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**Letter**

**Overcalling a teledermatology selfie: a new twist in a growing field**

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**Abstract**

Teledermatology via patient-generated digital images or “selfies” has been increasing since the advent of portable devices capable of high resolution image capture. During these early days, doctors and patients are learning about uses and limitations. We describe a case in which a patient's selfie led three attending physicians to suspect an iatrogenic hematoma requiring urgent assessment. There was no hematoma at follow up, simply dark and smooth adherent crust, which was gently removed to reveal a well-healing wound. This case introduces a previously undescribed teledermatology-related issue, that of “overcalling” a selfie. An image supplied by a patient misleadingly appeared to show a serious complication requiring urgent treatment.

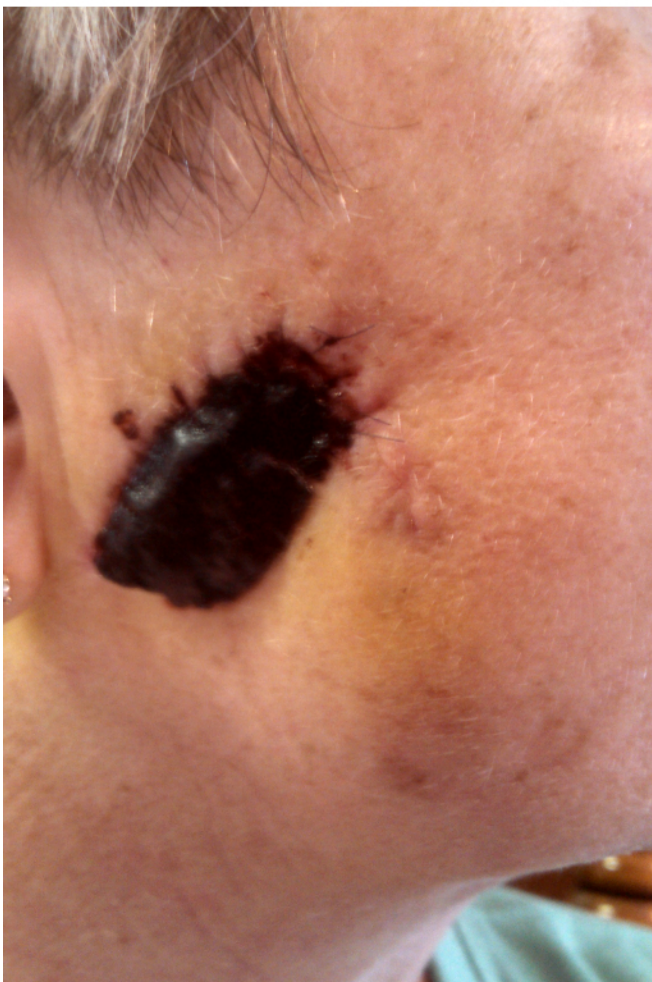
**Introduction**

Overall occurrence of postoperative hematomas following dermatologic surgery has been reported to be between 0.26% and 0.45% by two studies involving 4,329 patients [1, 2]. Several factors affect the likelihood of hematoma development, including age, postoperative activity, medications, bleeding disorders, and other comorbidities [3]. Elevated blood pressure has been associated with increased risk of postoperative hemorrhage in cutaneous surgery in some studies, but conflicting data has also been reported [4, 5]. Evidence implicating anticoagulation medications is more consistent. Use of aspirin or other NSAIDs is not definitively associated with increased risk of moderate-to-severe bleeding complications, whereas clopidogrel or warfarin carry a significantly increased risk [6, 7, 8].

The risk of postoperative hemorrhage, including hematoma, is greatest within 48 hours of surgery [3]. Hematomas have the potential to lead to infection, dehiscence, and necrosis, but patients can be educated to watch for warm, growing, often painful masses and to immediately contact the office to arrange evaluation. Depending on the stage of hematoma evolution and other clinical factors, the hematoma may be aspirated, incised and drained, or evacuated with ligation of the appropriate vessel [9].

