

EDITOR'S NOTE: Thank you for your answers to my questions. I have incorporated the changes you accepted. I have made a few additional suggestions to improve the flow of the English using Track-Changes. Please read this very carefully to see that the meaning is not compromised. If I can be of further assistance, I would be happy to review this again. Thank you for using the services of NAI.

Manuscript Number: 31414

Manuscript Title: The use of wearable smart glasses improves wire insertion under fluoroscopy

#1 Reviewed by 03068313

Comments To Authors

SUMMARY The objective of the review was to evaluate the interest of two models of smart glasses as a tool to facilitate / improve wire insertion under fluoroscopy.

GENERAL COMMENTS Please, use and line(s) number to facilitate referencing.

Answer: Thank you for your suggestion. I added line numbers.

Interesting study, that give objective values to quantify the effect of mixed reality glasses.

Answer: Thank you for your comment.

SPECIFIC COMMENTS

Introduction

In title and over the text: could you replace "wearable smart glasses" by mixed reality (MR) glasses. I think this is very important to be specific. Moreover, could you add 2 or 3 sentences to quickly explain the differences between Virtual Reality (VR) vs MR. ?

Answer: Thank you for your comment. I think that this technology is AR (augmented reality) rather than mixed reality, because the wearer basically looks at the operation field that is the real image and glances at the

head-mounted monitor that shows virtual images. I added this explanation in the manuscript line 100 to 105. I would also like to change the title of the paper to “Augmented reality for surgery: the use of PicoLinker smart glasses improves wire insertion under fluoroscopy”, if permitted.

Method

According to me, the section “Method” requires important modifications by the authors to be accepted:

I’ve quite important concerns about the method, and more specifically regarding statistics presented in this paper.

- Generally speaking, I don’t think that you can use statistic significance to conclude because:

+ Of what I understood, only one operator performed the study; is it correct? If yes, only one operator doesn’t accurately demonstrate that results can be extended to any future user.

+ Did you use/perform any stat method to determine the sample numbers? I am not sure that 10 are enough...

- WHAT stat method did you used and WHY? ANOVA? T-tests? Parametric or non parametric? Etc.

- At least should you present all limitations, related to both: if not in the section method, then it should be specifically and clearly added in the final discussion.

Answer: Thank you for your thoughtful advice. As you said, the trial was done by a single skilled surgeon. Statistical analysis was done using unpaired t-test. I added sentences about the statistical method in line 148 to 151 and a sentence about the limitations of this study in line 202 to 205.

Discussion

I would move the reasons why you chose PicoLinker rather than Google Glass from the discussion section where it is currently, to the introduction or to the method: according to me it will help the reader to understand why and what you decided to compare what you did.

Answer: This is a very important point. The difference between Google Glass and PicoLinker is that PicoLinker is a wired connection that enables minimum delay and has a direct electric power supply. Any video source can

be displayed on the PicoLinker's prism. These sentences were moved to the Introduction section line 95 to 100.

According to me, the fact that PicoLinker is currently available only in Japan decreases the "weight" of your publication. My recommendation would be to determine and add which glasses of similar performance are easily available over the world. Thank you for your paper!

Answer: Thank you for your comment. It is definitely an important point. As you said, PicoLinker is mainly sold in Japan but it is also available in the US and European countries through the respective distributors. Although I can describe how to get it, it seems not suitable for an academic paper. If any readers contact me or Westunits, they can get information on how to obtain it.

Reviewed by 02444715

Comments To Authors

a very interesting paper, need some language improvement, but it is dealing with a future important topic : The use of wearable smart glasses improves wire insertion under fluoroscopy That would be very interesting to many young surgeons

Answer: Thank you for your interest in our paper. We will polish the language and resubmit the revised manuscript.

Reviewed by 02444730

Comments To Authors

This is an interesting study testing a devise "coming from the future". Although it seems to be a "simple paper" I believe it is a useful study. COMMENTS INTRODUCTION. I believe that the authors should add a paragraph including any existing literature [like Chimenti et al. (7)] concerning the use of these devises in orthopaedics.

Answer: Thank you for your interest in our paper. We added some sentences regarding another device, Infolinker, other than Google Glass.

Reviewed by 02444729

Comments To Authors

Wearable smart glasses are a kind of computer that displays information on a head-mounted display. The authors of this study demonstrated the feasibility of wearable smart glasses in guide wire insertion under fluoroscope. Under fluoroscope 3mm guide wires were inserted into Sawbones of femur from the lateral cortex to the femoral head center with and without the wearable glasses where the fluoroscopic images were displayed (10 guide wires each). And the authors concluded that the wearable glasses can improve accuracy and reduce exposure time. This should be due to the fact that the wearable glasses enable surgeon to keep their eyes on the operation field. The authors have tested the insertion of k-wire in saw bones with/without glasses and found a superiority with the glasses. I think it is an interesting and useful instrument for orthopedic surgeons performing trauma surgery and spine MIS surgery. Simple and clear paper.

Answer: Thank you. We will polish the language and resubmit the revised manuscript.