

Dr. Rafael J. Grossmann: mobile technology radically redefines the realm of medicine

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I firmly believe that telemedicine, m-Health technology and Healthcare Social media will, very soon, completely redefine the way in which healthcare is delivered.

—Rafael J. Grossmann, MD, FACS

Dr. Rafael J. Grossmann is an attending surgeon at Eastern Maine Medical Center. He is also an active m-Health Innovator, GoogleGlass Explorer, TEDx speaker (http://www.youtube.com/watch?v=_9QW5jhuPKI), and Singularity U-FutureMed graduate who is passionate about Innovation, technology and healthcare social media intersecting Healthcare improvement. Reading his blog Rgrosssz.wordpress.com is like sailing far away to explore the future of medicine. We met at Doctor 2.0 & You summit in Paris in June 2013. In this interview, Dr. Grossmann performed the first ever documented “GoogleGlass” surgery (live streaming with GoogleGlass while operating on a patient).

Katherine: You did the first surgery in the world wearing GoogleGlass, could you introduce the firsthand experience?

Dr. Grossmann: Today on June 20th, 2013, for the first time, I performed a surgical procedure while using GoogleGlass (*Figure 1*). I had obtained permission from the patient, in order to take pictures, video, and use them for educational purposes. With the glass, I can see the endoscope, I can see the screen, the inside view of the stomach, and I can look at the abdomen where my assistant was doing the incision of the tube. I had GoogleGlass on at all times, with my view being streamed to a previously set Hang-out to myself, on an iPad. The live video images that I saw from Glass were projected on the iPad screen.



Figure 1 Dr Grossmann in the operating room with GoogleGlass. This figure comes from his blog <http://rgrosssz.wordpress.com>

<http://rgrosssz.wordpress.com/2013/06/20/ok-glass-pass-me-the-scalpel-please-googleglass-during-surgery/>

Katherine: You are the front-running GoogleGlass explorer, how do you think of the potential of GoogleGlass's application in healthcare? Would it change physicians' daily workflow?

Dr. Grossmann: I've been following GoogleGlass from the periphery, but when I saw the live demonstration of GoogleGlass by its inventor in FutureMed 2013 in front of

me, I thought it had an incredible potential to be applied to medicine. Instead of using big cameras, big screens, iPod Touch, smart phone, iPad, Laptop, we could have a computer in front of our eyes. It will be intuitively much easier to use when surgeons are operating. The device is voice activated. It gives you access to searching the Internet, to connecting with people, taking live video, pictures and even translating. With regards to workflow, I think it is going to be changed significantly. For surgeons and healthcare professionals in general, when we are rounding everyday seeing patients, we have to go to a computer before or after looking at the patient. Sometimes bringing computers to the patient's room in big carts. Imagine how the Glass would improve the workflow if you don't have to bring it but wear it around. It's not possible yet, but at some point you will have applications in the glass giving access to the patients' medical records, like to the laboratory resources, X-ray images or prior history without moving your face from the patient to look at the computer. It can also connect to patients' relatives far away and tell them that the patient is doing fine and show them the live video. In a few words, I think that GoogleGlass has real potential to improve the way we deliver healthcare, improve quality and also decrease costs.

Katherine: *In 2009, your teams initiative on Telemedicine applied to Trauma care, was awarded the "Best Scientific Award" at the annual congress of the American College of Surgeons in Chicago. Is this your first project applying m-health into your healthcare work? How it works?*

Dr. Grossmann: Yes, we have been doing telemedicine here in Maine for many years, because it's a very extensive rural area. Big screens are ok but they are very expensive and hard to maintain. Mobile health is really the answer in many ways. It's not a substitute to the old system but a supplement of additional tool to use. I can be in the operating room, in the Intensive Care Unit (ICU). If I get a request from a physician for help to treat a patient who is 200 miles away, I can just bring my smart phone out of my pocket and tap on an application with video connection. I can answer questions, talk to the patients relative, such as the parents of a kid. The physician can bring the phone near the patient, point to anywhere for me to see the patient's burns, wounds, etc. It's difficult for big cameras and screens on the wall to point to certain areas. There's more information about it at my TEDx talk.

http://www.youtube.com/watch?v=_9QW5jhuPKI

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Katherine: *When did you become a geek in new technology and apply it into your clinical work?*

Dr. Grossmann: I'm a General surgeon. My scope of practice includes Elective surgery, Trauma, Critical Care, Acute Care surgery, Advanced Laparoscopic, Single Access surgery Laparoscopy, and Robotic Assisted Surgery. It was how cutting-edge technology advances medicine and surgery that interested me. It is important to use technology in a smart way so we can make good use of it. We have been using telemedicine here in for many years, with wall mounted and portable cart-cameras and large screens. When the iOS 4 came out, with tools like iPhone and the iPodTouch, which is a device basically designed for gaming, I had the idea to use FaceTime applied to medical care. We started trying it since then and now it is upgraded to smart phones. It can connect to remote patients and physicians who request access to our expertise. It was after my residency, after my training in surgery that I got really involved in technology but I've always been interested in cutting-edge technologies since the early 1990's, when laparoscopy was becoming more common. Technology was invading the way we did surgery. Things are changing so quickly, that I think we need to adapt to new technology to provide the best care to your patients.

Katherine: *In your opinion, how will technology lead the trend of future medicine?*

Dr. Grossmann: Technology has been leading the evolution of medicine. People talk about revolution of medicine, but I think it is evolution because changes have been happening for a long time. The future is brighter than we can even think of. In next few years, we are going to see incredible changes in medicine, because of technology, better faster devices, better memory, the advent of Pharmacogenomics, Healthcare Social Media, etc, the advent of pharmacogenomics. The future is going to be phenomenal in many aspects of life. In medicine, the future is going to be radically different sooner than we expect.

Katherine: *How should healthcare professionals around the world face up the changing technologies? Is there a big difference of doctors in different countries adapting to new technology?*

Dr. Grossmann: Depends on where you live, you have more access to better technologies and newer technologies. It's not just the access to technology, but the culture. It's all about the professional's culture. I am passionate about

what I do and about technology. More and more people are realizing that there's a lot of potential in technology to improve medicine. There are differences in different countries now, but the change will come and spread. As technology gets better, the culture will change. People like me talk to people out there who did not realize before that this is possible, not only professionals, but patients. The change in a way has to come from patients.

Katherine: *Some people might be concerned with privacy issues using new technology like GoogleGlass, how can we conquer this problem?*

Dr. Grossmann: I think protecting patient's privacy is paramount. When we started using the iPod Teletrauma project, we couldn't do FaceTime, as it was not private.

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We started using Skype and then the industry provided very quickly many Apps that were designed connect with video in a private and secure way. I think the same will happen with GoogleGlass. Although we don't have yet a specific App that encrypts the data, to the standards that federal government needs, it's all to the users. You can do surgeries with Glass. As long as I do not tell viewers whom am I operating on, give the viewer any identifying information of the patient, showing patient's name or face. If you use technology in a smart way, you can protect patients privacy.

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