

Do Uro-Oncology Day Care Procedures Need to Be Differed during COVID-19 Pandemic?—An Experience from Tertiary Cancer Care Center

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South Asian J Cancer

Abstract



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Keywords

- ▶ COVID-19
- ▶ Pandemic
- ▶ Health resources
- ▶ Uro-oncology
- ▶ Day care procedures

Background: The SARS-CoV-2 virus pandemic has affected millions all over the world in very short span and changed the way how health care system work across the globe. It is essential to continue cancer treatment in spite of such pandemics. Various recommendations were proposed for cancer management based on risk stratification, however, in urological malignancies, day care procedures (DCPs) are a part of complete spectrum of cancer care and standard operating procedures (SOPs) for day care procedures (DCPs) in oncology is lacking at present.

Material and Methods: This is an institutional review board approved retrospective observational analytical study performed in tertiary cancer care center, with aim to assess the impact of COVID-19 on Uro-oncology day care procedures (U-DCPs) in terms of changes in appointments and actual U-DCPs performed, demographic changes such as sex ratio and age wise attendance in pre and post lockdown period and to provide a SOPs to accomplish U-DCP efficiently in pandemics.

Result: There was 67.89% and 68.16% reduction in total numbers of appointment and performed U-DCPs. A statistically significant difference was found in cystoscopy, intravesical installation and miscellaneous UDCPs. Overall, 4.45% reduction and 4.52% increase in male and female patients underwent UDCPs respectively, M:F ratio reduced from 3.58:1 to 2.79:1 and 30% to 50% reduction in overall patient statistics in post lockdown compare to pre lockdown procedures.

For various age groups there was a statistically significant change in the number for males underwent cystoscopy in ($p < 0.001$), Intravesical therapies ($p < 0.001$) and miscellaneous procedures ($p < 0.004$).

DOI <https://doi.org/10.1055/s-0043-1776289> ISSN 2278-330X

How to cite this article: Srivastava N, Pal M, Prakash G, et al. Do Uro-Oncology Day Care Procedures Need to Be Differed during COVID-19 Pandemic?—An Experience from Tertiary Cancer Care Center. *South Asian J Cancer* 2024;00(00):00–00

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Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

Conclusion: We are now coming up to the fact that effective management of healthcare system during pandemics require establishment and effective implementation of standard protocols. Routine major urological surgical care is continued using a tiered standard of protocols (SOPs) and adequate precautions. This study may provide an insight into impact of COVID-19 on UDCPs and what precautions and strategies can be institutionalized so that the patients and the health care workers remain protected from contracting infection while in performing DCPs during pandemic or similar circumstances.

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-induced coronavirus disease 2019 (COVID-19) infection spread like a wildfire across the globe in 2019 and 2020 and presented an unprecedented situation in front of the healthcare system worldwide.¹ Low- and middle-income countries (LMIC) like India faced dual challenge of combatting the burden which the pandemic imposed on their already weak healthcare system as well as to curtail the spread of infection among the large population. This led to the implementation of various strategies, varying from personal measures like hand hygiene, protective masks, and physical distancing to administrative steps like intensive testing, travel restrictions, and nationwide lockdown.²

Healthcare systems that were strained by the rapid influx of large number of COVID-19 patients, limited resources, and reduced manpower due to high number of infections among healthcare workers, responded by suspending or postponing the nonemergent and non-COVID-19-related care and diverting the healthcare resources to COVID-19 directed treatment plans.

Cancer care was adversely affected by such strategies because not only there was impaired access to healthcare facilities due to travel restrictions and fear and anxiety of contracting the virus among patients, but also routine cancer diagnosis and treatment were delayed due to deferment of elective surgeries and outpatient services. This led to reduced number of hospital registrations, reduced diagnostic tests, elective cancer surgeries, and reduced number of patients on chemotherapy and radiotherapy.³

Various guidelines recommended stratifying the disease into risk categories and going ahead with surgery for high-risk patients, while deferring elective major surgeries for low-risk categories. Standard operating protocols were established specifically for major surgical procedures and operation theater (OT) management.⁴⁻⁶

Uro-oncological day care procedures (UDCPs) holds a unique place in onco care as they include invasive minor operating room procedures that consist of both diagnostic and therapeutic modalities. Also, they play an important role in surveillance and detection of tumor recurrences thus covering large spectrum of cancer care in uro-oncology. We believe that the guidelines for major surgical procedures cannot be extrapolated to manage UDCPs since they are vital procedures required at all steps of cancer care in uro-

oncology and at the same time have increased chances of virus transmission due to their invasive nature that cannot be overlooked.

