

**Tele-Urology in the Era of COVID-19: an Experience of the Reconstructive Urology
Department in Iran**

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Abstract:

Introduction: The outbreak of coronavirus has put additional pressure on the health care systems of many countries; but telemedicine can be an important way to deal with it, especially for people whose health has been affected by the virus. The present study aims to investigate the Implementation of a Tele-urology Program for Reconstructive Urologic Referrals: Initial Results and Patient Satisfaction.

Material and methods: All patients with a history of a urethral reconstructive surgery during last year was entered to our study and two nurses collected data of demographic and past medical history of patients by existed. Telephone visits: Fellowship of reconstructive urology was connected to patients during a phone call and filled the USS-PROM and COVID-19 questionnaires. Face to face visits: All patients were asked to answer the questionnaire about recent exposure and infection by corona virus, recent travel and other risk factors of COVID-19.

Results: Mean of USSPROM scale was calculated as 1.65 (+2.91) with a range of 0-15. Based on categorization for USSPROM scale, 74 patients (94.8%) had mild symptoms while 4 patients (5.1%) had moderate symptoms and needed further medical attention. Four patients with moderate USSPROM score were required to cystoscopic evaluation, which one patient with moderate USSPROM score had severe stricture and candidate for redo urethroplasty. Two other patients need for urethral stricture dilatation. Cost was calculated based on taxi-service fee. Accordingly, the average (+SD) cost for in-person visits to the physician was estimated as 4.80 + 4.32 million Rials. In terms of distance, the average distance for receiving medical services according to the patient's residence area was 373.2 +348.79 kilometres. In terms of the patient's opinion regarding virtual examination, inappropriateness of virtual visits for physical examination, and patient's

inability to explain the problem correctly, patient`s condition at the time of the virtual visit were the main challenges reported by the respondent.

Conclusion: Considering that the present COVID-19 emergency will likely last for months, telehealth could be the safest way to deliver urological care for a large percentage of the patients, such as those who are more at risk of unfavorable outcomes of COVID-19.

key words :Tele-urology ,COVID-19, urology, reconstructive

Introduction:

Currently, we are facing a crisis of corona spread; one of the problems is the influx of patients to medical centers and their triage. Considering that symptoms of corona disease is similar to other viral diseases, so most of the time they don't have significant disease, but presence of these patients in medical centers, not only leads to endangering medical personnel and doctors, but also may expose them to catch infection from medical centers because of contamination of hospitals. In fact, hospitals can spread the disease while treating patients with corona disease.

On the other hand, follow-up treatments for patients infected with corona, can spread the disease. Eighty percent of patients with coronavirus do not need to refer to hospital, and many are not required to leave the home if an infection is diagnosed.

The outbreak of coronavirus has put additional pressure on the health care systems of many countries; but telemedicine can be an important way to deal with it, especially for people whose health has been affected by the virus.

Physicians can make an initial diagnosis of the disease by evaluating symptoms such as fever and cough and the patient's communication with others. Also, the laboratory's order to confirm the infection can be transmitted electronically to minimize contact in epidemic conditions. Telemedicine is made easier by devices such as Internet-connected thermometers, pulse oximeters and other technologies to control vital signs. Sometimes a crisis can be a motivator for change.

Currently, basis of applying telemedicine is prepared and it can reduce many of these transfers, and in fact, it can be the first step of triage of patients, and while preparing a close relationship between doctor and patient, physical and face-to-face communication is largely prevented. People, who are invited to the clinic at the discretion of the doctor, consider as infected and all preventive clues applied for them from the beginning of triage.

The COVID-19 virus epidemic crisis was a testament to the value of telemedicine, which has long been recognized as a way to provide medical services for people in disadvantaged and underprivileged areas and includes medical emergencies u to psychologic issues. Many of the urgent needs for care, mental health, post-surgery follow-up, and diabetes control are issues that can be easily managed through telemedicine.

