Research Article

Role of Telemedicine in Management of Surgical Patients During Covid-19 Lockdown: A Solution to Reduce Footprints in Surgical Outpatient Clinics

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Abstract

Objective: To see role of telemedicine in management of surgical patients during covid-19 lockdown and to see patient satisfaction levels with this treatment modality.

Methods: This descriptive study conducted at Department of Telemedicine, King Edward Medical University Lahore during Covid-19 lockdown in months of March and April 2020 (2 months). All those who approached for their general surgical complaints included in this study excluding patients of other medical issues and patient age less than 12 year. Patient's variables include age, gender, severity of compliant, symptoms of patient, follow up status, treatment provided and satisfaction levels etc. The statistical research performed with the SPSS Version 20 software. Mean values and frequency were analyzed and comparison of categorical variables performed by chi-squared methodology or, where necessary, the exact Fisher test. The cut off for significance placed at p-value ⩽ 0.05.

Results: We studied 156 (n=156) and there were 109 (69.9%) males and 47 (30.1%) females with mean age at presentation 41.52 ± 16.40 S.D. years (Range 12 to 70 years). Total 61.5% (n=96) patients presented from city of Lahore while 38.5% (n=60) presented from outside city. Regarding severity of disease, there were 29.5% (n=46) mild, 57.7% (n=90) moderate and 12.8% (n=20) severe cases. New cases were 90.4% (n=141) and follow up cases were 9.6% (n=15). Patient satisfaction was 97.4% (n=152) and 2.6% (n=4) were not satisfied. Those patients who presented with minor or moderate severity of complaints were more satisfied rather than those who presented with severe symptoms (p<0.001).

Conclusion: During Covid-19 Lockdown situation, when patients have restricted access to surgical consultation than before, alternative methods of patient consultation need to be provided. Our study showed that telemedicine is good for mild to moderate patient symptoms but not for serious problems.

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Introduction

The COVID-19 pandemic has helped to bring in dramatic changes in the way healthcare has to be delivered in order to protect patients and caregivers and at the same time maintaining scarce funds. Telemedicine has been used for continuing treatment in many areas while retaining social distance and the

concepts of isolation in the outbreak. Telemedicine will minimize the outbreak tension and further extend our accessibility. Although surgery does not sound like telemedicine practices, multiple studies has shown that it can be a useful technique of secure and convenient surgical treatment as a replacement for in-house pre- and post-operative visits.[1,2,3]

There seem to be three main telemedicine types, such as video, phone calls, and instant communications, like fax, healthcare texting, and smartphone applications that display reported patient information. While teleconferencing can be favored, each one has its own advantages.

Although there are no existing guidelines for clinical examination or surgical consultations, the studies indicate that every pre-operative telemedicine assessments must be done on the day of procedure by the primary surgeon.[1,4,5]

A secure and effective post-operative telemedicine network can be developed using a wide-ranging electronic medical reporting system that can enhance patient satisfaction, maximize efficiency and reduce gross healthcare costs.[6]

Although telemedicine is restricted by the absence of physical inspection, the use of teleconferencing for consultations can resolve this. Telemedicine assessments offer the distinct benefit of providing a community general practitioner or middle level doctor directly requesting guidance from the specialist and performing a controlled clinical test.[1,5] In comparison, telemedicine provides patient appointments in time, much earlier than an in-person appointment, and has higher patient and physician satisfaction levels.[1,4,5]

The advent of telemedicine during the COVID-19 outbreak helps everybody to stick to social distance practices and mitigate risk, particularly individuals at significant risk for extreme COVID-19 disease. Following surgery follow-ups can also be carried out easily using teleconferencing or by means of phone conversations and wound photographs taken by sufferers has proven to be a reliable and efficient strategies for tracking early post-operative complications. Registration can be debated with care-receiver prior to discharge and current follow-up individuals may be advised to enroll in telemedicine follow-ups over the phone.

In countries such as Pakistan, there is a lack of studies regarding telemedicine services. As a research experiment, we performed this analysis to see the realms and essence of patient concerns, and also the care that was recommended. Satisfaction level after discussing treatment plan with them was taken from patients.

Methods

This cross sectional descriptive study conducted at Department of Telemedicine, King Edward Medical University Lahore. Department of telemedicine is newly established department after Covid-19 pandemic started in our country. All patients who approached telemedicine department during months of March and April (2 months) for their general surgical issues were included in this study. All patients with complaint for other medical issues and patient age less than 12 year were excluded. Patient's demographic data include age, gender, district to where they belong. Other variables include nature of complaint, chronicity and severity of compliant, symptoms of patient, follow up status, treatment provided and satisfaction levels etc. The statistical research performed with the SPSS Version 20 software. The number variables as age interpreted as mean and standard deviations however, categorical data represented as frequency and percentage. The comparison of categorical variables performed by chi-squared methodology or, where necessary, the exact Fisher test. The cut off for significance placed at p-value $\leqslant 0.05$.