In this article, we describe the impact of COVID-19 on UDCPs and highlight how were they managed efficiently in tertiary care cancer referral center that continued cancer care during all stages of the pandemic and propose a scheme to manage UDCPs in such calamities while maintaining optimal cancer care and preserving healthcare resources.

Materials and Methods

This is an institutional review board-approved retrospective analysis of UDCPs from December 2019 to July 2020 in a high-volume cancer care center in India.

Sample size formulated was based on data retrieved from prospectively maintained electronic medical records and divided into two time frame based on date of lockdown imposed in India:

- A) Pre-lockdown period: December 2019 to March 2020 (112 days) and
- B) Lockdown period: March 2020 to July 2020 (129 days).

(Pre-lockdown period was measured from December so that both the time periods and data can be balanced and compared)

All patients above the age of 18 years who were scheduled for UDCPs in study period were included in study.

Data collected were age, sex, and numbers of appointments and performed UDCPs in each time period.

Variables analyzed comparing frequency and proportion for the total appointment performed UDCPs among sex, in various age groups (a) less the 30 years, (b) 31 to 40 years, (c) 41 to 50 years, and (d) more than 60 years during the pre-lockdown period and during lockdown.

Based on definition of DCPs: cystoscopy, cystoscopy and biopsy, transurethral resection of bladder cancer (TURBT) performed for single and small tumors, intravesical instillation, double J (DJ) stent insertion/ removal, and miscellaneous procedures (open biopsies for penile cancer and haematolymphoid malignancies, circumcision, secondary suturing, emergency bladder clot evacuation, incision, and drainage of pus/hematoma) were included in this study termed as UDCPs.⁷

Data was descriptively summarized using and procedures performed during the pre-lockdown and post-lockdown

period. To compare the proportions of each UDCPs, between the two time periods, we performed the chi-squared test or Fisher's exact test as needed (p -Value was set as 0.05.)

Results

In our retrospective analysis, there was 67.89 and 68.16% reduction in total numbers of appointment and performed UDCPs, respectively, during lockdown. A statistically significant difference was found in cystoscopy and intravesical installation in both periods, difference in miscellaneous UDCPs were statistically significant during lockdown, while TURBT, DJ stenting/removal, cystoscopic biopsy did not significantly differ between the pre-lockdown and lockdown period (→Table 1).

On comparing differences of UDCPs performed in male and female, there was an overall 4.45% reduction and 4.52% increase in male and female patients, respectively, during lockdown. M:F ratio reduced from 3.58:1 to 2.79:1 in lockdown compared to pre-lockdown.

Males had statistically significance difference in cystoscopy, intravesical instillation, and miscellaneous UDCPs, while female population had statistically insignificant differences in similar UDCPs (→Table 2).

While comparing the age wise difference in UDCPs in both periods, there was 50% reduction in 31 to 40 years age group and approximately one-third reduction in UDCPs performed in rest of age groups during lockdown period. During pre-lockdown, 72.94% patients were more than 50 years old, and 68.83% patient underwent UDCPs in lockdown. There was approximately 30% reduction in number of patients of 51 to 60 years and more than 60 years age group, respectively, during lockdown.

On comparing UDCPs in age groups, in the pre-lockdown and lockdown for age group 31 to 40 years, 51 to 60 years, and more than 60 years, there was a statistically significant change in the number for the cystoscopy in males ($p < 0.001$). Intravesical therapies were more performed in lockdown period (58.5%) in males for the age group of 31 to 40 ($p < 0.001$) with similar pattern also seen in 51 to 60 age group and more than 60 age group ($p < 0.001$). Significant change in miscellaneous UDCPs was seen in males with more than 60 years ($p < 0.004$).

In female patients, there was no statistically significant UDCPs found in age group comparison (→Table 3).

