

open surgery trained registrars to novices. We found no difference between the groups. It is plausible that open surgical training and laparoscopic training should be two different routes of training.

Open surgical experience is considered as essential to perform laparoscopic surgery. There has been no study in the literature to see if open surgery trained individuals can transfer these skills to the laparoscopic setting. Our objective was to determine if training in open surgery improved performance in laparoscopic surgery. Open surgical experience is considered as essential to perform laparoscopic surgery.

15 medical students who had never performed any surgery were compared to 10 registrars who were confident of performing caesarean sections independently. Baseline dexterity skills were assessed in both the groups. A series of tasks were given to be performed on a laparoscopic simulator (i-Sim, I Surgicals, UK). Validated scoring system (Mistels score, McGill University, Canada) was calculated for each individual. Comparison between the groups for mental rotation ability, manual dexterity, Mistels score for each task and combination of tasks were made. Both groups were compared using non-parametric tests. Data is presented as median and range.

The manual dexterity test and the mental rotation ability were not significantly different between the two groups. There was no statistically significant difference in Mistels scores between the two groups for transfer of washers, cutting circles, endo-loop placement or suturing. The average Mistels score for MS was 310.79 (21.14-379.49) Vs 305 (233.48-465), p value 0.65.

The performance of medical students in laparoscopic simulator tasks was equal to speciality trainees who were trained in performing caesarean sections.

FC.11.8

Proving construct validity of virtual reality hysteroscopy

Bajka M.*^[1]

^[1]Clinic Of Gynecology, University Hospital Of Zürich ~ Zurich ~ Switzerland

Virtual Reality (VR) Simulation is a new training opportunity for diagnostic as well as therapeutic hysteroscopy. Its significance is now under systematic validation with promising results. The main advantages using simulation are no risk for patients, no limits for training access, no need for a teacher, systematic instead of random case supply, and objective, validated performance feedback.

Since a century, the traditional training in operative disciplines has been learning by doing as part of the apprenticeship model. But more and more ethical concerns are rising next to a number of well known disadvantages of the procedure. But so far, also substitutes come along with lots of drawbacks, e.g. animal protection concerns, lack of realism, need for intense support during training, restricted number of training cases, and still no opportunity for objective performance feedback. VR Simulation allow for overcoming many restrictions hampering effective operative training.

Construct validity of the simulator training on HystSim was investigated by comparing novices and experienced hysteroscopists assessed by a new Multi Metric Scoring System (MMSS) consisting of 15 performance metrics grouped by four modules.

The ergonomics and fluid handling modules resulted in construct validity, while the visualization module did not, and for the safety module the experienced group even scored significantly lower than novices in two exercises. The overall score showed only construct validity when the safety module was excluded. Concerning learning curves, all subjects improved significantly during the training on HystSim.

Construct validity for HystSim has been established for different modules of VR metrics on a new MMSS developed for diagnostic hysteroscopy. Careful refinement and further testing of metrics and scores is required before using them as assessment tools for operative skills.

FC.11.9

Psychomotor skills in laparoscopy

Afors K.*^[1], Nama V.^[1], Kaushik S.^[1], Athanasias P.^[1], Ind T.^[1]

^[1]St George'S Hospital Nhs Trust ~ London ~ United Kingdom

Minimal access surgery requires the use of a unique set of psychomotor skills. Objective assessment of these skills lacks evidence. 33 subjects were invited to complete specific manual dexterity tasks. Mental rotation tests were found to be a useful predictor in assessing trainees potential to learn laparoscopic skills.

Operative competence at the end of training is crucial to safe patient care. Psychomotor skills are important predictors of surgical skill. There are three main psychomotor skills necessary for minimal access surgery. These are manipulative, visual-spatial and eye-hand coordination. There is lack of evidence as to which skills plays the most important role. Our objective was to test if one or all the psychomotor components play an important role in Minimal Access Surgery.

23 students and 10 registrars confident in performing Caesarean sections were recruited. The novices in laparoscopic surgery were tested using the Purdue Peg Board test and mental rotation test. A series of tasks with increasing complexity were given to each candidate to perform on a laparoscopic simulator. Validated Mistels scoring system were calculated for each individual. Linear regression analysis was performed with mental rotation tests and the Purdue Pegboard Test as predictor variables in both groups.

The registrar group was significantly older than the novices group (Median 24 yrs vs median 35 yrs in the registrar group, $p=0.003$). Neither the mental rotation test nor the Purdue Pegboard Tests correlated to the Mistels score in the novices group ($R=0.04$). In the registrar group the mental rotation test showed a correlation to the Mistels score ($R=0.7$) but the Purdue Peg Board did not show any correlation.

Mental Rotation test of visual-spatial orientation may be useful in assessing the ability to learn laparoscopic skills in older trainees. Age should be taken into consideration when assessing psychomotor ability.

FC.11.10

Specialized course to teach intracorporeal laparoscopic suturing

Mereu L.^[1], Cofelice V.*^[1], Carri G.^[1], Albis Florez E. D.^[1], Prasciolu C.^[1], Giunta G.^[1], Pontis A.^[1], Mencaglia L.^[1]

^[1]Centro Oncologico Fiorentino ~ Sesto Fiorentino, Firenze ~ Italy

A specialized training course of laparoscopic suturing technique of five days to evaluate if “the gladiator rule” is an useful, applicable and reproducible method to teach intracorporeal suturing.