Results

We studied 156 (n=156) patients who contacted department of telemedicine for their general surgical complaints during the last 2 months (March 2020-April 2020) and met our inclusion criteria. There were 109 (69.9%) males and 47 (30.1%) females with mean age at presentation 41.52 ± 16.40 S.D. years (Range 12 to 70 years). Total 61.5% (n=96) patients presented from city of Lahore while 38.5% (n=60) presented from outside city. 50.6% (n=79) patients required medicine prescription based on their history, 45.5 % (n=71) complaint regarding general surgical issues, and 3.8%(n=6) required information regarding Covid-19 issue. Minor surgical issues were present in 64.7 %(n=101) and major surgical issues were present in 35.3% (n= 55). Acute surgical issues were 82.1% (n=128) and chronic issues were present

in 17.9% (n= 28). Regarding severity of disease, there were 29.5% (n=46) mild, 57.7% (n=90) moderate and 12.8% (n=20) severe cases. New cases were 90.4% (n=141) and follow up cases were 9.6% (n=15) as shown in Fig.1. Symptoms and treatment advised are shown in Table.1. Patient satisfaction was 97.4% (n=152) and 2.6% (n=4) were not satisfied. Fig.2. Significant factors for the patient satisfaction were analyzed by chi-square or when needed exact Fischer test and results are shown in Table 2. Those patients who presented with minor or moderate severity of complaints were more satisfied rather than those who presented with severe symptoms (p<0.001).

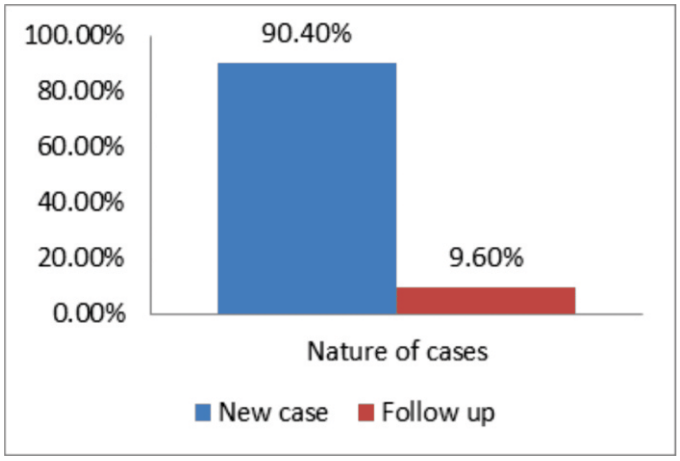

Fig.1. *New Cases vs. follow up Cases*

Table 1: *Frequency of Symptoms and Treatment Advised*

	1. Symptoms of patient	Frequency Total (n=156)
i.	Swelling/Lump	8(5.1%)
ii.	Abscess	6(3.8%)
iii.	Generalized Pain Abdomen	9(5.8%)
iv.	Muscular/Post-Traumatic Pain	6(3.8%)
v.	Wound Site Pain	8(5.1%)
vi.	Wound/Ulcer	8(5.1%)
vii.	Neck Swelling	15(9.6%)
viii.	Renal Colic	10(6.4%)
ix.	Upper abdominal pain	20(12.8%)
x.	Fever	21(13.5%)
xi.	Chronic Diseases	30(19.2%)
xii.	Others	15(9.6%)
2.	**Treatment Advised**	
i.	Medicine advised for simple symptoms	82(52.6%)
ii.	Called up for operation	40(25.6%)
iii.	Referred to medical specialist	33(21.2%)
iv.	called for senior consultation	1(0.6%)

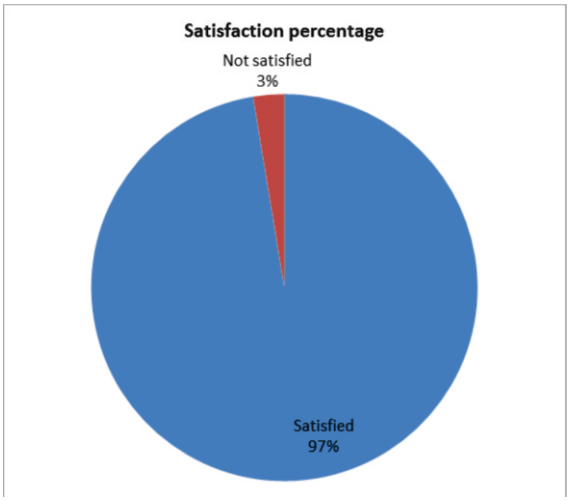

Fig.2. *Patient Satisfaction Ratio*

Table 2: *Significant Factors Related to the Patient Satisfaction(Cross Tabulation Analysis)*

