Advances in Medicine and Engineering Interdisciplinary Research, 2026, Volume 4, Issue 2
DOI: 10.32629/ameir.v4i2.5253
ISSN Online: 2972-3825
ISSN Print: 2972-3833

Experience in the surgical treatment of breast cancer during COVID-19. January 2020 – December 2021

Álvaro L Gómez Rodríguez*, Josepmilly Peña, Wladimir Villegas, Juan Rodríguez A.

Bolivarian Republic of Venezuela
*Corresponding author.
Email address: gomezalvaro579@gmail.com

Abstract: The experience in the Breast Pathology Service of the Padre Machado SOH IVSS Oncological Hospital, during the years 2020-2021 of the COVID-19 pandemic, and the impact on the decrease in the activities of outpatient consultations and the elective surgeries, and the measures that we were taken to continue attending the patients diagnosed with the breast cancer are presented.

Key words: cancer; breast; pandemic; COVID-19; surgery

1 Introduction

In late 2019, the first cases of a respiratory illness caused by an emerging coronavirus were diagnosed; the virus was named SARS-CoV-2 and the disease it caused, COVID-19 [1,2].

The World Health Organization declared COVID-19 a pandemic on March 11, 2020. Initial data from China showed that nearly 10% of patients with the disease required intensive care and that hospitals had to make a major organizational effort to care for all hospitalized patients [3].

In Venezuela, a lockdown was decreed due to this pandemic, known as COVID-19, effective March 14, 2020, which significantly impacted the country's oncology services and units, especially those operating in the public sector. This, combined with existing problems of resource shortages — both in the diagnosis and treatment of cancer patients — exacerbated the crisis, particularly in our case, in the area of outpatient care for patients diagnosed with breast cancer, as well as in the surgical management of the disease.

Furthermore, cancer patients, in the context of the pandemic, are considered a high-risk group for developing severe complications when infected with SARS-CoV-2, due to their immunosuppressed state caused by cancer. Furthermore, most patients in our public hospital clinics are undergoing systemic neoadjuvant treatments because they have an advanced stage of the disease, which implies a higher risk of immunosuppression, and upon infection with SARS-CoV-2, there is a higher risk of complications and of dying from COVID-19 [4].

In studies published in China, 2% of patients with COVID-19 had cancer in various locations; notably, these patients experienced severe events, more complications, and progression of their underlying conditions. In Italy, the mortality rate among cancer patients with COVID-19 reached 20% [5,6].

In the case of breast cancer, which is the leading cancer among women worldwide, the pandemic has caused a delay

in diagnosis and screening of at least 6 months, resulting in an increase in deaths of 2 to 3 per 100,000 inhabitants, delays and interruptions in more than 40% of cancer treatments, a 30% reduction in elective surgeries, and an estimated 5% to 10% decrease in survival rates among cancer patients [7,8].

In Venezuela, where there is a high incidence of cases and mortality due to the absence of breast cancer prevention programs, limited access to mammography, and a public health system lacking the resources to diagnose and treat our breast cancer patients, the COVID-19 pandemic has further exacerbated this situation.

As breast cancer specialists, we have had to adapt to this new situation by reorganizing and adjusting patient care in outpatient clinics, in the inpatient setting, and—in the context of this discussion—by establishing protocols for the surgical treatment of breast cancer.

1.1 Objective

To report on our experience with the surgical treatment of breast cancer during the period from January 2020 to December 2021.

1.2 Protocol

In this context, we wish to present our experience with the surgical management, consultations, and therapeutic decisions for patients with breast cancer in the Breast Pathology Unit of the Oncology Services at the Padre Machado Social Security Oncology Hospital [9,10,11,12,13,14].

Based on the recommendations of various scientific societies, including those of the Venezuelan Societies of Oncology and Mastology, strategies were designed with the aim of:

1. Reduce the patient's exposure to infection.
2. Protect healthcare personnel.
3. Secure biosecurity supply resources.

In the Breast Pathology Service, priorities were established in the areas of outpatient care, hospitalization, and surgery.

Percutaneous procedures, fine-needle aspirations, and core needle biopsies for cytological and histological studies, respectively guided by ultrasound, were postponed until biosafety conditions necessary to prevent infection and disease transmission were in place for both patients and staff.

Outpatient consultations were suspended on March 17; at that time, there were 38 breast cancer patients on the waiting list for surgery, including 19 operable luminal-phenotype cases, 13 patients who had completed their neoadjuvant treatment, and 6 operable patients whose molecular phenotype was unknown.

In a meeting of the Breast Pathology Service held via a telematic platform (Zoom - Google Meet), surgical priorities were established based on nationally and internationally published recommendations.

