Committee structure

- Equal representation from physician and surgeon
- Representation from :
  - GESA (1 physician, 1 surgeon)
  - RACP (2 - physicians)
  - RACS (2 - surgeons)
  - Rural surgery and medicine (2)

Guidelines

- Learning under supervision of recognised endoscopist
- Approved facilities
- Combine cognitive and procedural training
- Principles and practice of cleaning and disinfection

Requirements

- Complete a minimum number of supervised procedures
- Maintain a log book of all procedures signed by supervisor
- Satisfactory report from supervisor
- Complete specialist training [Colleges] (gastroenterology or GI surgery)

Supervisor

- Endoscopist (physician or surgeon) in active, approved unit
- Recognized by Conjoint Committee in area of Endoscopy

Endoscopy training

- Gastroenterologists
  - upper endoscopy
  - colonoscopy
- Digestive (General) Surgeons
  - upper endoscopy
  - colonoscopy
- Optional
  - ERCP

Credentialing

- Hospital Boards seek information as part of determination of competence to practice
- No certificate
- No specific qualification - (Colleges)

Summary

- "Conjoint Committee" sets a standard of training in endoscopy for Australia
- Colleges and GESA underpin these standards

Conclusion

- Training in endoscopy is a model for training in procedural medicine
- Multidisciplinary requirements recognized
- Objectives of training defined

  Results of training are accessible to evaluation and assessment

Endoscopic Simulators

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A simulator as a training tool is well established, especially in aviation.[1] The airline industry has demonstrated that by using flight simulators, the skills of pilots may improve and mistakes be avoided, thus saving lives.[2] Therefore, it is natural to use simulators in medical training as well, especially in fields such as laparoscopy,[3] cardiology[4,5] and anesthesiology.[6,7] Changes in medicine, legal awareness and progress in technology have contributed to greater use of simulators in medical training.

Endoscopy requires a minimal number of procedures to achieve competence. Various organizations have different standards as to the minimal number of procedures needed. It ranges between 100-300 for esophagogastroduodenoscopy, 100 for colonoscopy and 100-200 for ERCP.[8-11] Therefore, any device which saves time would be valuable. An endoscopic simulator obviously saves time, as the trainee can learn and be tested quickly and safely, with less discomfort for patients, and less supervision time.

The first endoscopic simulators were mechanical modules, designed to facilitate early training, especially sigmoidoscopy and colonoscopy.[12,13] They ranged from a simple slide projection system to a rubber model of the colon and were unfortunately inappropriate for training. Their interaction with the trainee was negligible. The most advanced mechanical model currently available is that of the University Hospital of Tuebingen, which resembles reality with respect to dimension, colour, structure and tissue feeling. Artificial tissue, mimicking pathologic stricture and simulating pathologic findings, has been developed.

For therapeutic procedures, animal organ-simulators are necessary. These enable performance of polypectomy, ERCP and sphincterotomy, PEG, ablation with laser or argon plasma coagulator and stent implantation. They are more realistic, but require continuous search for animals and ethical objections are likely to limit their availability. Therefore, the exteriorized dog colon used for colonoscopy[14] and the porcine models used for ERCP and sphincterotomy have not gained popularity.[15,16] The Erlangen models known as EASIE and the Enlarger Endo-Trainer[17] in which the gastrointestinal tract and the pancreatica-biliary system are obtained from slaughtered pigs are exceptions. The upper or lower GI tract is installed on a plastic structure shaped like the human. The ethical issue is eliminated as the pig GI tract arrives from the slaughter house where the animal is killed for meat. A perfusion system may regenerate realistic bleeding episodes. The papilla of Vater can also be identified and cannulated, even though only rarely is the pancreatic duct visualized. As the biliary and pancreatic systems have individual papillae and the location of the biliary papilla of the pig is in the duodenal bulb 1cm from the pylorus, this allows an easy cannulation with a forward view gastroscope. The pancreatic duct papilla is 7-12 cm more distal in the duodenum.

There is, to date, only one computer-based simulator of the gastrointestinal tract, by a company named Simbionix (Tel-Hashomer, Israel). Also, HT Medical System (Rockimlle, Maryland) has developed a computer-based simulator for bronchoscopy and plans to enter Gastroenterology as well. The Simbionix simulator produces a 3-dimensional geometric model. The GI tract texture is videotaped from real endoscopy and further computer manipulated as needed. There is global as well as local deformity and the computer stores information related to movement of the endoscope from the beginning of the procedure. Information about endoscope location is transmitted from sensors located on it. The resistance encountered is based on the motion model and the characteristics of the GI tract.[18] It is a real time interactive simulator that allows diagnostic and therapeutic procedures, performed on a mannequin with an authentic endoscope. Steering and torque of the endoscope is possible and suction and inflation buttons are present as well. It includes upper and lower GI cases with gradual increase in performance as anatomy becomes more difficult and pathology rarer.

Based on simulators already available, endoscopic training will eventually change, starting with a computer-based simulator. It will allow the trainee to perform as long as needed and at a convenient time. The simulator's incorporated virtual mentor will constantly improve the trainee's performance. More advanced training in therapeutic procedures can be done with an animal model (perhaps the Erlangen model). This requires early planning, as the animal's organs need to be obtained and prepared. However, in the near future, computer-based simulators will provide the opportunity for training in therapeutic procedures, as well as the possibility for continuous monitoring of competence in endoscopy, helping doctors recognize areas where improvement is needed and healthcare organizations identify faulty practitioners.

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