



## Innovative Application of Cost-Effective Neck Mobile Holder in Plastic Surgery

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### Abstract

One of the applications of telemedicine is the audio-video recording and content sharing. Intraoperatively when the surgeon is scrubbed they face various problems which may be overcome with the innovative use of neck mobile holder.

**Keywords:** Innovation; Neck mobile holder; Plastic surgery

### Introduction

Innovation is finding a new use of existing technology [1]. Usually neck mobile holders are used for viewing videos or make video calls while keeping hands free.

Plastic surgeons, dermatologists, cutaneous surgeons while operating need to take photographs in specific angles either for documentation or academic purposes and may also need to record the procedure. They require a trained assistant for this.

Surgeons also find it difficult to attend emergency audio or video calls. Majority of the time an assistant has to attend the call.

An assistant is also required when a surgeon has made a video conference call with the resident on emergency duty or resident requiring online assistance from the consultant.

To overcome these problems we thought of using commercially available cost-effective neck mobile holder, which may be worn by the operating surgeon and share our preliminary experience.

### Materials and Methods

A neck mobile holder which has a slot for holding the Smartphone was procured. A Smartphone (android 9.0 version) connected to the internet with a minimum speed of 1 Mbps was used. The neck holder has an adjustable slot for holding the phone, an aluminium malleable bar and an area over the aluminium bar with foam padding for neck support. There is an aluminium malleable bar

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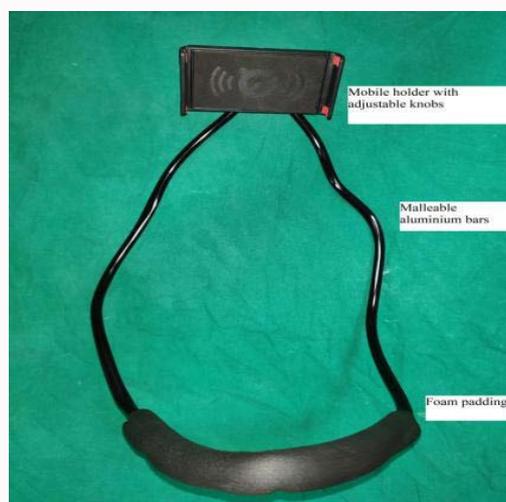


Figure 1: Neck mobile holder with parts.



Figure 2: Neck Mobile holder with sterile drapes.



Figure 3: Operating Surgeon attending a video call.

QUESTIONNAIRE

**FEEDBACK FORM**

[Submitted by Operating surgeon/ remotely attending doctor]

1. Overall quality of audio-video interaction : Poor/ Average / Good
2. Audio clarity : Poor/ Average / Good
3. Video clarity : Poor/ Average / Good
4. Comfort of the operating surgeon : Comfortable/ Uncomfortable
5. Would you like to recommend your colleague for usage of this device : YES/NO

Suggestions if any

Figure 4: Feedback form.

for adjustment of the height and distance (Figure 1).

The aluminium bar was wrapped in sterile polythene (opsite) or sterile towel. It was kept on a sterile side trolley (Figure 2) and was worn by the operating surgeon whenever required (Figure 3). Audio, video call, still photograph and recording was done using voice control mode in the Smartphone.

A questionnaire was used to take feedback from users (Figure 4).

## Results

The device was used for five procedures. The maximum duration of the usage was for five minutes continuously. The feedback

Table 1: The audio/video quality.

S. No	Question	Good	Average	Poor
1	Audio quality	5		
2	Video quality	4	1	
3	Overall quality	4	1	
4	Comfort of the operating surgeon	4	1	

revealed, the device was helpful and easy to use and they would like to recommend it to their peers. The audio/video quality was rated as good by all except one who found the kit to be average.

No additional complaints were noted by the operating surgeons (Table 1).

## Discussion

Telemedicine is the use of telecommunication and information technology to provide clinical health care from a distance [2]. One of the applications of telemedicine is audio-video recording and content sharing [3].

Through this article, we would like to highlight the use of neck mobile holder to overcome the common problems mentioned above (in discussion), faced by most surgeons. We found that most surgeons were comfortable using the mobile neck holder, however, using it continuously for prolonged periods may cause strain over the neck and shoulder (more than 15 min). But, this device is used only for emergency video conferencing lasting for 2 min to 5 min, the rest of the time the device may be kept on a sterile side table. The malleable bars help in preventing the blocking of surgeons' view.

Even video recording of the whole procedure is not advisable. Only crucial vital steps can be recorded. If a full recording is required, instead of the operating surgeon, a surgical assistant may wear the device and record.

There are various devices like Bluetooth for talking on phone handsfree, Gopro for video recording etc. But the price of these devices is very high whereas the price range of the neck mobile holder is from Rs. 400 to Rs. 1500. Also, it can be used for multiple purposes whereas the other devices mentioned are for a single purpose.

It is easily commercially available and is cost-effective. It can be easily cleaned and easy to maintain user friendly and does not require any formal setup. Any mobile/tablet may be used.

Limitation of this study is that it's a small sample size. Further larger studies are required to substantiate our findings.

## Conclusion

This innovative cost-effective neck mobile holder may be useful in plastic surgery practice.

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