**Case synopsis**

A 63-year-old woman presented for excision of a basal cell carcinoma from the right cheek. A rotational flap was used for optimal functional and aesthetic outcome; the patient tolerated the procedure well. A pressure dressing was applied and the patient was sent home. On day six post-op, the patient contacted the clinic with complaints of swelling, crusting, and pain. She emailed a photo to the clinic, which appeared to show a large moist red hematoma overlying the surgical site (Figure 1). The patient urgently returned to the clinic and was evaluated in person. A thin, adherent, smooth, dark crust was found, which was easily removed, revealing a well-healing wound. Sutures were intact and the site appeared to be healing as expected (Figure 2).



**Figure 1.** Moist red hematoma-like tissue overlying excision site **Figure 2.** Healing incision with granulation tissue removed

## Discussion

Thirty-seven tele dermatology programs were active in the United States at the start of 2012, primarily in the store-and-forward modality at academic institutions [10]. Several unique applications of the technology have been demonstrated, including inpatient consultation [11], off-site melanoma screening [12], chronic wound management [13], and many more. The prevalence of smart phones with built-in cameras promises to expand the utilization of tele dermatology via patient selfies. This will likely spur further investigation into the benefits and limitations of the technology.

Cited benefits of tele dermatology include cost-effectiveness and reduced time to treatment, though certain conditions are required in assuming the practice is cost-effective [14, 15]. A benefit of particular note is avoiding unnecessary hospital or clinic visits. Multiple studies have demonstrated the use of mobile-phone digital images for postoperative follow up of local surgical complications, principally hematomas and blood-stained bandages [16, 17]. Reported success varies between studies and larger sample sizes are needed, but some believe this can help assuage patient concerns while avoiding unneeded trips to caregiver sites. Yet, although some reports claim tele dermatology provides similar clinical outcomes as conventional clinical consultations, one such study specifies that patients randomized to tele dermatology required nearly identical numbers of subsequent hospital visits [18].

In general, a high concordance has been reported for tele dermatology in comparison to face-to-face visits [19, 20, 21]. When limited to adequate management recommendations, rather than correct diagnosis, success rates have been reported as high as 98 percent [22]. However, a meta-analysis of 78 separate studies by Warshaw *et al.* highlights that clinical consultations still provide better diagnostic accuracy [14]. For a subset of patients, tele dermatology may serve as a convenient and accepted method of delivering care [23]. Patients seem to be satisfied by the care they receive with tele dermatology [14, 17], and lack of experience or comfort with the modality does not seem to present a significant concern for diagnosing physicians [24]. Nevertheless, some concerns remain.

Primarily, the quality of the digital image limits the ability to properly visualize and assess skin lesions [25]. A significant correlation has been demonstrated between image quality and correct diagnosis [26, 27]. As average camera-phone resolution

improves, the accuracy discrepancy between clinical consultations and teledermatology may diminish [28, 29]. Additionally, demographic changes may provide a patient population that is increasingly comfortable and proficient in the use of mobile phone image capture. To further enhance the utility of patient-captured digital images, several strategies have been tested.

Including a clinical questionnaire provides additional information for use in diagnosis and treatment management, with a demonstrated correlation between the quality of information provided and correct diagnosis [26]. Patients have also been provided with a tutorial regarding technique and technology [30]. A small study suggests that patients can be trained to acquire images of good quality, as determined by dermatologists, simply through an online tutorial [31]. Furthermore, patients can be encouraged to provide multiple images since one study showed that dermatologists were better able to modify treatment and prevent hospital visits for postoperative patients when provided with multiple images [17].

This case introduces an additional teledermatology-related issue, that of “overcalling” a selfie. An image supplied by a patient misleadingly appeared to show a serious complication requiring urgent treatment. Our extensive literature search did not find prior work addressing this topic. The overall prevalence and impact of this issue remains ill-defined, but merits further study.

## Conclusion

Selfie teledermatology is a potentially valuable tool in the practice of dermatology. Expanded use of teledermatology should be combined with a sufficient training, technology, and communication infrastructure, and tempered by investigation into its limitations.

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