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Telemedicine Application in Thyroid Diseases in the Background of COVID 19 Pandemic in a Developing Country

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Abstract:

Introduction: Tele-video consultation has been increasingly applied to medical practice. After COVID 19 pandemic patients are looking for alternatives to face to face consultations. In this article we share our experience with use of telemedicine facility in thyroid disease management.

Methods: Retrospective study. All patients having tele-video consultations with the Department of Endocrine Surgery at our hospital from 2017 till date (2020 August) are included. We looked into the number/ type of consultations, demographic profile, the common treatments which could be provided and follow ups. The problems in the consultations, limitations were also analyzed. Chi-square test was used to compare the proportions.

Results: Total number of tele video consultations was 130. 17.5% (n=23) were males and 82.5% (n=107) were females. Year wise consultations seen were 2017 (n=25), 2018 (n=26), 2019 (n=20) and (n=59) in 2020. First time consultations prior to pandemic was 15% (n=11) and 48% (n=28) after the pandemic (p=<0.0001).The common diagnosis made during the tele-video consultations was hypothyroidism with or without diffuse goiter, hyperthyroidism with or without goiter, euthyroid goiter, carcinoma thyroid and hyperparathyroidism Follow up of 33 patients after their thyroidectomy/ parathyroidectomy was through tele-video consultation. Among the patients 26.9% (n=35) were consulting from outside India. 25.3% were from urban areas and 74.7% were from rural areas (p=<0.0001). Poor internet connectivity (Poor video/ audio) was seen in 28 sessions (21.5%).

Discussion: In medical/surgical issues related to thyroid tele video consultation is as good as direct contact with doctor.

Keywords: Tele-video consultation, Telemedicine, Endocrine practice, Thyroid, COVID 19

Introduction

The patients in India and most of the world prefer to meet the treating doctor directly. This has been the practice over the years and it is difficult to substitute. WHO has defined telemedicine as "The delivery of health care services, where distance is a critical factor, by all heath care professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and the continuing education of health care workers, with the aim of advancing the health of individuals and communities" [1]. Telemedicine facility has been available in India especially the urban areas but has never been fully utilized by the patients. However with the COVID 19 pandemic the outlook has changed and many prefer to have virtual consultations from their homes and visit the hospitals/ clinics if needed. In this paper we share our experience with the thyroid patients and their use of telemedicine facility provided to them in the context of the current pandemic.

Subjects and Methods

Retrospective study. All patients having tele-video consultations with the Department of Endocrine Surgery at our hospital (Tertiary care referral center in North Kerala which is in South India) from 2017 till date (2020 August) are included. Institutional ethical committee clearance was obtained for the study. All tele video consultations are initiated from the patient side and hence consent is implied. Patients who want tele-video consultation visit the hospital website (www.babymhospital.org) to initiate the video consultation. The user journey is depicted in **Figure 1**. The requirements at the patient and doctor/ hospital side is depicted in **Table 1**.

