J Surg Res 2021; 4 (1): 142-151 *DOI: 10.26502/jsr.10020118*

Research Article

Our Experience of Breast Cancer Surgeries in COVID-19 Pandemic

Anam Mumtaz*, Jibran Mohsin, Ramsha Zaheer, Aun Jamal, Muhammad Asad Parvaiz, Mohammad Zulqarnain Chouhdhry, Amina Iqbal Khan

Shaukat Khanum Cancer Memorial Hospital and Research Center, 7-A Block R-3 Johar Town, Punjab,Lahore,

***Corresponding Author:** Anam Mumtaz, 37-B, Alpha Society, Opposite Doctors Hospital, Lahore, Pakistan, Tel: 03219454200

Received: 14 February 2021; **Accepted:** 19 February 2021; **Published:** 22 March 2021

Citation: A. Mumtaz, J. Mohsin, R. Zaheer, A. Jamal, M. A. Parvaiz, M. Z. Chouhdhry, A. I. Khan. Our Experience of Breast Cancer Surgeries in COVID-19 Pandemic. Journal of Surgery and Research 4 (2021): 142-151.

Abstract

Objective

This study provides an insight of the impact of the COVID-19 pandemic on the breast surgical field in our setup. We will summarize the safety measures we adapted over the time span of COVID-19 pandemic and also decision making in prioritizing patients with respect to tumor biology, stage and phase of treatment and effects of COVID-19 on post op patients in terms of morbidity and mortality. In addition we will discuss new aspects of patient-healthcare worker communication.

Materials and Methods

A retrospective study at a single institution was reviewed from April 2020 to June 2020. Patients operated for breast cancer only included in this study to estimate their chances of getting COVID-19 infection or if operated after contracting COVID -19 infection what is their probability to develop pulmonary complications in 30 days period post op.

Results

After collecting data we have refined our results on the basis of COVID-19 pandemic. Our discussion will be based on following main points i-e General hospital policies, development of health care workers protection against COVID-19, prioritizing surgeries, new ways of communication with patient and impact of our policies during pandemic on patient care.

Total 258 patients included in study. In April, May and June, 57, 103, 98 patients were offered surgery respectively. Out of Total, upfront surgeries were 56

and post chemotherapy was 202. Patients with tumor biology of ILC were 18 and IDC were 234, DCIS 5 and 1 occult breast primary. Total 192 patients were hormone receptor positive and 74 were Her2neu expression positive. In month of June 15 patients were operated who were COVID positive 2 weeks earlier to surgery dates. On completing 2 weeks after being diagnosed as case of COVID-19, as per hospital policy, symptom free patients were offered surgery. No patient developed post op pulmonary complications.

Conclusion

This COVID-19 era has set new challenges in healthcare but in our experience cancer surgeries can continue without fear of making patients more susceptible to contract this infection by observing full SOPs in a country with scarce resources like ours where all medical supplies were limited and vastly affected by COVID-19.

Introduction

COVID-19 has been declared a pandemic by the World Health Organization (WHO) as confirmed cases approach 2,00, 000 patients with what will exceed 8000 deaths across over 160 countries [1]. The pandemic has tested the resilience of health-care systems, including hospitals, which were largely unprepared for the scale of the pandemic [2].

During the COVID-19 pandemic, surgical departments were forced to re-schedule their activity giving priority to urgent procedures and non-deferrable oncological cases [3].

According to the Global Cancer Observatory of the WHO, in Pakistan, The top-ranking cancers among males are lung followed by oral cavity and larynx. Among females, the order is breast, ovary and oral cavity [4].

Many general guidelines were released to set the criteria of case classification in order to define elective surgeries that can be postponed and urgent procedures that need a rapid intervention [5]. A delay in the early diagnosis of breast cancer can worsen the outcomes. Delayed diagnosis is exacerbated by patient fear of SARS-CoV-2 infection, resulting in the postponement of appointments, examinations, and surgeries. In the coming weeks or months, it may be necessary to manage an overwhelming influx of patients with breast disease or advanced breast cancer in a health care system that is already overwhelmed by COVID-19 [6].