The 19 patients diagnosed with operable luminal phenotype breast cancer were referred to medical oncology, and via WhatsApp, text message, and during postgraduate residents' on-call shifts, they were prescribed neoadjuvant hormone therapy, as our hospital does not have telemedicine capabilities.

Outpatient consultations resumed on May 13, 2020, after establishing biosafety priorities with the SOH IVSS administration; these were implemented inconsistently, but the clinic was able to open due to the interest of patients and the institution's healthcare staff.

For these outpatient visits, based on recommendations from various organizations and societies, the following priorities were established:

- Evaluate pre-surgical patients who had completed neoadjuvant treatment.
- Patients with disease progression or relapse.

- Patients referred by medical oncology for reevaluation.
- Recently diagnosed patients who require neoadjuvant treatment.
- Patients with complications related to previous surgeries.
- Follow-up and monitoring appointments were postponed.

Elective surgical procedures for patients diagnosed with breast cancer began on May 19, with a biosafety protocol established for inpatient and surgical areas. Notably, despite their low sensitivity, rapid antibody tests were performed 24 hours prior to surgery, along with a questionnaire regarding signs and symptoms of COVID-19.

Patients who tested positive on rapid COVID-19 antibody tests were referred to the IVSS epidemiology department, and their surgeries were rescheduled once they had completed at least 14 days of isolation from the time of diagnosis, had a negative PCR test, and had not developed complications associated with COVID-19.

Once priorities were established, it was decided to perform elective surgery on patients who had completed neoadjuvant therapy, with locoregional disease progression, relapses of their known primary tumor, and, in collaboration with the plastic and reconstructive surgery department, cases with difficulty achieving primary closure, while postponing cases of immediate post-mastectomy reconstructions [15].

Activities in both outpatient clinics and operating rooms have been gradually increasing since late July 2020, as biosafety conditions have improved and we have gained a better understanding of COVID-19, its presentation, risk factors, and likely complications in patients treated for breast cancer, whether they have undergone surgery or not.

During this pandemic, the Breast Pathology Service at SOH IVSS has found it difficult to develop an efficient strategy to prevent transmission and provide appropriate treatments consistent with the disease; the pandemic has exacerbated deficiencies in the screening, diagnosis, and treatment of cancer patients.

2 Method

This is a retrospective observational study of women diagnosed with breast cancer who underwent surgical treatment at the Breast Pathology Service of the Padre Machado Cancer Hospital (SOH IVSS) during the period from January 1, 2020, to December 31, 2021, years considered to be the COVID-19 pandemic, caused by the known infectious agent SARS-CoV-2. The study evaluated the number of outpatient visits and the surgical techniques performed in the treatment of breast cancer in these patients, as well as the complications that arose, without taking into account aspects related to systemic cancer treatment or radiation therapy. The study analyzed the number of patients seen in outpatient clinics and those who underwent surgery, describing the techniques performed.

3 Results

During the period from January 2020 to December 2021, 2,925 outpatient visits were conducted, corresponding to initial consultations, preoperative visits, completion of neoadjuvant treatment, disease progression during treatment, and, to a lesser extent, follow-up or monitoring of patients diagnosed with breast cancer. It was observed that the lowest percentages of consultations occurred during the period from April to June 2020 (6.8% of cases) (Figure 1), which coincides with the start of the lockdown in Venezuela, as well as the period from October to December 2020 (6.2% of cases) seen in outpatient care, a time of the highest number of SARS-CoV-2 infections in our country (Figure 2).

Figure 1. Percentages of outpatient visits in 2020

Figure 2. Comparative bar chart of patients treated: comparison of the years 2020 and 2021

Various types of breast cancer surgery were performed, with 73 surgical procedures in 2020 and 131 in 2021, for a total of 204 surgical procedures performed (Figure 3), including breast-conserving surgeries, radical mastectomies, reconstructions, and selective sentinel lymph node dissections. The modified radical mastectomy was the most common type of surgery in both 2020 and 2021, accounting for 38 (48.10%) and 57 surgeries (43.5%), respectively, of all surgical procedures performed (Figure 4).