Discussion

COVID-19 pandemic had brought about an unexpected impact on the cancer care services that will likely to lead to stage

Table 1 Comparison of appointments and performed UDCPs during pre- and post-lockdown period

Procedure	UDCPs appointment			UDCPs performed		
	Pre-lockdown (%)	Post-lockdown (%)	p -Value	Pre-lockdown (%)	Post-lockdown (%)	p -Value
TURBT	34 (2.61)	9 (2.15)	0.7323	30 (2.71%)	14 (3.97%)	0.2272
DJ stenting/removal	15 (1.15)	3 (0.72)	0.6291	29 (2.61%)	12 (3.40%)	0.4369
Cystoscopy	918 (70.51)	237 (56.70)	<0.001	742 (66.91%)	158 (44.76%)	<0.0001
Cystoscopic biopsy	0	0	0	12 (1.08%)	1 (0.28%)	0.1638
Intravesical installation	305 (23.43)	153 (36.60)	<0.001	265 (23.90%)	139 (39.38%)	<0.0001
Miscellaneous	30 (2.30)	16 (3.83)	0.1322	31 (2.80%)	29 (8.22%)	<0.0001
Total	1302	418		1109	353	

Abbreviations: DJ, double J; TURBT, transurethral resection of bladder cancer; UDCPs, uro-oncological day care procedures.

Table 2 Comparison of male and female who underwent UDCPs in pre-and post-lockdown period

Procedure	Pre-lockdown	Lockdown	p -Value	Pre-lockdown	Lockdown	p -Value
	Performed (%)	Performed (%)		Performed (%)	Performed (%)	
	Male			Female		
TURBT	30 (3.5)	12 (4.6)	0.4991	0 (0.0)	2 (2.2)	0.1346
DJ stenting/removal	24 (2.8)	7 (2.7)	1	5 (2.1)	5 (5.4)	0.2165
Cystoscopy	580 (66.9)	104 (40.0)	<0.001	162 (66.9)	54 (58.1)	0.1636
Cystoscopic biopsy	8 (0.9)	1 (0.4)	0.6471	4 (1.7)		–
Intravesical installation	203 (23.4)	115 (44.2)	<0.001	62 (25.6)	24 (25.8)	1
Miscellaneous	22 (2.5)	21 (8.1)	<0.001	9 (3.7)	8 (8.6)	0.1222
Total	867 (78.18%)	260 (73.65%)	0.0913	242 (21.82%)	93 (26.35%)	0.09126

Abbreviations: DJ, double J; TURBT, transurethral resection of bladder cancer; UDCPs, uro-oncological day care procedures.

Table 3 Age group comparison of UDCPs in pre- and post-lockdown period

Procedure	Sex	Age groups						>60							
		18-30		31-40		41-50		51-60		Pre		Post		p-Value	p-Value
TURBT	M	-	-	-	1 (2.4)	-	5 (2.6)	3 (5.0)	0.596	11 (3.4)	3 (3.1)	14 (2.9)	5 (3.4)	1	0.9738
	F	-	-	-	-	-	-	1 (1.7)	-	-	-	-	1 (0.7)	-	-
DJ stenting/ Removal	M	4 (12.9)	1 (11.1)	1	-	4 (2.0)	3 (5.0)	0.4369	9 (2.8)	1 (1.0)	7 (1.5)	2 (1.4)	1	0.556	
	F	-	-	2 (2.7)	1 (2.4)	-	2 (3.3)	-	-	1 (1.0)	3 (0.6)	1 (0.7)	1	-	
Cystoscopy	M	16 (51.6)	3 (33.3)	0.5568	43 (58.9)	9 (22.0)	72 (36.7)	18 (30.0)	0.4228	182 (55.7)	26 (27.1)	267 (55.4)	48 (32.7)	<0.001	
	F	5 (16.1)	3 (33.3)	0.5076	15 (20.5)	1 (2.4)	51 (26.0)	13 (21.7)	0.6093	38 (11.6)	15 (15.6)	53 (11.0)	22 (15.0)	0.3861	
Cystoscopy with biopsy	M	-	-	-	-	-	-	-	-	2 (0.6)	-	5 (1.0)	1 (0.7)	-	1
	F	-	-	-	-	-	1 (0.5)	-	-	1 (0.3)	-	2 (0.4)	-	-	-
Intravesical therapy	M	-	2 (22.2)	-	6 (8.2)	24 (58.5)	40 (20.4)	8 (13.3)	0.2986	61 (18.7)	36 (37.5)	96 (19.9)	45 (30.6)	<0.001	0.009
	F	4 (12.9)	-	-	4 (5.5)	3 (7.3)	13 (6.6)	5 (8.3)	0.8711	10 (3.1)	4 (4.2)	31 (6.4)	12 (8.2)	0.8341	0.5881
Miscellaneous	M	2 (6.5)	-	-	3 (4.1)	2 (4.9)	5 (2.6)	4 (6.7)	0.2653	8 (2.4)	8 (8.3)	4 (0.8)	7 (4.8)	0.0187	0.004
	F	-	-	-	-	-	4 (2.0)	3 (5.0)	0.4369	5 (1.5)	2 (2.1)	-	3 (2.0)	1	-
Total		31	9	-	73	41	196	60	-	327	96	482	147	-	-