In order to avoid person-to-person contact, experts suggested taking benefit from the recent technologies in making remote consultations, patients' allocation and triage, educating junior surgeons, and knowledge sharing [7].

This study provides an insight of the impact of the COVID-19 pandemic on the breast surgical field in our setup. We will summarize the safety measures we adapted over the time span of COVID-19 pandemic and also decision making in prioritizing patients with respect to tumor biology, stage and phase of treatment and effects of COVID-19 on post op patients in terms of morbidity and mortality. In addition we will discuss new aspects of patient-healthcare worker communication. We, as scientists and physicians should act in a way to share experiences and recommendations in order to establish the best practices and save lives.

Materials and Methods

Data was collected for patients, at Shaukat Khanum Cancer Memorial Hospital and Research center, who underwent breast surgery for breast cancer between April 2020 to June 2020. Total 258 patients were enrolled in study.

Inclusion criteria:

All breast cancer surgeries in 3 months

Exclusion criteria:

- Patients operated for benign breast disease
- Patients re-operated for wound infection/Incision and drainage
- Patients operated for reasons other than breast cancer e-g axillary lymphnode biopsy

All patients enrolled in study were recorded for their tumor biology in terms of grade, hormone receptor status, Her 2neu expression, phase of treatment either upfront surgery or post neoadjuvant chemotherapy and their COVID status pre –operative and post-operative. (As Table 1 & 2)

Total Patients	Up front surgeries	Post Neoadjuvant surgeries	Total Surgeries
April	18	39	57
May	9	94	103
June	29	69	98
Total Patients	**56**	**202**	**258**

Table 1: Total patients segregated according to months and stage of treatment

As per hospital policy patients who completed neoadjuvant treatment for more than 4 weeks, with high grade tumor biology, hormone receptor negative, Her2neu expression positive and partial or poor response to neoadjuvant therapy were offered surgery on priority as compared to others with less aggressive, hormone receptor positive, good treatment response tumors. Later group was deferred from surgery and put on hormonal treatment.

In April we operated on 57 patients, 39 (68.4%) were post neoadjuvant treatment and 18 (31.6%) were upfront surgeries. In May we operated on 103 patients, 9 (8.7%) up-front and 94 (91.3%) post neoadjuvant. In June operated on 98 patients 29 (29.6%) upfront and 69 (70.4%) post neoadjuvant. (As per Table 1)

Total number of Invasive lobular cancer patients operated in 3 months was 18, IDC 234, DCIS 5 and 1 occult breast cancer.

Tumor Type	Patients
ILC	18
IDC	234
DCIS	5
Occult	1
Total	**258**

Table 2: Tumor type

Total Her2neu expression positive patients were 74 and hormone receptor positive were 192.

Tumor Biology	Patients
Hormone Receptor	192
HER2Neu Expression	74
Triple Negative	32

Table 3: Tumor biology

In mid of May as per hospital policy pre-op COVID-19 testing within 24 hours before surgery was made compulsory for all patients undergoing surgery no matter they were symptomatic or not. If any patient was found to be COVID-19 positive, surgery was deferred for 2 weeks. After 2 weeks patient was contacted to know about any symptoms of COVID-19, if no symptoms, patients were booked for surgery. So in June 15 patients were operated who were previously COVID-19 positive. None of them showed any post op pulmonary complications up-to 30 days post op period.

All patients were followed up for 30 days after surgery to know if they developed any symptoms of COVID-19 in post op 30 days period which warrants COVID-19 testing. No patient was found to have developed respiratory symptoms for which they had to get COVID-19 testing. (As Per table 4 & 5)

Month	No	Patients recovered form COVID-19
April	57	0
May	103	0
June	98	15

Table 4: Operated patients recovered from COVID-19

Pre-Op COVID-19 +ve Patients Tumor Biology		
Tumor Type	**Patients**	**Tumor Biology**
ILC	1	ER+ PR+ H2N-
IDC	14	7 Patients with ER+, H2N- 3 Patients with ER+, H2N+ 3 Patients with ER-, H2N+ 1 Patients with triple -ve

Table 5 Pre-Op COVID-19 +ve Patients Tumor Biology

Discussion

On 30th January 2020, the World Health Organization declared the 2019 novel coronavirus disease (COVID-19) outbreak, which is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a public health emergency of international concern.