Also follow-up and supportive therapies and control of people related to patients or their families can be done through self-quarantine, and at the same time communication with doctors for accurate monitoring can be done through these platforms. However, in this situation, we should use all the available capacity to control the disease as much as possible

Material and methods

Our department is the center of excellence of reconstructive urology in Iran that starts its work at 1995 with more than 300 operations annually. In February 2020, department of urology decided to postpone all elective surgery and visit all patients by telephone.

Indication

All patients with a history of a urethral reconstructive surgery during last year was entered to our study and two nurses collected data of demographic and past medical history of patients by existed document.

Telephone visits

Fellowship of reconstructive urology was connected to patients during a phone call and filled the USS-PROM and COVID-19 questionnaires. Expert staff of department examined the data after calling each patients and he written an instruction or prescription person by person.

Face to face visits

All patients were asked to answer the questionnaire about recent exposure and infection by corona virus, recent travel and other risk factors of COVID-19. We asked patients who had moderate to severe urinary symptoms or postoperative complications like wound infectious, urinary retention and etc. to refers to our clinic for more evaluations. If primary screening was negative, patient and physician were visit together with standard masks and appropriate distance. If surgical intervention was mandatory, patients were evaluated for COVID-19 by real-time PCR and lung CT scan.

Results:

Overall, successful telephone calls were made with 78 patients (response rate=89.6%). Mean of USSPROM scale was calculated as 1.65 (± 2.91) with a range of 0-15. Based on categorization for USSPROM scale, 74 patients (94.8%) had mild symptoms while 4 patients (5.1%) had moderate symptoms and needed further medical attention. No patients reported severe symptoms. Distribution of USSPROM symptom score according to etiology showed that 25% of cases with congenital etiology, 16% of cases with trauma, and 6 % of cases with PUFDD had moderate score while other etiologies (including straddle, infection, iatrogenic, hypospadiasis) had no cases with moderate symptom score.

Complications:

Four patients with moderate USSPROM score were required to cystoscopic evaluation, which one patient with moderate USSPROM score had severe stricture and candidate for redo urethroplasty. Two other patients need for urethral stricture dilatation.

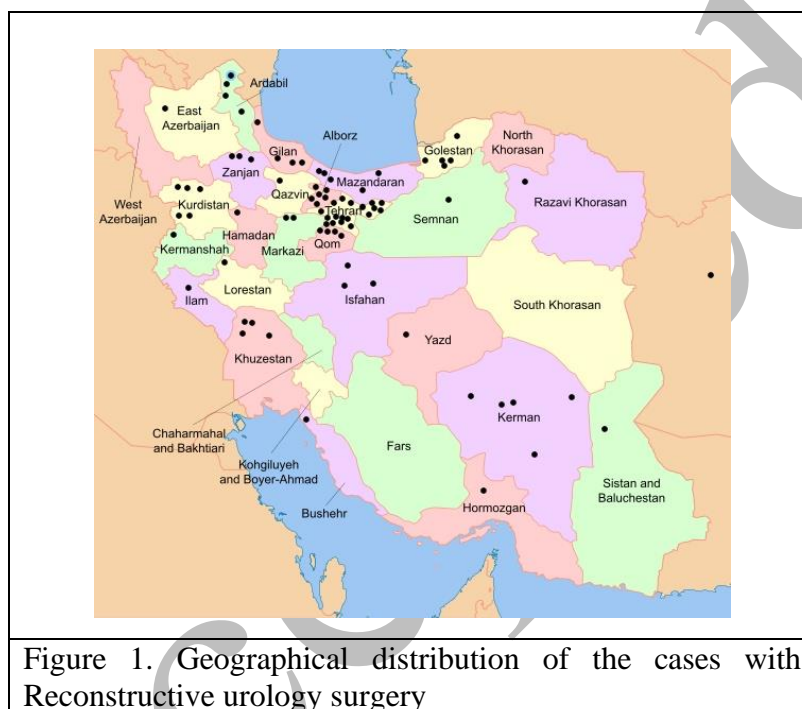
Save time and cost and prevention of traveling

Cost was calculated based on taxi-service fee. Accordingly, the average (\pm SD) cost for in-person visits to the physician was estimated as 4.80 ± 4.32 million Rials. In terms of distance, the average distance for receiving medical services according to the patient's residence area was 373.2 ± 348.79 kilometres. (Table-1) Geographical distribution of the cases is presented in Figure 1.

