



Feasibility and safety of surgical wound remote follow-up by smart phone in appendectomy: A pilot study



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HIGHLIGHTS

- A system to provide follow-up after surgery without the need of physical examination.
- Using a cell phone and a mail address follow-up is achieved.
- Feasibility and security of this system was assessed.
- E-mail follow-up achieved high sensibility and specificity rates compared to face-to-face follow-up.
- Patients were satisfied with telemedicine follow-up and preferred it to face-to-face regular examinations.

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ABSTRACT

Introduction: The objective of the present study is to assess the safety and feasibility of the use of telemedicine-based services for surgical wound care and to measure patient satisfaction with telemedicine-based follow-up.

Material and methods: 24 patients were included, they were provided with a corporate mail address. On day 7 after surgery patients sent, via email, an image of their surgical wound together with a completed questionnaire in order to obtain an early diagnosis. Two independent physicians studied this information and the histologic analysis of the specimen. On day 8, all patients underwent face-to-face office examination by a third physician and all of them completed a satisfaction questionnaire at the end of the study.

Results: The use of telemedicine-based services showed a sensitivity of 100%, a specificity of 91.6%, a positive predictive value of 75% and a negative predictive value of 100%.

Degree of concordance between the two physicians, as regards the necessity of face-to-face follow-up yielded a kappa coefficient of 0.42 (standard error 0.25 and confidence interval 95% (0.92–0.08), which means a moderate agreement between the two evaluations.

94% of patients were satisfied with telemedicine-based follow-up and 93% showed their preference for this procedure over conventional methods.

Conclusions: The telemedicine-based follow-up, has proven to be feasible and safe for the evaluation of early postoperative complications. Patients reported high levels of satisfaction with the procedure. Telemedicine-based follow-up could become standard practice with the development of a specific mobile application.

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1. Introduction

According to the WHO, telemedicine can be defined as the practice of medical care over a distance using information and communication technologies (ICTs) for diagnosis, follow-up and treatment of diseases and injuries and for the continuing education and exchange of medical information in a situation where the actors are not at the same spatial or temporal location [1,2]. Telemedicine has applications in a variety of medical areas, including teledermatology and wound care [3–5] the most popular fields, where images and videos are exchanged using telecommunication technologies.

At present, patients undergoing appendectomy are seen as outpatients one month after the operation for evaluation of surgical wound and confirmation of pathologic findings. Yet, the percentage of surgical wound infections diagnosed in face-to-face consultation among patients undergoing appendectomy after at least a one-month follow-up period reaches 3.7% [6], being inferior in laparoscopic than in open surgery (1.9% vs. 22.2%). The incidence of unusual histopathologic findings (tumors, parasites, mucocele, inflammatory bowel disease) revealed by the analysis of the resected specimen is of 1% [7].

Face-to-face consultations have an economic cost and affect patients' quality of life as it require unnecessary transfers to the

health facility and absences from work [8]. Remote assessment via e-mail simplifies the follow-up of patients whose conditions or diseases make it unnecessary or impossible to undergo face-to-face examination by a surgeon.

The objective of the present study is to assess the safety and feasibility of telemedicine-based follow up in patients undergoing appendectomy in comparison with conventional face-to-face follow-up, as well as to measure patient satisfaction with telemedicine-based follow-up.

2. Material and methods

Prospective pilot study to evaluate the validity of a new diagnostic method. Images of the surgical wounds of cases obtained via their own mobile devices, questionnaires completed by patients and pathologic analysis of the surgical specimens were used to establish a diagnosis of complications vs. discharge (no complications). Control evaluation was carried out a day later via face-to-face consultation in our institution. Telemedicine-based evaluation and face-to-face consultation were carried out by independent surgeons. Two independent surgeons were in charge of telemedicine-based evaluation.

24 patients (14 males and 10 females) were treated in University Hospital Virgen del Rocío, from September 1 through December 15, 2014. Average age of patients was 25.4 ± 10.6 and all of them had undergone appendectomy in our institution. Of the 24 patients, 15 agreed to participate in the study and completed it successfully, 6 patients did not complete it correctly and 3 other patients refused to participate and give informed consent (Table 1 and Fig. 1). All patients presented with at least a surgical wound. The study was approved by the ethics committee of the University Hospital Virgen del Rocío.

2.1. Procedure

Patients were discharged as soon as they met the criteria established by the physician in charge of the postoperative period. Prior to discharge, patients taking part in the study were applied exactly the same hospitalization protocol as the rest of patients

Table 1
Inclusion and exclusion criteria of patients under study.

Inclusion criteria
- Signed consent form
- Age ≥ 18
- Appendectomy via laparoscopy or laparotomy carried out at our institution
- Have a mobile device to take images and transfer them via the Internet
Exclusion criteria
- Other surgical procedures
- Pregnancy
- Immunosuppressed patients
- Cancer
- HIV
- Unsigned consent form
- Inability to accomplish the follow-up

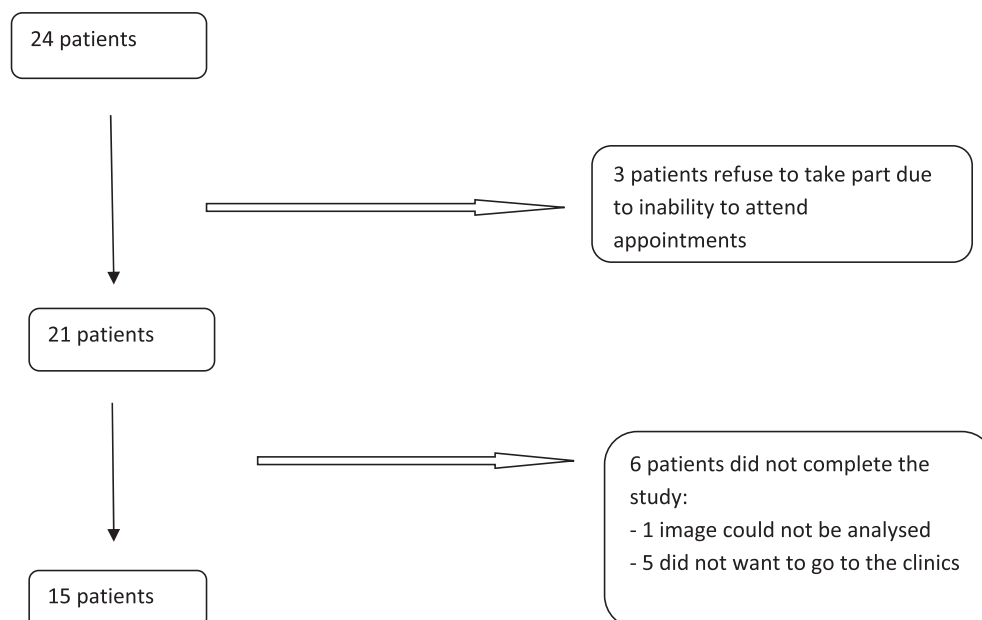


Fig. 1. Flow chart.

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