In Pakistan total number of reported cases of COVID-19 till September are 2,98,025, total recovered 2,82,553, critical 535 with death of 6,340 patients. When the global impact of COVID started number of reported cases in Pakistan were quite a few but with increasing numbers in March government implemented complete lockdown in the country with only emergency service providing departments remained open. Our hospital also shut down its elective work for 2 weeks, but with number of patients waiting for surgery in breast cancer department increased, hospital has to resume with breast cancer surgeries first.

Several measures need to be taken to minimize the risk of infection of patients with cancer (e.g. rescheduling non-urgent outpatient care appointments, telephone appointments instead of clinical assessments and when clinical assessment is deemed necessary, seeing patient in an isolation room after taking precautions) and to prevent spread of the disease [7].

General change in policy of Hospital

Health care workers:

- All staff was trained for donning and doffing of PPE.
- Reduction in number of patients.

In operation theater:

- It was decided to reduce the number of staff in surgical teams,i-e only one surgeon and assistant surgeon will scrub in every case with a scrub nurse.
- Staff was also reduced in holding bay, recovery area.

All health care workers when scrubbed will be wearing PPE, that includes double gowning which was later on changed in to single impermeable double layered

gown, goggles or face visor, N-95 mask with a protective second mask on it which was discarded after every cases however N-95 mask was retained for 7 days.

- Surgical team remained outside OR at the time of induction and will leave OR before extubation.
- No movement allowed from in or out of theater after induction of anesthesia.
- All staff other than scrubbed team present within theater would wear PPE as well.
- N-95 masks were in great shortage, it was advised to reuse N-95 for 7 days by each employee because supply was limited.

Out-patient department:

- Our one-stop breast clinic was stopped initially after resuming hospital services as hospital deferred new patients because of huge load of pending operative cases.
- Unnecessary hospital visits were discouraged.
- All communications regarding further plan of action was given through telephone i-e introduction of **Tele-clinic**. If hospital visit is necessary, patients were asked to visit without companion or if needed only one attendant allowed
- Patients were screened before entering the hospital building as described in screening
- Waiting area strict protocol was to maintain distance of 6 feet among patients or attendants
- Patients and their attendants were asked to wear masks all the time.
- All healthcare works would wear face masks and impermeable gown.

Inpatient facility

As there was huge increase in number for reported COVID cases, priority should be given to the management of the pandemic, equipment and facilities should be re-allocated to prevent shortages for COVID-19 patients. Another aspect was that, cancer patients have compromised immune system and have increases susceptibility for catching infection so they should be well protected against the infection. Therefore, following modifications accepted for hospitalized breast cancer patients:

- As per hospital policy, fewer beds will be allocated for breast surgery patients
- In breast surgery patients who have major surgery e-g MRM or axillary dissection with Breast conserving surgery will be admitted, wide local excisions with Sentinel lympnode biopsies will be done as day case surgery
- Time of hospital stay will be shortened
- Visitors will be restricted
- Number of staff in ward and rooms will be lessened

Screening

Strict screening protocols were observed for patients and hospital employees.

All hospital entry gates were equipped with screening teams.

Patients were asked for history of fever within a week, cough sore throat, difficulty in breathing, history of

contact with a person having COVID-19 disease and if they belong to high alert areas as marked by government where COVID-19 cases were reported in abundance.

Similarly all employees were screened at their entry points for signs and symptoms.

Anyone found to have fever or any signs and symptom was referred to Camp COVID-19 made at the outskirt of hospital vicinity for assessment and tests where further guidance till results were given.

There were educational announcements at entry gates to educate patients, families and employees about sign & symptoms of COVID-19 and when they should get there self-tested for COVID-19.

Prioritizing surgeries

Hospital policy about offering or deferring surgery was made on the basis of the risk assessment if by deferring surgery can affect overall survival or may lead to stage progression or by offering surgery improves overall survival or increases chances of cure.

