Section: Surgery

Research

MAJOR CANCER SURGERY DURING COVID- 19 PANDEMIC – EXPERIENCE OF CENTRAL INDIA

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Abstract

World faced a biggest challenge on health care system during Covid-19 pandemic and has become the focus of attention worldwide. The challenge faced by surgeon treating cancer patient is different, because most of the cancer surgeries are elective but cannot be delayed beyond a period of time due to biology of cancer and adverse effect on survival. A prospective database of elective cancer surgeries was analyzed from May 3rd 2020 to august 30th 2021 by group of surgeons in Jabalpur Madhya Pradesh. In symptomatic patient RT PCR testing was advised and HRCT chest was performed. During the study period 350 elective major cancer surgeries was performed. Median age of our cohort was 53 years and 52.5% patients were male. Head neck surgeries constituted 41.6 % followed by breast 22%, Gynae-oncology (10.2%) and gastrointestinal (10 %). In 8 patients the RT PCR test was positive. Additional 12 patients were advised quarantine in view of clinical suspicion even with a negative RTPCR report. None of the patients undergoing surgery had clinical suspicion for COVID-19 infection. 43% patients were having associated comorbid illness among them 11.7% of the patients were ASA class-3. There was no postoperative mortality in our cohort across all cancer sub sites. Our lower rate of complication and zero mortality over 8 weeks not only reflect our case selection policy, screening strategies, adopting best surgical practices, judicious use of personal protective equipment(PPE), best operating team members and using the basic protocol by using a triple layer/ N-95 mask with physical distancing and avoid overcrowding. Relevant clinical history and examination about COVID infection was the most critical factor before proceeding to surgery during pandemic. RT PCR should be done only in selective patients. Our result possibly represented the largest published series of central India on cancer surgery during COVID pandemic.

INTRODUCTION

World faced a biggest challenge on the healthcare system during Covid-19 pandemic and has become the focus of attention worldwide. The pandemic started in December 2019 and over a few months disease spread to other countries and finally across the world demonstrating a rapid doubling time.[1] SARS-CoV-2 is spread human-to-human by respiratory secretion and occasionally by feces. Most infections are asymptomatic or produce only mild symptoms whereas 10 to 15% occur in severe form requiring hospitalization and 3 to 4% require intensive care support. On 11th March 2020 World Health organization (WHO) had declared it is a global pandemic and as a public health emergency of international concern.[2] Protecting health care providers was a biggest challenge during pandemic including supplying of personnel protective equipment, arrangement of quarantine facility, maintained supply of food chain and increasing testing facility.

Government of India has imposed a nationwide lockdown from 24th March 2020 to contain the spread of coronavirus infection. Transformation of health care services all over India including caring of critical care COVID-19 patients resulted in massive diversion of critical hospital resources and affected treatment of non COVID-19 patients including cancer patients. Population based studies suggested a high COVID-19 death rate in patients. In most of the parts of the world hospitals treated only the patient with health care emergencies and postponed most elective surgeries.

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surgeries are elective but cannot be delayed beyond a period of time due to biology of cancer and adverse effect on survival. Possibility of the protracted nature of COVID-19 pandemic surgical oncologists are facing ethical and moral dilemmas in day to day practice while making decisions regarding cancer surgeries. Most of the guidelines are not based on high level evidence due to the unprecedented nature of COVID-19 pandemic. Treating team should make individualized treatment decision depending on the local circumstances.[2,3]
Whether to withhold surgery or modify the plan of treatment for cancer patients in COVID-19 pandemic is a dilemma in the oncology community. In oncology, the potential problem of collateral mortality is the primary concern from delayed or deferred treatment in patients with cancer. Substantial delay in diagnosis and treatment of any cancer would invariably result in poorer oncological outcome, with patients with early stage cancers needing surgery found to have advanced or metastatic disease. We are sharing our surgical experience of surgical oncology in central India during COVID 19 pandemic.

MATERIALS AND METHODS

A prospective database of elective cancer surgeries was analyzed from May 3rd 2020 to august 30th 2021 by group of surgeons in Jabalpur Madhya Pradesh. During Outpatient visit all patients were examined and tested in clean health care facility. All the outpatient was screened for COVID 19 by asking specific symptoms. In symptomatic patient RT PCR testing was advised and HRCT chest was performed. Oxygen saturation and fever testing was performed in every patient. If the RT PCR test was positive or HRCT was suspicious for infection and oxygen level was below 94% then isolation was advised for 7 to 14 days depending on symptoms and clinical-radiological correlation. In different series, 20 to 30 % false negative rate was reported of SARS-CoV-2 by RT- PCR method hence if clinical suspicion was high, infection could not be ruled out on the basis of RT-PCR alone and quarantine was advised.
During clinical visits of patients N-95 mask/ triple layer surgical mask was always used with frequent hand washing and use of sanitizer was the protocol. Selected patient advised neoadjuvant therapy in which surgery can be postponed without compromising outcome because of shortage of intensive units, beds and human power in COVID-19 pandemic. Patient was only advised to arrive at the hospital on the day or one day before operation. We performed straightforward operations in suitable patients as day care surgery (such as mastectomy or thyroidectomy) in a clean facility. We maintained a strict operating protocol to minimize the chance of infection as usual. Postoperative follow-up was appropriately managed by home visit, remote teleconferencing and advised to attend neighborhood health care facilities to minimize unnecessary hospital visits and admission if required. By following these protocols we performed onco-surgery to ensure patient safety.