Figure 3. Comparative bar chart of types of surgery. Comparison of the years 2020 and 2021

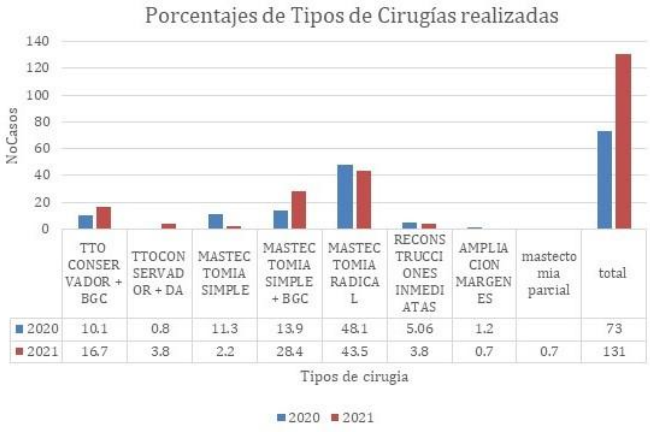

Figure 4. Comparative bar chart showing types of surgery expressed as percentages: Comparison of the years 2020 and 2021

In 2020, 69 patients underwent surgery; 4 of these patients underwent mastectomies with immediate reconstruction to close the defect, representing 73 procedures or types of surgery. It was observed that, during the first and second waves of the pandemic—in the periods from April to June and from October to December 2020— the lowest number of surgeries were performed—9 and 12 surgical procedures, respectively (Figure 5)—representing 13% and 17% of the patients operated on during 2020 (Figure 6).

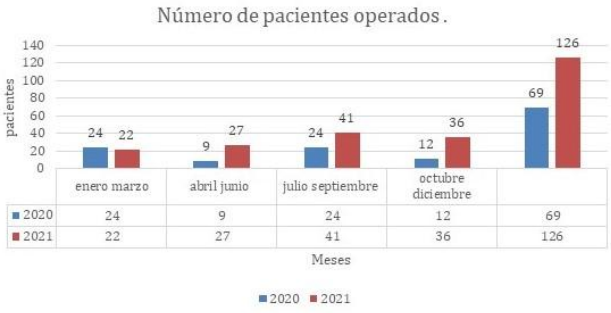

Figure 5. Comparative bar chart showing the number of patients operated on per quarter. Comparison of the years 2020 and 2021

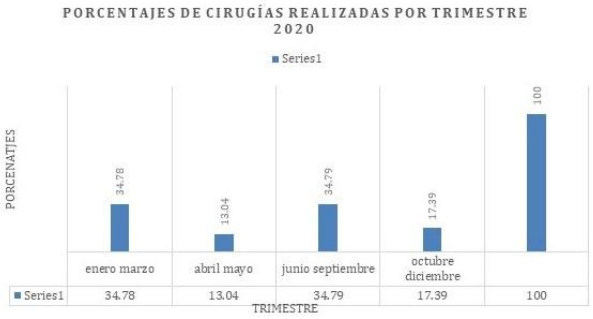

Figure 6. Percentage chart of surgeries performed by quarter in 2020

Regarding the sentinel lymph node biopsy technique or selective axillary lymphadenectomies for breast cancer in 2020, we performed 18 such procedures using only the patent blue dye technique, and in 2021, 57 sentinel lymph node biopsy procedures were performed, of which 5 used the dual technique (patent blue + 99mTc) and the rest using only the patent blue dye technique (Figure 7).

Upon reviewing the types of complications, the highest number of cases occurred in 2021, with seromas representing the most frequent complication following the surgical procedure (Figure 8).

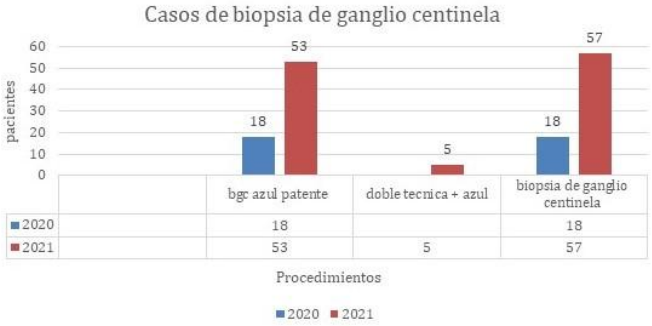

Figure 7. Comparative bar chart showing the number of sentinel lymph node biopsies (patent blue alone / dual technique with 99mTc). Comparison of the years 2020 and 2021

Figure 8. Comparative bar chart showing the number and types of complications observed. Comparison of the years 2020 and 2021

4 Discussion

In this study, we sought to analyze and present our experience with outpatient consultations and the surgical treatment of breast cancer patients during the years 2020 and 2021, especially during the first year of the COVID-19 pandemic, when outpatient visits and surgeries decreased, exacerbating the backlog of surgical procedures due to the already chronic shortage of supplies and resources. We also aimed to demonstrate how we adapted to the pandemic situation by developing protocols that differed from those recommended in other countries but enabled us to provide a response and solution for our patients [9,10,11,12,13,14,15,16].

