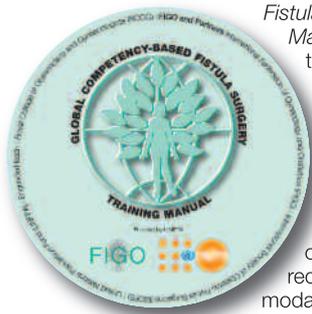


New interactive video trainer set to revolutionise fistula repair

The challenge of fistula

Obstetrical fistula remains a common and demeaning affliction of young women in the developing world, in part due to the lack of sufficiently trained medical personnel. Training medical professionals in fistula repair can be costly and time-consuming, and many who have successfully completed a training programme lose confidence over time and do not continue repairing fistula.

The most significant advance in the training of fistula repair is the recent publication of FIGO's 'Global Competency-Based Fistula Surgery Training Manual', which, for the first time, has established a standardised educational curriculum. Implementation of this manual is a formidable challenge and will require a multi-modal training initiative.



A technological solution

Simulation technologies have revolutionised the education of surgical trainees across the developed world. These tools have yet to be utilised meaningfully in the developing world and may benefit the implementation of the manual at certified fistula training centres.

In this effort, the FIGO Committee for Fistula has requested the assistance of the US-based non-profit organisation Children's Surgery International* and medical software company Red Llama, Inc. to develop and deploy a simulation trainer that would communicate the key elements of this curriculum in an interactive video format. The final product is intended to run on the surgical trainee's own personal computer and provide a preparatory course with assessments of knowledge before a student begins a hands-on training programme at a certified fistula centre.

Five master fistula surgeons from the FIGO Committee for Fistula have been appointed to the authoring and editorial board of this unique project: Professor Serigne Gueye, Dr Kees Waaldijk, Dr Mulu Muleta, Dr Andrew Browning and Dr Suzy Elneil.

The benefits of the interactive approach

It is believed that such an interactive video training programme would uniquely engage fistula trainees and allow them the opportunity to fully rehearse the steps of the procedure before practicing on a woman and potentially making a serious error. Utilising this tool, it is hoped that many more surgeons could be trained efficiently and safely at certified centres. In addition, upon returning to the trainee's home hospital, this video trainer may provide a useful refresher and build confidence in those who may consider abandoning their newly acquired skills.

The manual curriculum is divided into 'standard', 'advanced' and 'expert' levels. The intended audience for this video trainer project will be practicing surgeons who are entering at the 'standard' level of fistula repair and plan to attend a training programme at a fistula training centre.

The trainer's core software engine will be based

on video recordings of a master fistula surgeon's actual cases and will be uniquely interactive, requiring input from the trainee in order to proceed through the entire training course. It will also provide virtual mentorship and a running narrative throughout the programme, as well as an assessment of the surgical trainee's knowledge base via a comprehensive testing and scoring system.

The project in detail

In the production of this programme, an entire fistula repair will be video recorded using high definition endoscopic camera equipment. Afterwards, the footage of the procedure will be broken down and the key images/video clips organised into a series of logical steps. A team of software engineers will then generate live 'hot spots' within the video picture frame to highlight the relevant anatomic locations in the surgical field. In the final product, the trainee will be required to choose the correct instrument from an animated Mayo stand using their computer's mouse and place the instrument at the correct point of action ('hot spot') within the surgical field. Incorrect choices will be recorded as an error and identify an area that may require more focused training.

Once the correct choice is made, the video will progress with running commentary of that specific step. Step-by-step, the student will progress in this fashion until completion of an entire fistula repair. At important intervals, quizzes and tests of pre-op assessment, patient positioning, instrument management, anatomy, post-op management and awareness of complications will appear in order to verify that the core principles are being imparted to the trainee.

Upon completion of the trainer, a print-out of the student's score is provided to identify areas needing additional attention. It is hoped that this assessment will allow master trainers at certified training centres to focus their educational efforts on the areas needing most attention.

Next steps: production and implementation

Phase I (development) of the project has been completed, including an initial on-location film shoot in Dakar, Senegal at Grand Yoff General

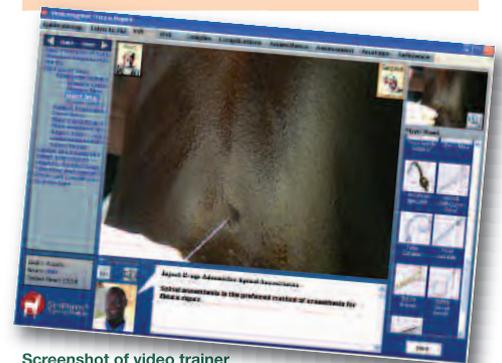
Hospital with Professor Serigne Gueye, in which numerous fistula repairs were video recorded from start to finish using high definition endoscopic cameras and video equipment provided by Stryker Corporation.

Phase II (production) involves the laborious and highly technical effort of separating the video of a fistula repair into individual steps, applying the interactive anatomic 'hot spots', and integrating curricula from the manual. Upon completion of Phase II (which will take approximately eight months), a deliverable product will be available in the form of a standard DVD that runs on a personal computer.

Phase III (implementation) involves the distribution and implementation of the project, including a validation study and language translation.

We will report on further progress with this project very shortly – we are confident that our video trainer will prove an invaluable, truly ground-breaking tool in the fight against fistula.

**This article was prepared with the assistance of Peter Melchert MD, who is a Paediatric/Internal Medicine Hospitalist at Abbott Northwestern Hospital, Children's Hospitals and Clinics of Minnesota. Since 2004, he has been on the board of Children's Surgery International (www.childrenssurgeryintl.org), a humanitarian organisation that provides free surgical services to enhance the lives of underprivileged children, and serves as its Medical Director.*



Screenshot of video trainer (administering spinal anaesthesia)



Surgery in progress