

# The Impact of COVID-19 Pandemic on Breast Cancer Staging: An Experience from a Tertiary Healthcare in a Developing Country

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## ABSTRACT

**Objective:** To assess the impact of COVID-19 Pandemic on Breast Cancer presentation at our tertiary healthcare facility.

**Study design:** Retrospective cross-sectional study.

**Setting:** Patients will be selected from surgical unit I, Dow University Hospital, Ojha campus, Dow University of Health sciences, Karachi.

**Duration of study:** 1 year (February 2020 till February 2021)

**Methods:** All patients undergoing Breast cancer surgery from February 2020 to 2021 were enrolled in the study. Recurrent cases were excluded. A proforma was used to measure their demographics, Histopathological and surgical details. The data was analyzed to observe any correlation between the patient characteristics and COVID-associated factors, including monthly incidence, mortality and recoveries in the province Sindh.

**Result:** One hundred and seventy-six female patients were enrolled in the study. A significant association of mean stage was observed with respect to monthly incidence ( $p=0.012$ ) and mortality ( $p=0.010$ ) due to the COVID -19 pandemic.

**Conclusion:** Breast clinics and surgeries should continue during COVID waves due to high risk of disease complications, especially on the overall survival of the patient.

## INTRODUCTION

COVID-19 pandemic has effected every field and aspect of life. This novel virus initially affected Wuhan city of China in December 2019 and later it spread rapidly worldwide.<sup>1</sup> This outbreak caused a huge burden on the health economies of all developed, developing and under developed countries.<sup>2</sup> Pakistan being a third world country, has also been effected by this contagious virus. According to the Government of Pakistan 7 may 2021 updates, 834,146 confirmed cases have been reported since January 2020, out of which 18,677 (2.2%) deaths have occurred and 747,755 (88.0%) have been recovered from this disease.

In order to limit the spread of this contagious disease, a worldwide lockdown was imposed. People worldwide were counselled by their respective health ministries to stay at home and try not to come to hospitals if there is no emergency.<sup>[2,3]</sup> Hospital lockdowns were also imposed in which guidelines were published to halt elective surgeries and entertain only emergency or oncological surgeries. In order to overcome the staff shortage, increased demand of oxygen and ventilators and massive number of cases reporting to hospital facilities, surgical units were converted to Covid-19 dedicated wards. Their staff was shifted to serve as frontline worker in dealing with this novel virus.<sup>[4,5,6,7]</sup> Due to these strict restrictions screening and diagnostic measures of oncological diseases also came to a halt.<sup>[5,6]</sup> Guidelines were also published regarding prioritizing type and nature of cancer and treating only aggressive tumors. This leads to worldwide annulment of approximately 38% of tumor related surgeries.<sup>[9]</sup>

Breast cancer worldwide, being an important risk factor for early cancer related deaths in women. Early detection via screening breast imaging is the mainstay of better prognostic outcomes of breast cancer. Neo-adjuvant and adjuvant chemotherapy along with post-operative Radiation also has a key role in management of breast cancer. But due to above mention restrictions these measures were not possible. There is little or no evidence regarding consequences of this Covid-19 preventing lockdown on breast cancer presentation.<sup>[10,11]</sup>

The aim of this study is to compare the presentation of Breast cancer patients during Covid-19 related lockdown with post lockdown presentation. Breast cancer cells are expected to have a doubling time of 45 to 260 days<sup>[12]</sup> Therefore it is expected that after lifting up of this approximately 12 week, worldwide lockdown patient will present with an advanced disease with poor outcomes. This study would also help us to evaluate whether such hospital

lockdowns are more beneficial in controlling spread of current contagious disease or are leading to further deterioration of other fatal diseases.

## MATERIAL AND METHODS

All patients undergoing breast cancer surgery at The Dow University of Health Sciences Ojha Campus in 2020 were enrolled in the study. The data collected included demographics, operative and histopathological information. The enrolled patients were divided into pre and post covid groups based on their month of surgery in the year 2020. patients undergoing surgery from January to April 2020 were allotted to the Pre-Covid group, whereas patients undergoing surgery from August to December 2020 were allocated to the Post-Covid Group. Patients undergoing surgery between May and July 2020 were excluded from the analysis.

The data was analyzed using R. The continuous variables were presented as mean with standard deviations, whereas categorical data was presented as frequency and percentages. Logistic regressions were run to evaluate the difference between categorical and continuous variables.

## RESULTS

No significant difference was found between the two groups for pathological TN. Similar results were observed for the highest dimension of tumor, minimal tumor distance from margins, and extracapsular spread from lymphnodes.