Abbreviations: DJ, double J; TURBT, transurethral resection of bladder cancer; UDCPs, uro-oncological day care procedures.

migration with unknown consequences on the long-term prognosis.³ It has affected the whole spectrum of cancer care that includes cessation of screening programs, delay in patient presentation and diagnosis, delay in elective surgeries, and use of alternate treatment pathways to reduce the risk of infection and reduction in clinical trials impacting future research.⁸

This coupled with already existing lack of uniform guidelines for cancer management in developing country like India that has had a negative impact on cancer care and vital steps are needed to mitigate its effects.

Various authors proposed recommendations and algorithms on decision-making as per risk stratification of elective surgical procedures based on the underlying indication and predicted resource utilization during the current COVID-19 pandemic.^{4,6}

Wallis et al in their narrative review of literature of evaluating the risks of deferring treatment in genitourinary cancers highlighted the need for timely initiation of treatment in patients with high-risk diseases in whom delays are likely to lead to adverse outcomes.⁹ Narain et al in a similar review for the management of urological cancers in Indian scenario laid down recommendations for risk stratifying urological cancers as per the site and the stage of disease and underscored the importance of continuing treatment for high-risk cases and deferring treatment for low-risk cases.¹⁰

However, for oncological day care procedures, no separate recommendations were proposed. Our study proposed an algorithm to manage oncological day care procedures in such calamities.

Various studies had reported the impact of the pandemic and lockdown on routine urological surgical procedures. Bansal et al¹¹ reported a decline of 87.7, 70.7, and 76% in uro-oncologic, renal transplants, and other urological procedures performed during lockdown compared with a similar duration in 2019 at a tertiary care center in India. Devana et al¹² in a similar study from a tertiary care center in India showed that during the pandemic the urological procedure reduced to 13.58% compared to pre-lockdown, in which all cases performed were emergencies out of which TURBT was the most common performed procedure (70.4%).

Another retrospective analysis of 152 patients from a tertiary care center from western India showed that during lockdown only 29.6% of cases were new patients, while rest were follow-ups. Out of the total procedures, 67.1% were emergency or semiemergency and 32.9% were outpatient department (OPD) room procedures. OPD room procedures were Foley removal/change, suprapubic catheter change (15.8%)/removal (18.4%), urethral/meatal calibration, and hormonal therapy. Local anesthesia was the most used anesthesia (69.1%).¹³

In our study, there was 68.16% reduction in UDCPs during lockdown. About 93.2% of the cases were done under local anesthesia and only 6.8% (all TURBTs) cases were performed under general anesthesia. Among the procedures, there was a statistically significant difference in number of cystoscopies and intravesical instillation procedures. This can be attributed

to the decrease in number of follow-up cystoscopies due to implementation of institutional strategies and referrals to local nearby urologists by our institute during lockdown.

In our study, the male to female ratio undergoing UDCPs was compared in both the cohorts in all UDCPs. There were statistically significant difference in males undergoing cystoscopy, intravesical instillation, and miscellaneous UDCPs, while this difference was statistically insignificant in females. John et al¹⁴ in their retrospective analysis of cancellation of general oncological appointments during lockdown reported that there were more cancellations in females. Our study showed contrary results. Though both studies were small retrospective studies and had different cohorts, they need further research for any conclusion.

On stratifying for age, we found patient aged more than 50 years made largest cohort in attending UDCPs in both periods.

Our center is a high-volume cancer care center situated in the western part of India that was one of the most severely affected areas by COVID-19 across the country decided to continue delivery of cancer care throughout all stages of the pandemic including the lockdown period as a proactive measure to deliver optimal and timely treatment to cancer patients as well as managed resources effectively to cater both COVID-19-related and non-COVID-19 services.¹⁵

The following institutional policies were implemented to regularize UDCPs and to minimize the risk of transmission of SAR-CoV-2 virus to patients as well as the healthcare providers (**- Figs 1 and 2**).

Risk Stratification and Rationalizing Day Care Procedure Appointments

Patients were risk stratified based on their disease status. All new patients requiring diagnostic procedures, patients on active treatment and requiring evaluation procedures, and patients who had completed treatment recently (< 1 year) were considered high risk and given priority for UDCPS.¹⁰ Patients with low-risk features and long-term follow-up patients were telephonically contacted and requested to follow up with a uro-ono/uro-/oncosurgeon at their local place and were encouraged to utilize our teleconsultation facility for further treatment-related decisions.