Characteristic	Category	N, %; Mean \pm SD	USSPROM score	
			Mild symptom (n=74,94.8%)	Moderate symptom (n=4,5.1%)
Occupation	Self-employed	19 (25.3%)	17 (89.5%)	2 (10.5%)
	Retired	5 (6.6%)	5 (100%)	0
	Unemployed	14 (18.6%)	14 (100%)	0
	Employed	27 (36%)	25 (92.6%)	2 (7.4%)
	Student	5 (6.6%)	5 (100%)	0
	Farmer	5 (6.6%)	5 (100%)	0
Education	Illiterate	2(2.6%)	2 (100%)	0
	Elementary	26 (34.2%)	23 (88.4%)	3 (11.5%)
	High school-diploma	27 (35.5%)	27 (100%)	0
	Associates	6 (7.8%)	6 (100%)	0
	Bachelor	11 (14.4%)	10 (90.9%)	1 (9.1%)
	MSc	4 (5.2%)	4 (100%)	0
Etiology	PFUDD	33 (42.3%)	31 (93.9%)	2 (6.1%)
	Straddle	14 (17.9%)	14 (100%)	0
	Other Traumas	6 (7.6%)	5 (83.3%)	1 (16.6%)
	Infection	6 (7.6%)	6 (100%)	0
	Iatrogenic	5 (6.4%)	5 (100%)	0
	hypospadias	3 (3.8%)	3 (100%)	0
	BXO	2 (2.5%)	2 (100%)	0
	Congenital	4 (5.1%)	3 (75%)	1 (25%)
	Surgery	1 (1.2%)	1 (100%)	0
	Unknown	4 (5.1%)	4 (100%)	0
Follow up	Telephone	49 (62.8%)	48 (98%)	1(2%)
	In-person	20 (25.6%)	18 (90%)	2 (10%)

	Video-chat	9 (11.5%)	8 (89%)	1 (11%)
Follow-up satisfaction		98 (4.48)	98.1(4.43)	100 (0)
Distance (km)		373.2 (348.79)	369.8 (354.7)	351.2 (348.8)
Time (min)		268.9 (227.12)	266.3 (230.3)	256 (238.4)
Cost*		4.80 (4.32)	4.78 (4.40)	4.72 (4.44)

*in 1,000,000 Iranian currency (Rials)



Discussion:

COVID-19 pandemic is significantly modifying the health systems worldwide. It has been accompanied with substantial implications on the medical disciplines that were not primarily involved in the management of COVID-19 pandemic. Specifically, the growing need to comply with quarantine strategies in order to protect patients and physicians has brought novel interests in telehealth interventions, which allows performing many clinical routines safely and efficiently (1). This study aimed at implementation of routine checkups for patients undergone reconstructive urologic surgeries using telecommunication routes during Covid-19 pandemic in a tertiary hospital in Tehran city. The rationale for the present study was to minimize contact of the patients with healthcare settings, where a higher risk of contamination by Coronavirus exists.

Telemedicine, or on a broader context telehealth, is defined as the active clinical/healthcare interactions between spatially separated patients and care givers using various techniques (2). It

can be regarded as an efficient approach in public health emergencies allowing adequate protection for patients as well as clinicians (3).