The greatest impact of the COVID-19 infection on our center occurred in April and May 2020 and then in October of the same year; by 2021, although the incidence in the country was on the rise, the experience gained, combined with the efforts of healthcare staff and the availability of immunization—i.e., vaccines—allowed us to increase the number of patients treated in outpatient care as well as the number of surgeries performed at our center.

In our department over these two years, outpatient care prioritized patients with a recent diagnosis of breast cancer, those who required neoadjuvant therapy, patients with suspected relapse or disease progression, as well as preoperative consultations for surgical management of the disease. Chronic patients undergoing follow-up or monitoring were deferred, as were those with diagnoses of benign conditions or premalignant lesions; patients who began undergo regular follow-up starting in January 2022 [17].

Analyzing, as in other centers, the impact of the pandemic—such as the increase in diagnoses of advanced stages of the disease, larger tumor sizes, more positive axillary nodes, and more adjuvant therapy—was not the focus of our study, as this is difficult to assess since, in our department, most breast cancer cases are referred to us at advanced stages; but there is no doubt that the delay in surgical resolution will have a negative impact on patient survival [18].

When deciding which patients should be prioritized for surgical intervention, we followed the recommendations of various national and international societies; therefore, patients who had completed neoadjuvant therapy, showed disease progression while on treatment as well as relapses or second primary tumors, patients with tumors unsuitable for systemic treatment, or complications from previous surgeries, were operated on as a priority, with reconstructive and symmetrization surgeries deferred; the plastic and reconstructive surgery department was involved only in advanced cases for primary closure of the surgical defect [19].

A review of the literature shows that surgical activity varied depending on the incidence of infection in the country and hospital reviewed, particularly regarding the need for inpatient beds and intensive care unit beds to treat infected patients. We observed that in China and Italy, the situation of infected cancer patients led to a significant decline in surgical activity, as well as an increase in the number of deaths (four times more patients with cancer and COVID-19).

Unlike other centers, such as in A Coruña, where, although there was a decrease in the number of surgical cases, this did not have the same impact on mortality and complications, as we previously noted in China and Italy [20,21,22,23,24].

It should be noted that in our analysis, patients who underwent surgery did not present SARS-CoV-2 infection at the time of surgery; those patients who had symptoms or positive rapid antibody test results were referred to the IVSS epidemiology unit for evaluation and treatment. The complications observed in our cohort were inherent to the procedure or type of surgery and not due to a possible coronavirus infection [25].

We conclude that during these two years of the pandemic (2020–2021), in a country with high incidence and mortality rates for breast cancer—due to the absence of screening programs for the disease and a lack of resources for the diagnosis and treatment of this oncological condition—the COVID-19 pandemic further exacerbated this situation.

In this context, we were able to provide surgical treatment to a significant number of patients in our department.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

[1] Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A, et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). Int J Surg. 2020;76:71-76.

[2] WHO coronavirus disease (COVID-19 (dashboard) Disponible en: URL: https://covid19.who.int/ (Consultado 16 de septiembre 2020).

[3] Rocco N, Montagna G, Di Micco R, Benson J, Criscitiello C, Chen L, et al . The impact of the COVID-19 pandemic on surgical management of breast cancer: Global trends an future perspectives . Oncologist. 2021;26:e66-e77.

[4] Han E, MJin Tan M, Turk E, Sridhar D, Leung G, Kenji Shibuya K, et al . Lessons learnt from easing COVID-19 restrictions: An analysis of countries and regions in Asia Pacific and Europe. Lancet. 2020; 396(10261):1525-

1534.

[5] Liang W, Guan W, Chen R, Wang W, Li J, Xu K, et al. Cancer patients in SARS-Cov2 infection: A nationwide analysis en China. Lancet Oncol. 2020;21(3):335-337.

[6] Zhou J, Liu Y, Xu M, Mei L, Ruan S, Zhang N, et al. Management of breast cancer of China during the coronavirus disease 2019 pandemia: e experience from the epicenter of China. Clin Breast Cancer. 2022;22(1):e1-e7.

[7] De Santis J, Ma J, Gaudet M, Newman L, Miller K, Goding A, et al. Breast cancer statistic 2019. Ca Cancer J Clin. 2019;69(6):438-451.

[8] Vianni G, Santori F, Pellicciaro M, Materazzo M, Caspi J, Granai A, et al. Extremely advanced breast cancer presentation: Posible effect of coronavirus pandemic ansiety. In Vivo. 2021;35:2331-2335.