RESULTS

During the study period 350 elective major cancer surgeries were performed. Median age of our cohort was 53 years and 52.5% of patients were male. Head neck surgeries constituted 41.6 % followed by breast 22%, Gynae-oncology (10.2%) and gastrointestinal (10 %). In 23 patients free flap was performed (7 –Free radial artery flap, 3- free fibula, 10 Antero-lateral thigh flap and 3 MSAP flap). Associated comorbid illness of our cohort was shown in diagram number-2. 43% patients were having associated comorbid illness among them 11.7% of the patients were ASA class-3. In a cohort of 250 patients 24.8% patient's surgeries were done after chemotherapy and no patient had an episode of febrile neutropenia in the postoperative course.
In 8 patients the RT PCR test was positive. Additional 12 patients were advised quarantine in view of clinical suspicion even with a negative RT PCR report. None of the patient undergoing surgery had clinical suspicion for COVID-19 infection. In one oral cancer patient surgery was postponed in view of high clinical suspicion due to low oxygen saturation level and high suspicion in HRCT chest. Patient succumbed due to COVID illness in COVID ICU care facility. 220 surgeries were performed without any testing and 20 surgeries were carried out after testing for COVID-19 infection. 20 patients were advised quarantine and surgery was performed after completion of quarantine period of 7- 14 days depends on clinical condition. Postoperatively none of the patients were tested positive for COVID in hospital. One breast patient was positive for COVID-19 postoperatively after 10 days of surgery and advised admission for oxygen supplementation then she recovered well. Outcome across all cancer sites was mentioned in [Table 3]. There was no postoperative mortality in our cohort across all cancer sub sites.
450 minor procedures were performed on an outpatient basis including punch biopsies (57.5%), core needle biopsies (34.2%) and endoscopic biopsies (7.3%). In 10% of minor procedure patients COVID testing was performed due to clinical suspicion. In the tested patient 20% (7) was positive and in 3 patients' symptoms and HRCT was highly suspicious even with negative RTPCR hence procedure deferred and advised quarantine. Post procedure all patients recovered well and there was no COVID sickness found. No surgery or minor procedure was performed in COVID positive or clinically COVID suspicious patient in our cohort.

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Table 1: Number of patients of different sites of cancer surgery were performed during Pandemic.

Head and Neck oncology	**Composite resection**	**54**
	Lip excision	12
	Tongue excision	23
	Neck dissection alone	3
	Laryngectomy	3
	Thyroid surgery	7
	Parathyroid surgery	1
	Salivary gland	4
	Maxillectomy	4
	Tracheostomy	6
Breast oncology	Modified radical mastectomy/Breast conservative surgery	77
Soft tissue sarcoma	Sarcoma excision	8
Skin tumor	Squamous cell carcinoma	11
	Basal cell carcinoma	3
	Melanoma	2
Gynae-oncology	Endometrial tumor	8
	Ovarian tumor	15
	Cervix	10
	Vulva	2
Uro-oncology	High inguinal orchiectomy	3
	Radical nephrectomy	2
	Penectomy and ilioinguinal block dissection	6
	Trans scrotal orchidectomy	3
Gastrointestinal oncology	Hepatopancreaticobiliary	7
	Gastrectomy	3
	Colorectal surgery	12
	Miscellaneous	13
Others		48
Total patients		350
Plastic surgery procedure	Free flap	23
	Loco regional flap	38
	Split skin grafting	12
Total plastic surgery procedures		73

Table 2: Epidemiological factors and different aspects of cohort of patient.

Median age		**53 year**
Gender	Female	168 (48%)
	Male	182 (52%)
Diabetic alone		42(12%)
Chronic obstructive pulmonary disease		14(4%)
Hypertensive alone		56 (16%)
Diabetic and hypertensive		28(8%)
Other associated illness		7(2%)
ASA 1 and 2		308 (88 %)
ASA 3		16 (12%)
ASA 4		0
Reexploration		4 (1.1%)
Readmission		10(2.8%)
Mortality		Nil

Table 3: Surgical outcome of different cancer sub sites.