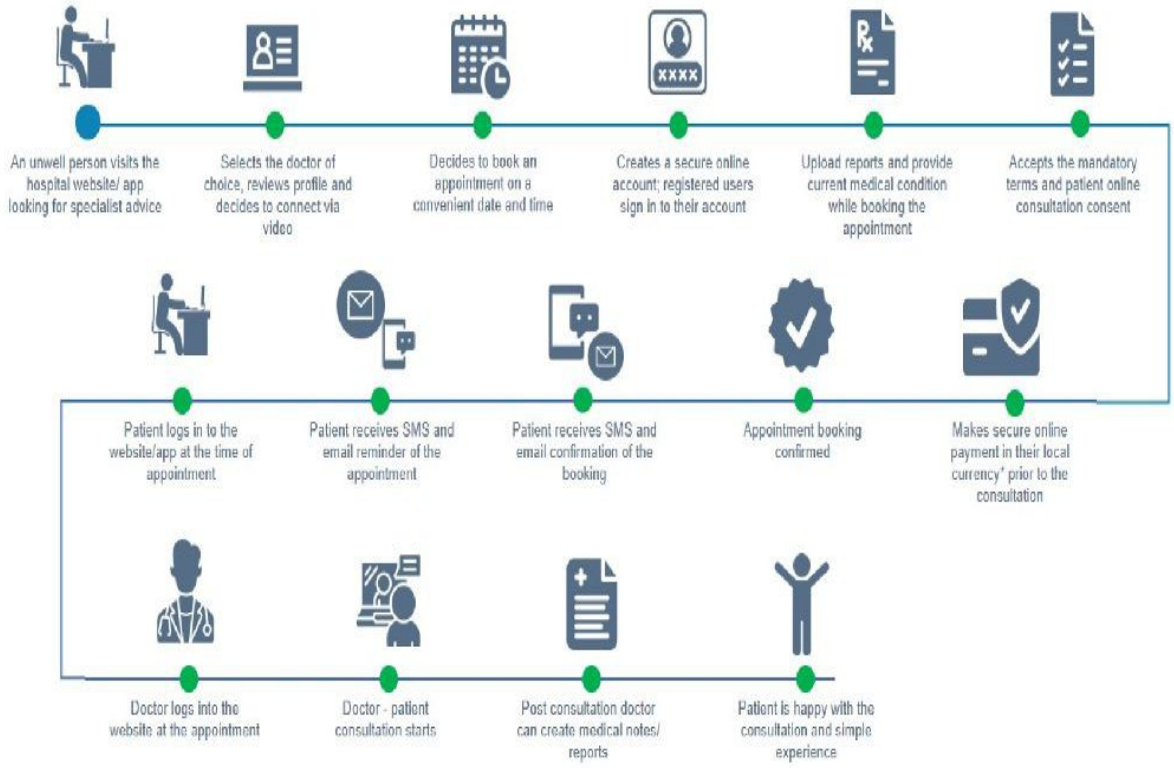

Figure 1: User Journey for and after booking tele video consultation

Table 1: Requirements at patient and doctors end for Tele-video consultation

Requirements
1) Stable internet connection (Minimum 1 MBPS)
2) A mobile phone (iPhone/Android) / tablet/ computer connected to internet
3) Google chrome if connecting via web
4) The devices microphone or headphones with a microphone connected to the device
5) The devices camera or external web cam connected to your device
6) Access to credit card/netbanking for making payments at the service seekers end

The data of the patients who had tele-video consultations using the web based portal with the Department of Endocrine surgery was collected and analyzed. We looked into the number/ type of consultations, demographic profile, the common treatments which could be provided and follow ups. The problems in the consultations, limitations were also analyzed. The information shared were thyroid function tests (blood reports), ultrasound/ CT scan reports of the thyroid, nuclear scan reports of thyroid and Fine needle aspiration biopsy reports. The reports are uploaded by the patient on the web site while booking a consult online. Service charges are paid online and patients are provided a prescription which is sent by E-mail and also available in the mobile application downloaded by the patient which they can download at their convenience. Chi-square test was used to compare the proportions.

Results

Total number of tele video consultations was 130. Each session lasts for fifteen minutes and extended further with mutual consent if needed. The repeat consultations are excluded from the study. During the session patient comes live on line and direct audio video consult is initiated. Among the consulting patients 17.5% (n=23) were males and 82.5% (n=107) were females. The total number of consultations during the year 2017 (n=25), 2018 (n=26), 2019 (n=20) and 2020 (n=59) are shown in **Figure 2**. However after the COVID 19 pandemic the consultations till mid-August 2020 (n=59, 8 months) showed a threefold increase. First time consultations prior to pandemic was 15% (n=11) of the total consultations per year and 48% (n=28) after the pandemic (p=<0.0001). The common diagnosis made during the tele-video consultations was hypothyroidism with or without diffuse goiter, hyperthyroidism with or without goiter, euthyroid goiter, carcinoma thyroid and hyperparathyroidism (**Table 2**). The platform was also used for follow up of 33 patients after their thyroidectomy/ parathyroidectomy. Among the patients 26.9% (n=35) were consulting from outside India (Gulf countries/Canada/Europe/US). Among the patients consulting from our state 25.3% n=24/95) were from urban areas and 74.7% (n=71/95) were from rural areas (p=<0.0001).

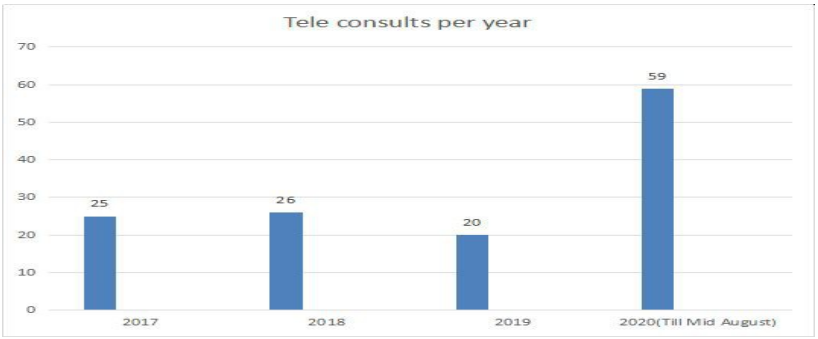

Figure 2: Video consultations per year

Table 2: Common diagnosis made during Tele-video consultation

Diagnosis	N=71 Pre COVID 19	N=59 Post COVID 19
Hypothyroidism with or without diffuse goiter	33 (46%)	25 (42%)
Hyperthyroidism with or without goiter	20 (28%)	18 (30.5%)
Euthyroid goiter	10 (14%)	10 (17%)
Carcinoma thyroid	06 (9%)	05 (8.5%)
Hyperparathyroidism	02 (3%)	01 (2%)