After resuming services, all breast patients back log data reviewed and following decisions made.

All patients who were hormone receptors positive were put on endocrine treatment despite completing neoadjuvant therapy.

All patients who were hormone receptor negative and completed neoadjuvant therapy were offered surgery (more gap period after completing neoadjuvant were booked first), also those patient who started their treatment with locally advanced stage were given preference. Additionally, SSO strongly discourages not delaying patients with progressive disease on systemic therapy, angiosarcoma, and malignant phyllodes tumors and these cases should be considered for urgent surgery [8].

Patients who were post-neoadjuvant were preferred over upfront surgeries as seen in Table 1 for reference, upfront surgeries were more in subsequent months as in start new patients registration in hospital was also stopped to accommodate back log first.

Patients with benign breast conditions like fibroadenomas and duct ectasia were counseled and deferred from surgery. The European Society of Surgical Oncology (ESSO) statement on COVID-19 advises no surgery for benign disease or risk-reduction should be performed [9]. Breast abscess and seromas were offered conservative treatment first; if conservative management failed they were offered surgery. SSO's recommends deferring prophylactic and risk-reducing surgery-reconstruction and surgery for atypia and benign breast disease at least 3 months.

Decisions about COVID-19 and oncological treatment in patients with cancer should be made on a patient-by-patient basis by a multidisciplinary team experienced in treating oncological patients and medical specialists experienced in intensive care support [7]. ASCO advice for clinicians and patients is to make individual determinations based on the potential harms of delaying needed cancer-related surgery [10].

For ER+ DCIS, SSO' recommendation is to defer surgery for 3-5 months and treat with endocrine therapy and monitor monthly for progression.

Untreated DCIS has high priority for surgery as soon as safe operation rooms are available [11]. However in our study we operated on 5 patients who were diagnosed as a case of DCIS, out of which 2 were ER/PR –ve.

Pre-operative assessment:

Apart from pre-op anesthesia assessment and internal medicine evaluation of surgical patients, initially hospital policy was that all patients were screened for signs & symptoms of COVID-19.

Later in mid of month of May hospital policy changed to compulsory COVID-19 testing within 24 hours before surgery.

Impact of our policies on Healthcare workers:

Healthcare workers were overburdened as staff was lessened to decrease the exposure and spread of COVID-19. It was observed there was huge surge of positive cases among healthcare works of hospital after hospital resumed services. One of three breast surgeon consultants was positive for COVID-19 which has also led to patient burden on other two consultants.

It was observed that this spread among hospital employees was more because of general meeting point in café where there was need to remove masks for having food. However necessary protocols were observed in café i-e spacing of seats, limited number of employees allowed in café per time. As per this observation 3 separate temporary café were made to accommodate staff. Number of employees visiting café were restricted.

Impact of policy on Patients

It was beneficial in a way that out of 258 patients enrolled in the study none of them contracted the disease during hospital stay and 30 days after surgery. However there was psychological distress among patients because of this COVID-19 disease that they might get it in hospital.

There is no evidence yet that patients with cancer have an increased risk for COVID-19 infections nor is there evidence to support withholding a non-metastasised patient with cancer with COVID-19 treatment for either disease. In a study, 18 (1%; 95% CI 0.61–1.65) of 1590 COVID-19 cases had a history of cancer, which seems to be higher than the incidence of cancer in the overall Chinese population (285.83 [0.29%] per 100000 people [12].

However, accumulated evidence has shown that development of cancer is usually associated with a blunted immune status characterized by overexpressed immunosuppressive cytokines, suppressed induction of proinflammatory danger signals, impaired dendritic cell maturation, and enhanced functional immunosuppressive leukocyte populations, which is contradictory to the events believed to result in severe events in patients with COVID-19 [13].

The incidence of COVID-19 in patients with cancer would be more informative in assessing whether or not patients with cancer have an increased risk of COVID-19 [14]. In our study 258 patients who underwent surgery did not contracted COVID-19 in 30 days after surgery. This shows by following strict SOPs as discussed above patients were not more vulnerable to contract COVID-19 disease. Another aspect can be, in our patients surgeries were delayed
>4 weeks after neoadjuvant, this time have given them

strength to recover from neutropenia state.

