



## Efficiency of Whatsapp App in Telecommunication in Acute Hand Trauma.

### KEYWORDS

\* Dr Sreekanth Raveendran

Prof: Binu P Thomas

MS Ortho, D Ortho, Dr Paul Brand Centre for Hand & Peripheral Nerve Surgery, Christian Medical College, Vellore, TN, India-632004,\* Corresponding Author

MS Ortho, D Ortho, Dr Paul Brand Centre for Hand & Peripheral Nerve Surgery, Christian Medical College, Vellore, TN, India-632004

**ABSTRACT** *Digital telecommunications have revolutionised the society and the changes are coming in to the medical and surgical specialities including hand surgery. Numerous 'Apps' are made for information archiving and retrieving, training and teleconsultation. Smartphone and its Apps are becoming powerful tools for telecommunication for joint action in planning the management of diseases and trauma. The authors are evaluating the efficiency of 'WhatsApp' smart phone App in telecommunicating the real clinical picture of acute hand trauma to different levels in trauma team and how it changes the management. The authors conclude that is 'WhatsApp' can be effectively used for teleconsultation in hand surgery*

### Introduction

Reliable communication of clinical information about hand injuries is an unavoidable skill of a hand surgeon. This not only increases the efficiency of the team but ultimately it is the patients who gets the full benefit of the team work. In institutions where there are surgeons with multilevel experiences and depth of knowledge, reliable communication skill really works for the benefit of the patients (1, 2). Regarding statistics of smart phone among clinicians it was showed 98.4 % of participants owned a smartphone 91.6 % of interns have downloaded medical applications ('apps'50 %) interns used apps to diagnoses and 43 % used apps to interpret laboratory values. 76.7 %) interns agreed or strongly agreed smartphones have a positive influence on them in terms of levels of stress, confidence and level of knowledge, respectively(3).

"WhatsApp" is one such popular App made for social networking with help of wireless internet by WhatsApp Inc, Mountain View, California, United States in 2009 which is available in all platforms of smartphones like iOS, android, Android, BlackBerry OS, BlackBerry 10, Windows Phone, Nokia Series 40 Symbian and Samsung Tizen(4). WhatsApp can be used for text and voice chatting and sharing of photos and videos. This can take photos and videos directly using the smartphone camera and send them wirelessly to an individual or group. Use of WhatsApp in communication among members of emergency team has been proven for general and orthopaedic emergencies(5, 6).it is also proved to be efficient not only in intradepartmental but also interdepartmental communications(7).

Management of acute trauma to extremities especially in the assessment of viability and reconstruction methods has seen dramatic improvement by the use of smartphones and Apps (8, 9).

### Objective and methods

The authors wanted to find out whether WhatsApp can improve the telecommunication, training and management in acute hand trauma in a tertiary referral institute.

Department of hand surgery formed a group in WhatsApp with all attending and registrars of all level after obtaining special permission from the head of institution. The ad-

ministrator was an attending who made sure that no one misused the data and none violated any patient's privilege. Clinical photographs were taken for selected ( inclusion and exclusion criteria below) acute hand trauma with standard Accident & Emergency (A&E) lighting at working distance of a standard smartphone (16cm) with no magnification showing from proximal wrist to finger tips on standard light blue sterile paper background. Minimum three photos in anteroposterior dorsal and palmar and lateral views were taken for all injured hands. Additional views if injury extended proximally. Soft tissue loss was shown in photo by trying to close the skin of the area of injury with stay sutures.

Data of these patients was discussed with all members of department who were not directly involved in the care of that particular patient just before trauma audit next day morning. Photos were taken after preliminary care was given to hand in A & E under local anaesthesia to remove and dirt or other contaminants after written informed consent from patients. Data collected in standard format regarding viability of fingers at presentation, composite soft tissue loss, and plan for the cover of this soft issue loss from specialist registrars (SR), junior attending(JA) and senior attending(SA). Viability of finger was assessed by it colour, rouge and appearance of pulp turgor. This was compared to the actual data from those who dealt with patent directly respectively. Inclusion criteria were the following

1. Hemodynamically stable patients with GCS scale-15
2. With hand acute trauma

### Exclusion criteria

1. Uncooperative
2. Head injuries GSC < 15
3. Children < 15 years age
4. Severe mangled
5. Amputations

### Observations

We collected data from August 2013 to March 2015 for all injured hands. There were 92 patients (with 109 hands and 545 fingers) who were eligible for the study over 18

months. Out of 545 fingers, 36 fingers of were avascular. There were 31 flaps done for 109 hands who had composite soft tissue loss. These flaps from V-Y advancement flaps, cross finger, FDMA, Litter's NV island flap to groin, Lateral intercostal perforator flap.

**TABLE 1 showing diagnosis by seeing only WhatsApp photo in Clinicians at various levels**

	Correct Identification by						
	Senior registrar		Junior attending		Senior Attending		
	N	n	%	n	%	n	%
Finger viability at presentation	36	31	86.11	34	94.44	35	97.22
Composite soft tissue loss	31	25	80.65	29	93.54	30	96.77
Flap cover choice w.r.t senior attending	31	25	80.22	30	96.77	31	100

Table 1 shows the actual number and percentage of agreement in various levels of hand surgeon by seeing only WhatsApp photo of acutely injured hand.

97.22% of senior members of team identified avascularity while junior members scored poorly. Same is the true for composite soft tissue loss and choice of flap.

## Discussion

Smartphones with reliable camera really changed the scene in clinical telecommunication. As long as the patient's privilege is not violated, the use of smartphone to transmit pictorial clinical data has changed the management of hand acute trauma.

The use of teleconsultation has started when smartphones acquired ability to transmit quality digital photo. Soon its use was proved to be beneficial to patients and clinicians in various fields (10-13). The most dramatic change it produced is in the management of acute extremity trauma which are usually initially dealt with surgeons with less experience in the field. (8, 14). Teleconsultation also became a guide for training of surgical registrars (15-17). With introduction of third generation wireless internet the transmission of digital photo became a more feasible and instant. Numerous "Apps" are being produced for different uses from interpreting laboratory values, protocols, choice of correct drugs and pharmacology, text books, case discussions and surgical training (18, 19). Applications (App) are being developed for even monitoring the free flap viability (20, 21) and hand therapy (22).

In the authors study, the standardised clinical photos telecommunicated by 'WhatsApp' proved to be a reliable method of teleconsultation between the members of the department.

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