Management of Healthcare Providers

We formed a team consisting of a surgeon, a nurse, and a technician. A particular team used to be involved in all day care procedures of a single day so that in the event that one team or its member is infected or quarantined there is a backup. For cases which required general anesthesia, policy of minimum staff exposure was applied.¹⁶ Separate staff were appointed for patient screening areas, calling, and shifting patients.

Preventive Measures for Infection Spread

Considering the high infectivity and perioperative mortality (20%) in COVID-19 carriers/patients, every attempt should be made to diagnose carriers of SARS-CoV-2 before surgery.

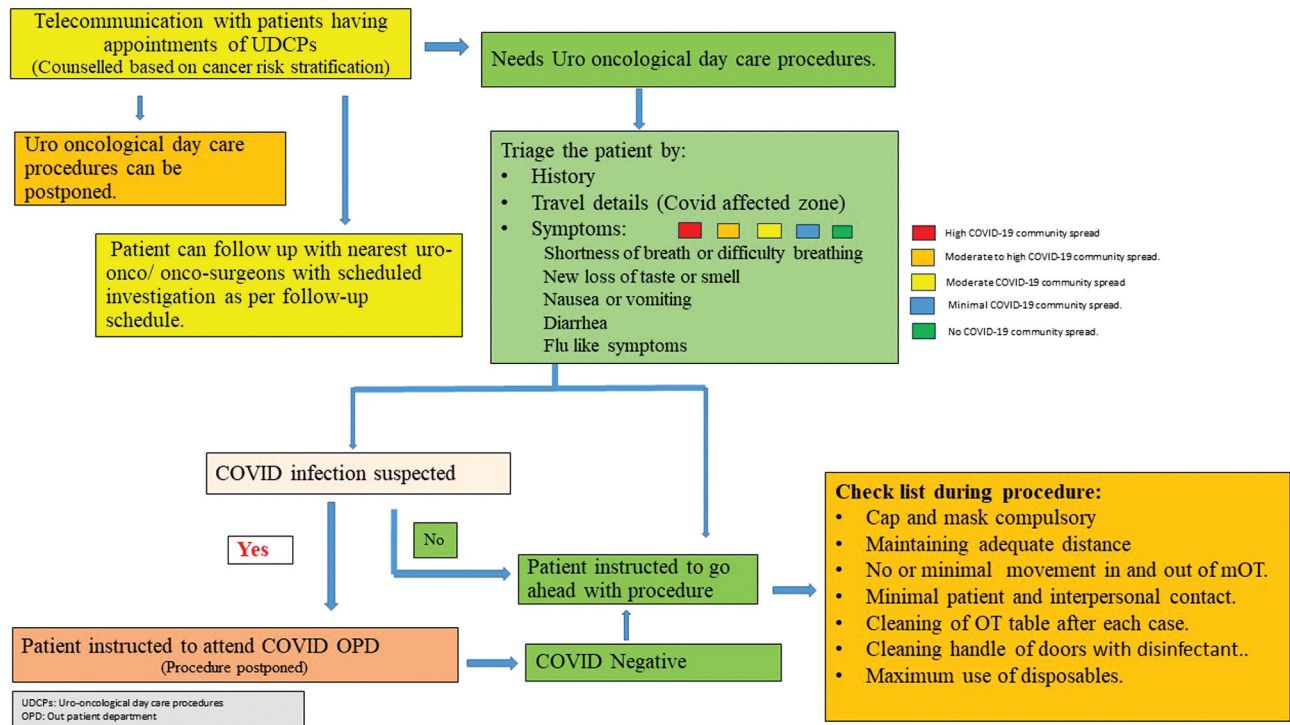


Fig. 1 Institutional policy: to triage the patient for uro-oncological day care procedures (UDCPs). COVID-19, coronavirus disease 2019; mOT, modular OT; OPD, outpatient department; OT, operation theater.