Laparoscopic surgery requires a set of skills different from open surgery, and learning in the operating room may increase surgical time, and even may be harmful to patients.

We designed a specialized training course for laparoscopic suturing skills of five days. Two coursis in each working station and 1 tutor every two pelvic trainer were present. Gladiator rule method was used to teach intracorporeal suturing. The coursis has been trained in intracorporeal knotting, stiches with right and left hand from lateral and sovrapubic access. Coursis’s features were collected. Data on ergonomy, coordination, sense of depth, precision and familiarity at the beginning and at the end of the course were detected. Follow up on subsequent live laparoscopic application of intracorporeal suturing was obtained.

We enrolled 44 consecutive doctors; mean age was 36.95 (range 25–55): 16 were doctors in formation, 14 surgeon assistant and 14 first surgeon. 28 of them have previously attended at least one laparoscopic course on suturing technique. 8/44 were left hand. In all doctors we found a significant statistical improvement during the course in coordination ($p=0.001$), dexterity ($p=0.000$), traction power ($p=0.002$) and posture ($p=0.003$). Males have been better than females in coordination ($p=0.002$), dexterity ($p=0.000$) and traction power ($p=0.014$). No significant statistical difference in suturing skill was found in relation to age, gender, previous courses, surgical rule and dominant hand.

Suturing skill is one of the most difficult laparoscopic procedure to learn. We demonstrate that “the gladiator rule” is an useful, applicable and reproducible method to teach intracorporeal suturing.

FC.11.11

The impact of the learning curve upon adhesion formation in a laparoscopic mouse model

Corona R.*^[1], Verguts J.^[1], Binda M. M.^[1], Casorelli A.^[2], Koninckx P. R.^[1]

^[1]Kuleuven ~ Leuven ~ Belgium - ^[2]Uneversità La Sapienza, Dipartimento Ginecologia e Ostetricia ~ Roma ~ Italy

Laparoscopic skills improve with training with a decreasing in duration of surgery and adhesion formation. Therefore completion of a standardized learning curve should be mandatory when initiating adhesion formation studies.

During laparoscopic surgery bowel manipulation was demonstrated to enhance postoperative adhesion formation. Therefore, the present study was designed to evaluate the impact of the surgeon training on adhesion formation in a laparoscopic mouse model.

The study was performed in an academic research centre as a prospective randomized trial in 200 Balb/c and 200 Swiss female mice. Adhesions were induced by opposing bipolar lesions and 60 minutes of pneumoperitoneum. Each surgeon operated 80 mice (40 Swiss and 40 Balb/c) the only variable thus being his increasing experience. Endpoints were the

duration of surgery while performing the lesions and the adhesion formation scored after 7 days quantitatively (proportion) and qualitatively (extent, type, and tenacity). Some surgeons were already experienced gynaecologists, others were starting their training.

With training, duration of surgery and adhesion formation decreased exponentially for all surgeons ($P<0.0001$, t test), whether experienced ($P=0.0001$) or not ($P=0.0001$). Experienced surgeons had initially a shorter duration of surgery ($P=0.0095$, t test), less adhesion formation ($P<0.0001$, Proc GLM) and less de novo adhesions ($P=0.003$, Proc GLM) than non-experienced surgeons.

These data suggest that laparoscopic skills improve with training, leading to a decrease in the duration of surgery and formation of adhesions. Therefore completion of a standardized learning curve should be mandatory when initiating adhesion formation studies both in laboratory or clinical setting.

FC.11.12

Trainee perceptions of ultrasound training—a UK study

Trehanne A.*^[1]

^[1]University Hospital Wales ~ Cardiff ~ United Kingdom

A survey of trainee perceptions in ultrasound training was conducted.

A reduction in working hours and increased trainees have increased training pressures. Training has had to develop in order to keep up with these demands.

An e-survey of training was distributed to all trainees in Obstetrics and Gynaecology. The survey consisted of ten questions. Trainees were contacted via the National Trainees Committee (NTC). The survey was open from January 1st 2011 to April 1st 2011.

311 responses were received from 13 responding deaneries (25% ST1-2, 62% ST3-7, 4 sub-specialty and 9% other grade). While awareness of the formal training programme was good (72%), 77% of respondents were concerned about the level of training exposure they received. Only 49% believe they will complete the 2 basic ultrasound modules, and only 20% consider it possible to complete 1 module in the current training climate.

Training in ultrasound has problems to overcome to ensure uniform competency. Only 57% and 60% of respondents felt confident to confirm location and viability while 50% and 84% felt they were able to confidently asses placental location and fetal presentation.

Examination of ultrasound skills and dedicated simulation suites were felt by trainees to be the most useful learning support modalities (61% and 63% respectively). Direct supervision on a virtual simulator with a trainer or with virtual feedback was thought to be equally useful (51% of respondents each). Locally organised training in ultrasound is vital and provided respondents with basic theoretical (66%) and practical (42%) knowledge.

Training in ultrasound does not have to be patient based and a wide variety of multi media and non-patient based learning aids are available to facilitate learning.