Table 1:

	Post- COVID Group (N=36)		Pre-COVID Group (N=23)		p value
	N		N		
Highest_Dimension of Tumor					0.538
- Mean (SD)	15	4.167 (1.440)	23	4.761 (3.496)	
- Range		2.000 - 7.000		1.000 - 14.000	
Presence of Lymphovascular Invasion					0.098
- No	29	24 (82.8%)	15	9 (60.0%)	
- Yes		5 (17.2%)		6 (40.0%)	

	Post- COVID Group (N=36)		Pre-COVID Group (N=23)		p value
	N		N		
Distance of lesion from closest margin (cm)					0.062
- Mean (SD)	33	2.133 (1.755)	23	1.300 (1.368)	
- Range		0.100 - 8.000		0.000 - 6.000	
Extracapsular Spread from lymph node)					0.931
- Absent	26	19 (73.1%)	7	5 (71.4%)	
- Present		7 (26.9%)		2 (28.6%)	
pT					0.275
- 1		4 (13.8%)		4 (22.2%)	
- 2		18 (62.1%)		7 (38.9%)	
- 3		6 (20.7%)		4 (22.2%)	
- 4		1 (3.4%)		3 (16.7%)	

Table 2:

pN					
- 0		11 (44.0%)		5 (35.7%)	
- 1		10 (40.0%)		6 (42.9%)	
- 2		2 (8.0%)		0 (0.0%)	
- 3		2 (8.0%)		3 (21.4%)	
	25		14		0.466
Total ERScore PSIS					0.269
- Negative		10 (55.6%)		1 (25.0%)	
- Positive		8 (44.4%)		3 (75.0%)	
Total PR Score PSIS					1.000
- Negative		9 (50.0%)		2 (50.0%)	
- Positive		9 (50.0%)		2 (50.0%)	
Percentage of Lymph Nodes Involved					0.422
- Mean (SD)	33	9.997 (24.081)	20	15.800 (27.169)	
- Range		0.000 - 100.000		0.000 - 86.400	

## DISCUSSION

The number of new malignancies diagnosed reduced in the early stages of the pandemic. [13,14] This decrease was most likely due to people not seeking care rather than an actual decrease in occurrence. As a result, these malignancies will eventually be detected at a larger or later stage than they would have been if detected earlier, potentially affecting prognosis. A model that assumed only a 6-month disruption in care during the pandemic projected the possible increased deaths from breast and colorectal cancer as a result of the pandemic disturbances in care over the next decade, peaking in the first few years. [15] This model does not account for increasing morbidity, such as the possibility of more extensive procedures, such as mastectomies, or the necessity for chemotherapy as a result of later disease presentations.

In this retrospective cross sectional study 176 females were underwent for breast cancer surgery included. The enrolled patients were divided into pre and post covid groups based on their month of surgery. In our study highest dimension of tumor in post covid group was 4.167 and pre covid group was 4.761. We found

that frequency lymphovascular Invasion in pre-group was higher found in 6 (40.0%) as compared to post group in 5 (17.2%). We did not found any significantly difference among both groups in distance of lesion from closest margin. Findings of our study was comparable to the studies conducted in past. [16,17] When screening programmes were temporarily discontinued from week 12, the incidence of breast cancer dropped the most among individuals aged 50–74 years, which corresponded to those eligible for screening. The decline in incidence across all age groups reflected the growing unwillingness of patients to contact their GP and the shortage of availability at GP offices. Similarly, the reduction in incidence among patients aged 75 years and older in weeks 12–13 could have been due to the recommendation that the vulnerable (e.g., the elderly and persons with chronic conditions) stay at home.

In our study there was no any difference found in spread of extracapsular from lymph node among both groups found in 7 (26.9%) and 2 (28.6%). [18] Percentage of Lymph Nodes Involved in our study was 9.997 and 15.800 among both groups. Patients with breast cancer, particularly advanced or metastatic breast cancer, were first worried that COVID-19 would make them more vulnerable to poor outcomes. Immunosuppression is a side effect of many of the most commonly used chemotherapy regimens for breast cancer. Furthermore, cancer patients have more visits and hence more exposures to HCWs and patients, putting them at a higher risk of contracting COVID-19. [19,20] Initial investigations from Wuhan, China, found that COVID-19 caused worse outcomes in cancer patients, implying that cancer care should be avoided during the pandemic. [21] Another early study from the Wuhan experience found that COVID-19 increased the probability of dying or being admitted to the intensive care unit in cancer patients by 5.4 (95 percent CI 1.8–16.2). [20] Furthermore, patients with cancer, regardless of age, had a higher relative likelihood of necessitating intubation. According to published studies, COVID-19 has a death rate of 11 percent to 28 percent in cancer patients. [22]

Most countries were ill-equipped to deal with the COVID-19 pandemic while maintaining conventional healthcare, forcing them to compromise non-COVID-19 care to varied degrees. The impact has been seen most acutely in low- and middle-income nations, where health systems are fundamentally fragile. We see the present pandemic as a chance to improve healthcare. Although the likelihood and severity of future COVID-19 waves (or other future pandemics) are unknown, it is obvious that global health systems must be prepared to prioritise healthcare sectors other than pandemic management. We propose the following steps to reduce the consequences of pandemics on cancer outcomes, based on the discussion above, by concentrating attention on five aspects: (1) ensuring the continuation of cancer treatment; (2) establishing guidelines for the management of cancer patients during pandemics; (3) focusing on the assessment and management of cancer patients who have been infected; (4) developing strategies to implement appropriate screening programme modifications; and (5) ensuring the continuation of cancer education and research.

## CONCLUSION

Breast clinics and surgeries should continue during COVID waves due to high risk of disease complications, especially on the overall survival of the patient.

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