In urology, telemedicine was initially implemented in the operating room and in the postoperative setting (4). The results of a recent systematic review shows that telehealth has been implemented successfully in several common clinical scenarios, including the decision-making process following the diagnosis of non-metastatic prostate cancer, initial diagnosis of hematuria, diagnosis and follow-up care of uncomplicated urinary stones, initial evaluation of patients with urinary infections, and follow-up care after surgical treatments or pelvic organ prolapse(1).

We found that nearly 95% of the patients undergone reconstructive urology treatments can easily be managed via tele-communication routes while the other 5% required in-person visits by the treating physician. This subgroup of patients was referred to the study hospital mainly due to the higher scores of USSPROM in the telephone interview. This finding is in line with previous experience with telemedicine in urologic patients, where only patients with critical conditions were indicated for in-person visits (5).

Implementation of routine clinical checkups through advanced technologies is more appealing for the newer generation of patients, who are skilled with digital technologies. We found that most of our study subjects aged between 20-50 years while more than half of them (63%) preferred to have their routine checkups via telephone and 98% of them were satisfied with the quality of telephone checkups. We believe that favoring telephone calls may reflect a shift in patients' attitudes during the Covid-19 pandemic. Simultaneously, younger patients usually have more convenience with digital application for checkups. Additionally, they might be more aware to prioritize on health and therefore, are more likely to adhere to physician's orders and have better clinical outcomes(6). From another perspective, long distances and need to travel to Tehran city in order to receive medical services is another reason why some patients prefer to have their medical checkups by routes of telecommunication. Our results showed that patients who are undergone reconstructive urologic treatments need to travel on average 373.2 Kilometres to reach medical care with an average cost of 4.80 million Iranian Rials. This imposes huge amounts of time and costs on the patients who are already under pressure to pay for the medical costs and medications. This explanation is consistent with previous applications of telemedicine in urologic patients in several settings (6, 7). Our study also explored the underlying factors why the patients would prefer to have in-person visits. While only one-quarter of the subjects preferred to have in-person visits, the most common reasons for their preference were difficulty remembering the complaints that have to be reported, concerns over inability of oneself to convey his message to physician, and inappropriate settings for clinical examination (by video-calls). Although preference for in-person visits has also been reported previously(8), this finding highlights the importance of providing proper education to patients undergone reconstructive urologic treatments to get familiar with their main clinical complaints, and to be able to communicate with the physician efficiently. Regarding Covid-19 risk profile, we found that one-third of our patients had at least one clinical comorbidity such as chronic non-communicable diseases (diabetes, hypertension, cancer, epilepsy, renal

disorders, and cardiac problems). This finding highlights the importance of avoiding the patients with higher susceptibility to Coronavirus to visit healthcare setting.

Among patients who were required for in-person visit, all had at least one risk factor for contracting Covid-19 and were subsequently referred for further examinations (CT-Scan and PCR testing). The results showed no positive case of Covid-19; therefore, routine clinical interventions were proceeded.

Considering that the present COVID-19 emergency will likely last for months, telehealth could be the safest way to deliver urological care for a large percentage of the patients, such as those who are more at risk of unfavorable outcomes of COVID-19.

We are well aware that by using telemedicine to check on our patients, there is a likelihood of losing relevant clinical information or inaccurate information during telephone consultation. To this regard, the availability of electronic hospital records is crucial in order to provide a safe and effective delivery of healthcare. Using telehealth for routine checkups of urologic patients may miss some information such as urine flow, genital examination, complications specifically infections, and other aspects of physical examinations. Some information might be further collected by video-calls or application of some devices for blood pressure or heart rate. Misclassified information might also be corrected by using educational footages for patients to measure some clinical symptoms (such as urine flow).

Other suggestions of this paper on patients undergone reconstructive urologic treatments include scrutinized prior screening to confirm that the patients have access to the phone or internet connection properly, and thorough patient education to communicate efficiently once the call is scheduled.

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflict of interest:

The authors declare no conflict of interest.

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Accepted