Major limitations of the tele-video consultations were related to internet connectivity (Poor video/ audio) (n=28; 21.5%). This necessitated postponing consult to another day (n=21), change over to whatsapp video consults (n=5), telephonic consult (n=2). However none needed complete cancellation of the consult. Even though incidence of internet connectivity issues arose in 21.5% of the sessions it was seen that these were mainly in the initial years of starting the tele-video consultations. Few of our patients who are not used to online services experienced difficulty in getting online booking, online credit card payments and uploading the reports which were sorted out by demo arranged telephonically by the telemedicine service provider. Earlier patients had to be in front of a desktop/ laptop for consultation at the fixed time, however with availability of mobile application which is available on google play store, patients can now connect while on the move.

Discussion

Face to face consultation with the doctor is becoming difficult due to the pandemic situation even though that is preferred by most Indian patients. In certain specialities like Endocrine surgery, in certain areas (Neck/Thyroid) the telemedicine consultation is equally good as a face to face consultation [2,3,4]. Telemedicine limits the travel of patients and hence protects the care givers as well as the patients especially during a pandemic. Technology based outreach programs have been used in India on a regular basis for knowledge sharing and skill development [2,5,6]. Now this technology is further extended to patient care services [4].

According to the Internet and Mobile Association of India (IMAI) the country has 718 million internet users of which 268 million are in rural areas and 450 million are in urban areas. However the internet penetration is only 40% compared to China 61% and USA 88%. Even though internet is available in India at many areas the signal strengths are weak making tele video consultations difficult. This is because of the lower average bandwidth of broadband connections. These groups of patients have option of telephonic consultation which is of limited value in clinical evaluation of head and neck region. However in many areas 4G connections and fast internet is accessible at competitive prices. Kerala, located in South India is well developed in terms of infrastructure and people are aware of the internet and its usage. Among the Indian states Kerala has the second highest internet penetration. Hence after the pandemic more people are using online consultation for diagnosis and post-surgical follow up after thyroidectomy and parathyroidectomy. In our hospital too we saw an increase in number

of consultations by three folds. Many patients among these in fact did not prefer tele-video consultations and wanted direct consultations prior to the COVID 19 pandemic.

Visual consultation such as tele video consultation is as good as in person consultation in some specialties [7]. However some reviews have suggested that patient satisfaction in telemedicine has not been scientifically assessed [8]. In our study we have noted that inspection of the neck region, proper history with the help of investigations like thyroid hormone levels, ultrasound reports and FNAC proper diagnosis could be made and treatment initiated. Our results showed that women preferred tele video consultations (82.5%) which may also be due to the fact that thyroid problems are common in women. It was noticed that the first time consultation had significantly increased after the COVID 19 pandemic started (15% to 48%). Earlier most patients were using tele-video consultations for follow up after initial direct consult/ surgery at the hospital. Another interesting observation was that significantly more number of patients from rural areas (74.7%) were using this mode of consultation In our patients we noted that poor internet connectivity happened in 21.5% (n=28) of the sessions. However in about 75% (n=21) of the cases the consultation could be completed through the same portal which reflects fluctuating bandwidth with the internet service provider.

There are certain limitations in this form of consultation. There is no direct patient doctor contact which makes clinical examination apparently incomplete and decrease in patient satisfaction [8]. Informed consent is an important medico-legal requirement for consultation which is system generated in our portal while the patient takes an online appointment and he/she checks the consent box. Besides this, there is ambiguity regarding responsibility during case of negligence, there are concerns about privacy, confidentiality, security of patient information and treatment. Currently health insurance policies are not useful for tele video consultations in India [7]. For our patients privacy is ensured since access to the documents and patient records are password protected. Also there are laws in India which protect the patients like the Information Technology Act and Drugs and Cosmetics Act [7].

To conclude, basic requirements for online telemdicine consultations and treatment are avilable in India. With time and need like in this pandemic patients will switch to this mode of consultation in atleast some specialities where this mode of consultation is as good as direct contact with doctor. However internet penentration, internet accessibility and user friendliness will determine further growth of this mode of consultation in India.

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Conflict of Interest

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