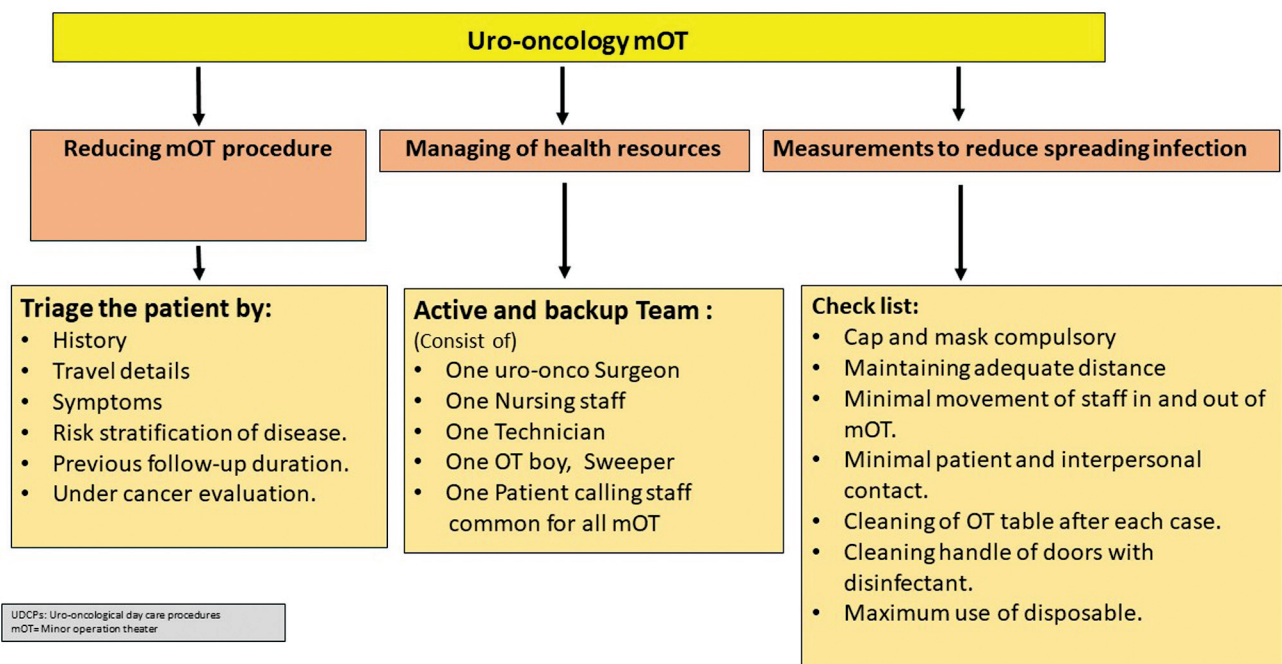


Fig. 2 Institutional policy to manage uro-oncological day care procedures (UDCPs). mOT, modular operation theater.

a. **Patient triage:** Patient were triaged at reception OT as per institutional policy by screening with symptom-based questionnaire (~Fig. 1) and patients having any positive history were asked to attend COVID-19 clinic

and their procedure postponed. Patients with negative history were taken up for the procedure. Due to large number of patient schedule for minor procedures and institutional policy, only suspected

patients were asked to performed test. Emergency minor procedures were performed with universal precaution and minimum staff involvement.

- b. **COVID-19 appropriate behavior:** All patients and minor OT staff were asked to wear mask and wash their hands with sanitizers and maintain safe physical distancing.
- c. **Role definition in OTs:** Separate staff was appointed for different stations that included patient reception area, calling patients, shifting patients and separate team was formed for managing the day care OT.
- d. **Personal protective measures inside OTs:** Maximum use of sterile equipment sets, disposables were utilized—like drapes, catheters, sterile saline and water, biopsy guns. Face shields were used for all aerosol generating procedures. After each procedure, OT table and handle of doors were cleaned with alcohol-based disinfectant. The waste disposal was as per the standard biomedical waste disposal norms.

We must realize and accept the fact that this virus is going to stay with us and elective surgical procedures resumed as before worldwide, but we are not sure about re-emergence of this virus or other calamities.

Despite being retrospective nature and focused on only one oncological subspecialty to represent entire oncological DCPs as its limitation, this is first study addressing UDCPs in terms of how they were affected and managed during COVID-19 pandemic, which can be useful in managing DCPs in other specialties in developing countries as well as other regions around the world during similar circumstances.

Conclusion

COVID-19 had brought to the fore the existing deficiencies of the healthcare system and reoccurrence of such catastrophes is unpredictable. Preparation for such circumstances involves intervention at the different levels in healthcare center. In oncological day care procedures, these measures include management of staff and patients, infection prevention strategies that can be challenging. We believe that proposed measurements in managing UDCPs may help to maintaining optimal cancer care and preserving healthcare workers in such circumstances.

Conflict of Interest

None declared.

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