	Patient Factors	Significance (p ⩽ 0.05)
1.	Gender	1.000
2.	Area of living	0.639
3.	Domain of complaint	0.916
4.	Nature of complaint	0.614
5.	Chronicity of complaint	0.148
6.	Severity of complaint	<0.001
7.	New case/Follow up\	1.000
8.	Symptoms	0.052
9.	Treatment advised	0.440

Discussion

Telemedicine has significant implication in surgery. The postoperative surgical e-clinics have demonstrated to be secure, efficient and cost-effective with documented high patient satisfaction.[6] Telemedicine is an evolving healthcare delivery approach that has the ability to increase access, improve efficiency, reduce costs and improve patient satisfaction.[7] A study in the United States showed a rise in the amount of patients who obtained oncological surgical services following the adoption of appropriate legislation by some states.[8]

Hospitals should review current context-specific pandemic response plan addressing the aspects outlined. Specific guidance should be constantly revised to reflect evidence evolving during the COVID-19 pandemic.[9] Since Covid-19 lockdown Pakistan has restricted public access to healthcare facilities, the

university department of telemedicine is formed to provide centralized access to the public not only from the region, but across Pakistan as well. Similarly in India, one study revealed that telemedicine in healthcare could be beneficial to patients in remote areas and rural doctors, and telemedicine could be regarded as an alternative to face-to-face care delivery in the near future.[10]

Of the research that published findings, the majority showed substantial reductions in patients' time, transportation and expenses without reducing health outcomes. In addition, patients and providers reported a high level of satisfaction and saw advantage in implementing telemedicine into their care.[11] Our study also showed high satisfaction rate of around 98%. Although existing utilization of Telemedicine for follow-ups supports it[11], the telemedicine has also been implemented into other surgical fields which include trauma surgery,[12] vascular surgery,[13] and urology[14] and breast surgery.[15] Successful results have been obtained in post-operative pediatric surgery patients follow up visits[16,17] and in plastic surgery also[18]. Recent study by Evans CR et al. also described promised results of the implementation of telemedicine into the field of robotic surgery.[19]

Our study found that patients have mentioned almost every symptom with our consultant doctors, ranging from minor to severe complaints. Satisfaction was the highest among those with minor problems at the end of the discussion and not the highest among those who complained about serious illnesses.

Personal protective equipment (PPE) should be provided during any in-patient surgical procedure by choosing professionals who have previously received personal protective equipment (PPE) in the COVID-19 positive patient treatment process to administer the physical inspection. This model should be used at once with several appointments, decreasing the COVID provider's viral exposure and mitigating the likelihood of infection to others. This would also prevent the area to become congested — all essential methods in controlling the disease spread. while the administration has proposed social isolation and a complete ban on elective surgery persists, preoperative assessments for oncological surgery may need to be done regularly or patients may face serious consequences due to delay in treatment. The principal physician can analyze documents, imaging and resectability, then describe health information, negative consequences, advantages and alternatives to surgery to patient and the family through videoconferencing, providing completion of the imaging and laboratories.

Beyond the oncological resections, outpatient preoperative telemedicine assessments are likely to be the most difficult, the least urgent, and therefore the last to be implemented, but it is entirely possible. This would be a lower priority with the ban on elective surgery, but may be a valuable resource for general physician and emergency care providers to receive surgical consultations and rule out any surgical emergency, without exposing the patient to the dangers of getting SARS-CoV2 in an emergency department. The epidemic of COVID-19 has already thrown Pakistan's healthcare system into a modern environment for which it might not have been able and we must now evolve. While the practical implementation of telemedicine activities can be unstable and uncertain, this pandemic will make telemedicine a staple in many medical fields, especially post-operative surgery. With multiple experiments and pilot trials showing approaches and efficacy in the application, it is evident that telemedicine can be an important method for ensuring good health care and preserving patient safety in the new pandemic.

The study was the first one of its kind to be carried out at our university in order to understand the impact of telemedicine and its prospective in general surgical patients. Future studies in our region, however, are required to see other facets of this area in the medical sciences before doing routine practice. There are a few limitations of this study as it has small sample size, problems with the use of technology for uneducated masses in Pakistan, which is a third world country with a high illiteracy rate, and only those patients who already had the necessary equipment to participate can cause selection bias. Additionally, it is important to recognize representative patient groups who can complete whatever telemedicine program is used and for which remote monitoring is reliable.

Conclusion

In the field of general surgery telemedicine is creative and secure practice with high patient satisfaction.

During Covid-19 Lockdown situation, when patients have restricted access to surgical consultation than before, alternative methods of patient consultation need to be provided. Our study showed that telemedicine is good for mild to moderate patient symptoms but not for serious problems, which involve direct face-to-face contact with doctors. Although cost-effective, it also has some drawbacks for uneducated individuals, such as lack of physical inspection and technology-learning problems.

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