significant difference in the average age of all observed types of surgery was verified,  $p < 0.001$ . The results of the Benferroni post hoc test are shown in the Table 4. The size of the effect, or value  $f^2$ , is 0.27.

## DISCUSSION

The average age of the patient in the observed period was 57.41 years, with a median of 57 years. If we take into account the fact, that in the Dubrava Clinical Hospital the time from confirmed diagnosis of breast cancer by pathology, and date surgery does not take more than a month, the result becomes comparable with the data of the US

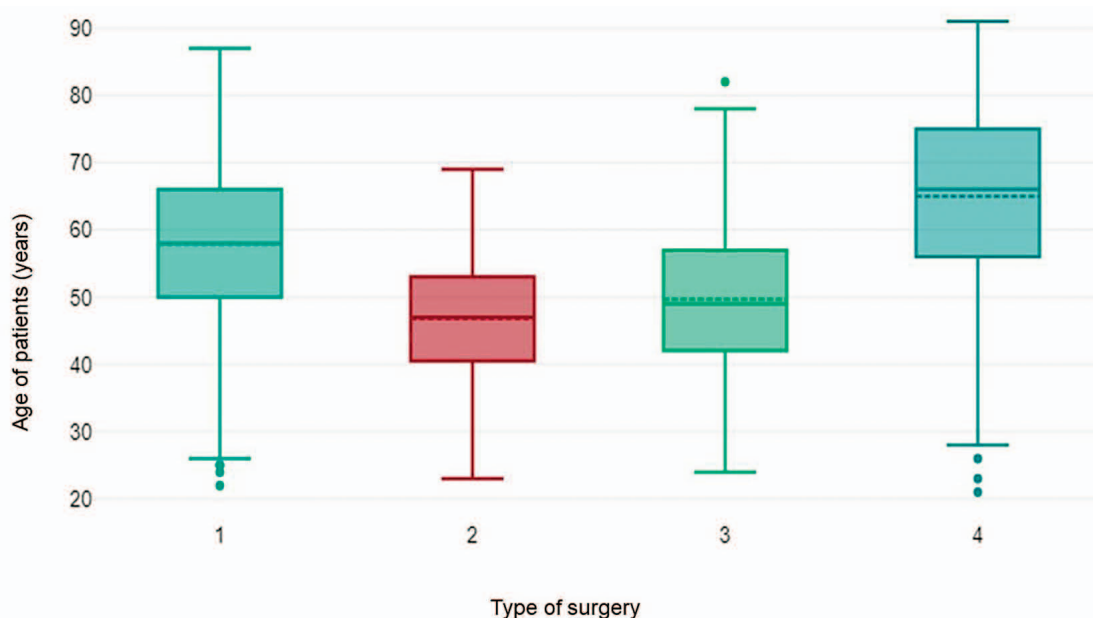


Figure 3. Box plot diagram of patient age by type of surgery: 1 – breast-conserving surgery; 2 – radical surgery with autologous reconstruction; 3 – radical surgery with primary reconstruction with prosthesis; 4 – mastectomy

Table 3.

Bonferroni post hoc test results – only statistically significant results are shown Mean diff. – Average difference; Std. Error – Standard error; t – difference error; p – probability; CI – confidence interval

Year	Year	Mean diff.	Std. Error	t	p	95% CI, lower limit	95% CI, upper limit
2005	2022	-5,35	1,452	3,69	0,046	-10,36	-0,35
2005	2023	-5,37	1,425	3,77	0,03	-10,28	-0,45

Table 4.

Bonferroni post hoc test results – only statistically significant results are shown. Mean diff. – Average difference; Std. Error – Standard error; t – difference error; p – probability; CI – confidence interval; type of surgery (O): 1 – breast-conserving surgery; 2 – radical surgery with autologous reconstruction; 3 – radical surgery with primary reconstruction with prosthesis 4 – mastectomy

O	O	Mean diff.	Std. Error	t	p	95% CI lower limit	95% CI upper limit
2	4	-18,16	0,707	-25,67	<.001	-20,06	-16,25
2	1	-11,04	0,668	-16,53	<.001	-12,83	-9,24
2	3	-2,86	0,768	-3,72	,001	-4,92	-0,79
4	1	7,12	0,457	15,56	<.001	5,89	8,35
4	3	15,3	0,594	25,74	<.001	13,7	16,9
1	3	8,18	0,547	14,97	<.001	6,71	9,65