Patients with cancer are more susceptible to infection than individuals without cancer because of their systemic immunosuppressive state caused by the malignancy and anticancer treatments, such as chemotherapy or surgery [15]. However author agrees with study [13] which proposes three major strategies for patients with cancer in this COVID-19 crisis, and in future attacks of severe infectious diseases. First, an intentional postponing of adjuvant chemotherapy or elective surgery for stable cancer should be considered in endemic areas. Second, stronger personal protection provisions should be made for patients with cancer or cancer survivors. Third, more intensive surveillance or treatment should be considered when patients with cancer are infected with SARS-CoV-2, especially in older patients or those with other comorbidities. However we lack data to support third strategy.

Conclusion

We concluded in our study that cancer patients, when operated with SOPs, are not more susceptible to contract COVID-19 infection. Patients with favorable biology (hormone receptor positive) can be deferred from surgery and put on hormonal treatment if they show good response with neoadjuvant chemotherapy. Patients with progressive disease on neoadjuvant chemotherapy, and locally advanced tumor to begin with, should be prioritized for surgery. Asymptomatic patients 2 weeks after the infection of COVID-19 can proceed with surgery without fear of developing pulmonary complications after general anesthesia. However our data is small for later group. Further research in this regard can lead to formation of guidelines to deal with respiratory contagious infections in cancer patients and their impact on post op period. However, in our country where we had limited resources we managed to provide health care. Cancer surgeries should not be stopped as chances of stage progression is more as compare to threat to healthcare professional's well being, if maximum efforts put in to reduce transmission of infections.

References

1. World Health Organisation (WHO) Coronavirus disease (COVID-19) outbreak webpage (https://experience .arcgis.com/experience/ 685d0ace521648f8a5beeeee1b9125cd) [accessed 9 August 2020].
2. Horton R. Offline: COVID-19 and the NHS—"a national scandal". Lancet (London, England) 395 (2020): 1022.
3. Moletta L, Pierobon ES, Capovilla G, et al. International guidelines and recommendations for surgery during Covid-19 pandemic: A Systematic Review. International Journal of Surgery 79 (2020).
4. International Agency for Research on Cancer. Global Cancer Observatory of the World Health Organisation. Cancer Today https://tinyurl.com/ w9w9msq [accessed 9 August 2020].
5. American college of Surgeons. COVID-19: Elective Case Triage Guidelines for Surgical Care. https://www.facs.org/covid-19/clinical-guidance/elective-case (2020).
6. Purcino FA, Ruiz CA, Sorpreso IC, et al. Management of benign and suspicious breast lesions during the coronavirus disease pandemic: recommendations for triage and treatment. Clinics 75 (2020)

7. Hartemink KJ, van Akkooi AC, Houwink AP, et al. Patients with cancer in the era of 2019 novel coronavirus disease. European Journal of Cancer 132 (2020): 125-126.
8. Available from: https://www.surgonc.org/wp-content/uploads/2020/03/ Breast-Resource-during-COVID-19-3.23.20 .pdf
9. Available from: https://www.essoweb.org/news/esso-statement-covid-19/
10. Available from: https://www.asco.org/asco-coronavirus-information/careindividuals-cancer-during-covid-19
11. Çakmak GK, Özmen V. Sars-CoV-2 (COVID-19) outbreak and breast cancer surgery in Turkey. European Journal of Breast Health 16 (2020): 83.
12. Liang W, Guan W, Chen R, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. The Lancet Oncology 21 (2020): 335-337.
13. Schreiber RD, Old LJ, Smyth MJ. Cancer immunoediting: integrating immunity's roles in cancer suppression and promotion. Science 331 (2011): 1565-1570.
14. Xia Y, Jin R, Zhao J, et al. Risk of COVID-19 for patients with cancer. The Lancet Oncology 21 (2020): e180.
15. Longbottom ER, Torrance HD, Owen HC, et al. Features of postoperative immune suppression are reversible with interferon gamma and independent of interleukin-6 pathways. Annals of Surgery 264 (2016): 370-377.