	Breast oncology	**Head neck oncology**	**Uro-oncology**	**Gynae-oncology**	**Skin and soft tissue tumors**	**HPB and GIT oncology**
Total number of patients	77(22%)	117(41%)	35(10%)	35(10%)	24(7%)	35(10%)
Median Surgery duration (minutes)	105	285	190	210	130	240
Median blood loss (mL)	180	300	240	220	100	240
>1 day ICU stay(number of patients)	2	16	6	6	1	10
Median Hospital stay	1.2	9.5	7.2	6.4	7.5	8.2
Reexploration	Nil	2	Nil	Nil	1	1
Readmission	1	3	1	1	2	2
Mortality	0	0	0	0	0	0

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DISCUSSION

The COVID-19 pandemic has created a major dilemma for health care providers. Our aim was not to allow pandemic to delay access of patients with cancer for appropriate care. Patients with cancer were a high-risk group in the COVID-19 pandemic. They were already vulnerable to infection because of their underlying illness and often immunosuppressed status and are at increased risk of developing serious complications including intensive care unit admission and even death. In the absence of surgery, most patients will experience disease progression with resultant mortality. The cancer mortality in absence of surgery will far exceed the mortality due to infection with COVID-19. These observations and burden of cancer was compelling enough to continue major cancer surgeries.[4]

The rapid spread of SARS-CoV-2, near complete global lockdown, serious supply chain disruption, wide spread fear among patient and health care workers have resulted in compromised health care.[5] Several cancer centers drastically scaled back their services after reports from China, United States and other European countries hence the reason for our decision to continue cancer surgery was not easy.

First case of COVID-19 from the state was reported on 20th March 2020 from Jabalpur. It was in the red zone area of India. During evaluation if the patient was symptomatic for COVID-19 then the patient was advised for RT-PCR swab test and HRCT chest. In CT chest lung lesions (i.e., ground glass opacification) specific to COVID-19 infection may show the possibility of COVID infection. CT chest is 97% and 75% sensitive with positive and negative PCR tests, respectively.

Patient was admitted on the day or one day before the surgery. Patients and their caretaker activities were restricted in hospitals. In operation theatre minimum staff was allowed and ensured the door must be closed all the time. Surgical caps, N-95 or triple layer masks, double layer gloves, face shield or goggles were used during surgery by all surgical team members. For abdominal surgery our preference was open surgery. However a recent article showed interesting results regarding absence of virus in peritoneal fluid and peritoneal washing. Blood transfusion was performed if needed because there is no evidence of COVID transmission by blood transfusion. The aerosol or particle released during surgery by using an electrosurgical instrument, oscillating saw or drill may contaminate health care workers and surfaces of theatre. To reduce this suction devices and negative pressure operating room was used to minimize infection rate. After the surgery instruments, theatre walls, floors and laundry was sterilized as usual like standard procedure.

Tele-medicine tools were frequently used in managing early postoperative courses and follow-up to minimize hospital visits. We have taken specific COVID-19 preventive measures all the time like stringent restriction of relatives and friends in outpatient clinic, establishment of fever clinic and creation of isolation ward, provision of paid leave for high risk staff members (elderly, people with multiple comorbidities and who are taking immunosuppressive), rotation of staff to ensure full backup options in case of mass quarantine, avoiding complex surgeries likely to require multiple blood transfusions and prolonged intensive care stay.

Our lower rate of complication and zero mortality over 8 weeks not only reflect our case selection policy, screening strategies, adopting best surgical practices, judicious use of personal protective equipment (PPE), best operating team members and using the basic protocol by using a triple layer/ N-95 mask with physical distancing and avoid overcrowding. Thus our outcome measures, length of ICU stay and zero mortality seems to validate for continuing elective cancer surgeries with basic protocol of COVID-19 prevention. This study supports the study published by Memorial Sloan Kettering Cancer Centre that showed receipt of chemotherapy and major surgery were not associated with hospitalization and severe disease, age older than 65 years and treatment with immune checkpoint inhibitors were predictors for hospitalization and severe disease in cancer patients in this study.[4] Whereas similar study was published by Tata memorial center Mumbai showed similar results with zero mortality supporting the evidence to continue major surgeries. In our study not all patients were tested for RT PCR and if patient was having suspicious clinical symptoms then RT PCR with HRCT chest was performed.[1] Longer follow-up with larger patient group is needed to better understand the effect of COVID-19 on outcome in patient with cancer.[6]

CONCLUSION

Relevant clinical history and examination about COVID infection was the most critical factor before proceeding to surgery during pandemic. RT PCR should be done only in selective patients. Our result possibly represented the largest published series of central India on cancer surgery during COVID pandemic. There were certain limitations to this study that not all patients and staff associated with patient care were tested preoperatively due to lack of facility and financial concern of testing Possibility of asymptomatic carrier remained a concern always. In this scenario, oncologists need to weigh up the risk versus benefit balance carefully when planning the treatment of cancer patients. Definitely the results of this study will be good supporting evidence to fight against similar future pandemics.

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