National Cancer Institute. This organization states that the median age of the patient at the time of diagnosis is breast cancer 62 years old(3). For example, in South Korea, the median age of female patients diagnosed with breast cancer is 52 years(16). Comparing the results of this study with the above given, it can be assumed that the stated average age of patients will move closer to American data since an increasing number of young women are exposed to the cumulative effect of various risk factors due to sociocultural and environmental changes. Furthermore, an additional reason supporting the stated assumption is that the age structure of the population is drastically changing in such a way that the proportion of the old compared to the young part of the population is increasing. The only significant deviation in the average year was recorded in 2005 compared to 2022 and 2023. In 2005 the average age of patients was 53.77. The mentioned significant difference in age, and the fact that in that year the age of women is the lowest compared to other observed years, could be explained by the beginning of the National Breast Cancer Early Detection Program that started in 2006. In 2005, an intensive media campaign was conducted that could have made a larger number of younger women aware of mammogram examinations. In the observed period, several radical surgical procedures were performed on the breasts. Mastectomy without reconstruction was performed on significantly older patients compared to other types of operations. In the observed period, more breast-conserving surgeries were performed compared to radical surgery with breast reconstruction. If it is taken into account, that the long-term results of survival and locoregional recurrence of the disease are the same or even better in breast-conserving surgeries, the above-mentioned differences in numbers are expected(14). Currently there is no consensus on why long-term results are better after breast-conserving surgery compared to the radical. The data suggest that the observed differences in survival cannot be explained exclusively by differences in prognostic characteristics. Differences in outcomes certainly contribute to the fact that over the years there has been better locoregional control of the disease after breast-conserving surgeries in the form of radiation and the application of other forms of adjuvant and neoadjuvant treatment(17). The example of the Dubrava Clinical Hospital shows that most breast reconstructions are done

with implants. The significant increase in primary reconstruction rates in the United States is closely related to the increase in the use of implants(18). Although the reasons for this increase are multifactorial, changes in mastectomy patterns, particularly the increased use of bilateral mastectomies, stand out as a significant contributing factor(18). Also, reconstruction with autologous tissue requires a longer operating time and increases the risk of complications and subsequent operations, which ultimately leads to higher treatment costs(20,21). For each additional hour of operative time, the probability of overall complications increases by 16%(19). Finally, the insufficient number of plastic surgeons trained in reconstruction techniques with perforator flaps additionally contributed to the greater use of implants in reconstructions(18).

## CONCLUSION

The average age of patients undergoing operative treatment is  $57.41 \pm 13.04$  (95% CI 56.99 – 57.83). The median age in the mentioned period is 57 years. The hypothesis that the average age of operated patients with a diagnosis of breast cancer in the period from 2004 to 2024, between the ages of 35 and 55 was rejected. In the investigated period from the beginning of 2004 to 2024, 1728 breast-conserving surgeries and 1982 radical surgeries were done. The hypothesis that in the period from 2004 to 2023, more breast-conserving surgeries were performed to the number radical surgery was rejected. Out of the total number of radical surgeries, 1015 were mastectomies without a primary reconstruction, 363 radical surgeries with primary reconstruction with autologous tissue, and 604 radical surgeries with primary reconstruction with a prosthesis. The hypothesis that in the period from 2004 to 2024, the number of breast reconstruction surgeries with implants is greater than the number of breast reconstruction autologous tissue was accepted.

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Sažetak

DVADESETOGODIŠNJA ANALIZA PODATAKA DOBI I VRSTE KIRURŠKOG LIJEČENJA KOD ŽENA  
OBOLJELIH OD KARCINOMA DOJKE U KB DUBRAVA: RETROSPEKTIVNO ISTRAŽIVANJE

*M. Plantak, I. Milas, J. Jaman, K. Grgat, F. Mikulić, R. Žic*

*Uvod:* Prema svjetskoj zdravstvenoj organizaciji rak dojke i dalje ostaje sveprisutan globalni zdravstveni problem, pogađajući milijune žena svake godine i predstavljajući značajne izazove za zdravstvene sustave diljem svijeta. Razumijevanje epidemiologije i terapijskih metoda, posebno u regionalnim kontekstima poput Hrvatske, ključno je za optimizaciju skrbi pacijenata. Uzrok bolesti je nepoznat, ali postoje čimbenici rizika kao što su obiteljska anamneza, hormonalni utjecaj, životne navike i izloženost zračenju te određenim kemikalijama. Rana dijagnostika, putem redovitih mamografskih pregleda i samopregleda dojki, ključna je u povećanju šansi za uspješno liječenje i preživljavanje.

*Cilj:* Retrospektivno analizirati dob i vrste kirurškog liječenja.

*Metode:* Istraživanje je provedeno u Kliničkoj bolnici Dubrava. Analizirane su pacijentice kirurški liječene u Kliničkoj bolnici Dubrava pod dijagnozom karcinoma dojke u periodu od 01. siječnja 2004. godine do 31. prosinca 2023. godine.

*Rezultati:* Analizirano je 3710 pacijentica. Prosječna starost je  $57,41 \pm 13,04$  (95% CI 56,99 – 57,83). Median starosti je 57 godina. Učinjeno je 1728 pošteđenih kirurških zahvata na dojkama, 1015 mastektomija bez rekonstrukcije, 363 mastektomije s rekonstrukcijom tkivom te 604 mastektomije rekonstrukcijom protezom.

*Zaključak:* Hipoteza da je prosječna dob pacijentica operiranih pod dijagnozom karcinoma dojke između 35 i 55 godina je odbačena, te da je učinjeno više pošteđenih od radikalnih kirurških zahvata također odbačena. Hipoteza da je broj operativnih zahvata rekonstrukcije dojki implantatima veći nego broj rekonstrukcija vlastitim tkivom je prihvaćena.

**KLJUČNE RIJEČI:** karcinom dojke; mastektomija; rekonstrukcija dojke