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How do new technologies affect surgical training: personal considerations

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I do believe that a failure to learn is a failure to grow!

In a world which is fast growing smaller with ease of travel and speed of communication, it is imperative that the advancing edge of surgical progress be made available to all people in all places.

Times are changing the concepts are changing and rapid development and general adoption in to common practice of high technology creates several problems also from an educational view point.

There are some implications for surgical education, for patient's safety, outcomes and cost-effectiveness. In addition to that to train the trainers in new technologies including simulators it is crucial.

The continuing growth of Minimally Invasive Surgery (MIS) and therapeutic endoscopy urge the need for reliable and solid data with respect to the application of surgical procedures in clinical practice. Any new discovery or any technical improvement runs the risk of over use or being used in non appropriate applications, in fact the technology too often respond to marketing.

Among the different possibilities we have in teaching surgery to young investigators (Congresses, Post-graduate and hand-on Courses, life demonstrations), there is nothing better than videos (Tape or CD) to show directly, in a dynamic sequence, the different phases of a surgical intervention for didactic purposes.

It is my opinion that the videos represent a tremendous educational tool in Surgery. In fact the surgical art is a discipline based on performing technical procedures following the anatomo-surgical principles.

Cinematography in the operating room started many years ago using very old cameras just for documentation or for personal surgical satisfaction. The videos and internet in Medicine, and consequently in clinical practice, represents nowadays a very important method in teaching the students, the residents, as well as training the trainers. The advantages in using video-images are the following: time saving, method of teaching, stimulate discussion among the staff, increasing interest during the demonstrations, possibilities of watching video-recordings at own personal convenience.

We are facing to: surgical education during medical school, surgical training during the residency, specialization on general surgery, continuing medical education, education of educating surgeons, multiethnic students, and endoscopic surgery in developing Countries. What better than videos to reach these aims!

Modern surgical endoscopy uses videos such images can be transmitted to a conference hall or indeed across Continents by using satellites. Computer simulators are also available. At present the last precludes their widespread use and the practical training is therefore only available to the very lucky few, and the fellow perceptions of training using computer-based simulators seem to be positive.

In accordance with S.Chung I must say that as the technology is new, the traditional apprentice system

of observation, tutelage and practice under supervision by a mentor, is inadequate in the developing Countries. The expertise simply does not exist among the senior staff in areas where therapeutic endoscopy is not available.

Surgical endoscopy requires complex cognitive and manual skills that can only be acquired after a long period of training. Experimenting with new instruments without proper training is unlikely to be rewarding. Not only would the patient be put to risk but the team itself would be discouraged and disillusioned by failures and complications, and the new techniques would be discredited.

One novel method of teaching surgical endoscopy is the "Master Class". This method is borrowed from the training of musicians: a group of advanced trainees perform a procedure, one after the other, in the presence of the Maestro. The Maestro then gives a critique to each trainee's technique. This format creates an intensive learning atmosphere and the trainees learn from each other as well from the Teacher discussing the operation performed through the video images.

From the 3-D Solo Surgery, telesurgery and robotics came enormous benefit for the developing Countries; virtual reality techniques with pre-op simulations could represent a new era of semi-automated or even automated telesurgery and surgical training will be revolutionized and it is easy to understand that, some conflict will naturally occur.

There is no doubt that the new technologies have affected the surgical training; the fact is that, as teachers, we must know this new reality. It is probable that in the near future these considerations will be ordinary or obsolete because of the development of new technologies which will be consolidated (teleproctoring, telementoring, teleconsultation).

The only thing left for us to do is to be aware of what is happening around us, continue to wander, still be enthusiastic, and thus go forward with the understanding of doing what is in our power to do, continue the work of Teachers and Surgeons, prepare our students in the best way possible and to spread the knowledge among Colleagues for the benefit of our patients.

To reach this aim nowadays the video images are very helpful, less expensive awaiting for the virtual teaching, as already mentioned, which is next to came and used in some centre of excellence.

So doing we should prepare our trainees in order to teach them their role as tomorrow's surgeons who will operate in the XX1 Century.

In conclusion even if I prefer the use of videos for education I must recognize that "live surgery" with its problems related to the demonstrations in "corpore vivi" some time is welcomed to the younger colleagues and of course I do think that the Post-graduate and hands-on Courses can be more useful in many occasions, certainly more productive than participate to the Congresses in which there are no PG in their programmes.

As far as the developing Countries is concerned we know the needs very well however all of us, particularly the Academic people and the Scientific Societies should be more active in these specific educational projects. So doing we can really help these populations and avoid new technologies being further delayed.

According to my experience I am convinced that to reach the best results in training we cant' look to the future without considering the past and the old way to teach directly in the operating theatre the different surgical procedures tutoring the younger, helping them during the operations going in the other side of the operating table! Of course this method can be used in the departments following a well organized educational programme in Surgery.

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