[9] Saad Abdalla Al-zawi1, Asaad A, Fisher R, Clayton G, Syed A, Barron M. et al. The Challenge of COVID-19: The biological characteristics and outcomes in a series of 130 breast cancer patients operated on during the pandemic. Disponible en: URL: https://associationfbreastsurgery.org.uk/news/2020/abs-statement.re.covid.19/.

[10] Leite F, Curi C, Sanches S, Curado M, Fernandes G, Moraes S, et al. How to maintain elective treatment of breast cancer during the COVID-19 pandemic-A cancer center experience. J Surg Oncol. 2021;123(1):9-11.

[11] Dietz J, Moran M, Isakoff S, Kurtzman S, Willey C, Burstein H, et al. Recomendations for prioritization, treatment, and triage of breast cancer patients during the COVID-19 pandemic. The COVID-19 pandemic breast cancer consortium. Breast Cancer Res Treat. 2020;181(3):487-497.

[12] ESMO Clinical Practice Guidelines: Breast Cancer Disponible en: URL: https://www.esmo.org/guidelines/breast-cancer . Consultado 30 de junio de 2020.

[13] American College of Surgeons COVID-19 Guidelines for Triage of Breast Cancer Patients. Disponible en: URL: https://ascopost.com/news/march-2020/american-college-of-surgeons-issues-covid-19-guidelines-for-triage-of-patients-undergoing-cancer-surgery/ Consultado el 30 de junio 2020.

[14] Valencia GA, Neciosup S, Gómez H, Benites M, Falcón S, Moron D, et al. Adaptation of international coronavirus disease 2019 and breast cancer guidelines to local context. World J Clin Oncol. 2021;12(1):31-42.

[15] Mathelin C, Ame S, Anyanwu S, Avisar E, Boubnider W, Breitling K, et al. Breast cancer management during the COVID-19 pandemic: The Senologic International Society Survey. Eur j Breast Health. 2021;17:188-196.

[16] Brenes J, López Picado A, Olivares Crespo M, García Sáenz J, De La Plata Merlo R, Herrera De La Muela M. Breast cancer Management during Covid-19 pandemic in Madrid: Surgical strategy. Clinical Breast Cancer 2020;21(1):e128-e135.

[17] Curigliano G, Cardoso M, Poortmans P, Gentilini O, Pravettoni G, Mazzocco K, et al. Recomendations for triage, priorización and treatment of breast cancer patients during the Covid-19 pandemic. Breast. 2020;52:8-16.

[18] Vanni G, Pellicciaro M, Materazzo M, Pedini D, Portarena I, Buonomo C, et al. Advances stages and increased need adyuvant treatments in breast cancer patients: The effect of the one year Covid-19 pandemic. Anticancer Res. 2021;41(5):2689-2696.

[19] Vanni G, Pellicciaro M, Materazzo M, Dauri M, D'angelillo R, Buonomo C, et al. Awake breast cancer surgery: Strategy in the beginning of Covid-19 emergency Breast Cancer. 2021;28:137-144.

[20] Corsi F, Caruso A, Albasini S, Bossi D, Polizzi A, Piccotti F, et al. Management of breast cancer in an EUSOMA-accredited Breast Unit in Lombardy, Italy during the COVID-19 pandemic. Breast J. 2020;26(8):1609-1610.

[21] Schlosser M, Signorelli H, Gregg W, Korwek K, Sands K. Covid -19 testing process and patient protections form resumption of elective surgery. Am J Surg. 2021;221: 49-52.

[22] Casella D, Fusario D, Cassetti D, Miccoli S, Pesce A, Bernini A, et al. The patient's pathway for breast cancer in the COVID-19 era: An Italian single-center experience. Breast J. 2020;26(8):1589-1592.

[23] Acea-Nebril B, García-Novoa A, García-Jiménez L, Escribano-Posada C, Díaz-Carballada C, Bouzón-Alejandro A, et al. Impact of the COVID-19 pandemic on a breast cancer surgery program. Observational case-control study in a COVID-free hospital. Breast J. 2020;26:2428-2430.

[24] Murris F, Huchon C, Zilberman S, Dabi Y, Phalippou J Canlorbe G, et al. Impact of the first lockdowm coronavirus on breast cancer management in France. A multicentry survey. J Gynecol Obstet Hum Reprod. 2021;50(9):102166.

[25] Romics L, Doughty J, Stallard S, Mansell J, Blackhall V, Lannigan A, et al. A prospectiv cohort stdy of the safety of breast cancer surgery during Covid- 19 pandemic in the west of Scotland. Breast. 2021;55:1-6.