Toward a platform for training and practice standards in advanced minimally invasive surgery

This issue of the journal contains a thoughtful summary by Birch and colleagues[1] of a consensus conference for the development of training and practice standards in advanced minimally invasive surgery (MIS). Although the conference took place nearly 2 years ago, the proceedings remain highly relevant today with the development of even newer technologies such as natural orifice translumenal endoscopic surgery (NOTES) and single incision laparoscopic surgery (SILS). It is timely to review responsibilities for achieving standards in training and practice, which are collectively borne by surgeons, health care institutions, university faculties of medicine, national specialty societies and industry.

The acquisition of skills in advanced MIS begins with participation in a teaching intervention. Typically, for established surgeons, these interventions consist of short courses with skills laboratories. The use of a short course yields positive short-term impacts on knowledge, skills and practice patterns, but it is a follow-up proctorship exercise with an experienced mentor that is essential for the adoption of safe, effective best practices according to the most rigorous evidence available. Recently, evidence has accumulated to show that a number of advanced MIS procedures have achieved standards of care. Furthermore, NOTES procedures, which are currently under development have benefited from the earlier MIS experience as all data are being collected under the auspices of registered trials. The Natural Orifice Surgery Consortium for Assessment and Research (NOSCAR) is an excellent example of pursuing new technology with rigor and standards that have been defined by international multicentre trials to guide the practice of individual surgeons. This contrasts with burgeoning new technologies such as SILS that are proceeding without blueprints for registries of trials; SILS is revolutionizing instrumentation with new characteristics but results in loss of degrees of movement for the surgeon and larger incisions that may be prone to complications. As in the earlier proliferation of MIS, great caution must be exercised by surgeons to avoid repeating mistakes that could result in suboptimal patient outcomes.

Academic institutions can assist in developing rigorous standards by developing simulation technology. A great deal of research lies ahead to improve the haptic interface between learners and the simulation trainers to realistically portray procedural challenges. Furthermore, all of Canada's medical schools will require simulation technology to meet future standards for postgraduate training. These simulation centres can be accredited and compared with peers by the American College of Surgeons. Two types of simulation are envisaged. The first is procedure-based simulation, which allows accurate instruction of the procedures; the second is team-based simulation. As Birch and colleagues[1] correctly identify, a principal obstacle to the adoption of advanced MIS is achieving appropriate training for the entire surgical team, a challenge that can readily be addressed by simulation. There is a pending "simulation summit" this fall, sponsored by the Royal College of Physicians and Surgeons of Canada, that will help to harness a simulation platform for Canada. The simulation centres themselves require committed partners from industry, health institutions and academic centres alike. Eventually, platforms of simulation distributed provincially are a reasonable objective so that deserving communities who wish to adopt advanced MIS can receive support.

The consensus conference stressed the evolution of a framework for national mentoring. An earlier model piloted by Birch and colleagues[2] demonstrated the benefits of mentoring. Unfortunately, the lack of MIS fellowship-trained surgeons throughout Canada creates a challenge for sustainable delivery of effective mentoring. This situation is changing as more surgeons are entering practice with MIS fellowship experience in health care centres throughout the country. An example of this is provided in the article by Bohacek and Pace[3] (also in this issue of the journal), who demonstrate beneficial outcomes for patients where a surgeon joins a practice group after completing advanced MIS fellowship training. The outcomes for complex gallbladder disease were a reduced length of stay in hospital and a reduced conversion rate to open surgery. These benefits could be linked to a system of proctoring within an individual hospital, and the advent of telementoring can also support practitioners in more isolated communities. Regardless of the mentorship program, it is essential for both the mentored surgeon and the mentor to assume a rigorous commitment to use best evidence and to provide support for costs of the mentor, staffing, equipment, facilities, supplies and technology. These are best addressed through development of a business case that addresses the challenges of the substantial learning curve, increased operating time for initial

patients, potential complications during the learning phase of adoption and operating costs associated with training and disposable instruments. Such planning is relevant to all surgical services that adopt advanced MIS, including general surgery, urology, thoracic surgery, reconstructive orthopedic surgery, vascular surgery and gynecology.

In conclusion, Birch and colleagues[1] challenge that a measure of success for their efforts is to observe that their recommendations will be adopted by funders and national specialty societies. To achieve this, the responsible dissemination of advanced MIS technology requires renewed partnership and commitment from surgeons, health care and educational institutions and industry.

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Vers un modèle de normes de formation et de pratique en techniques avancées de chirurgie minimalement invasive

Dans ce numéro du Journal, Birch et ses collaborateurs[1] présentent un résumé réfléchi d'une conférence de consensus sur l'établissement de normes de formation et de pratique en techniques avancées de chirurgie minimalement invasive (CMI). Bien que la conférence ait eu lieu il y a près de 2 ans, son propos demeure très pertinent aujourd'hui, compte tenu du développement de nouvelles techniques encore plus perfectionnées, dont la chirurgie endoscopique transluminale par orifice naturel (*natural orifice transluminal endoscopic surgery* ou NOTES) et la chirurgie laparoscopique par simple incision (*single incision laparoscopic surgery* ou SILS). Il est donc opportun de revoir les responsabilités relatives aux normes de formation et de pratique, responsabilités qu'assument collectivement les chirurgiens, les établissements de santé, les facultés de médecine, les sociétés nationales de spécialité et l'industrie.

L'acquisition de compétences en techniques avancées de CMI commence par la participation à une intervention formative. Typiquement, pour les chirurgiens établis, ce type d'apprentissage prend la forme de brèves séances théoriques accompagnées de laboratoires pratiques. L'utilisation de séances théoriques de brève durée a certes des effets positifs à court terme sur les connaissances, les compétences et les modèles de pratique; il est toutefois essentiel, pour compléter la formation et assurer l'adoption de pratiques exemplaires sécuritaires et efficaces correspondant aux données probantes les plus rigoureuses disponibles, que la mise en pratique subséquente des techniques apprises soit supervisée par un mentor expérimenté. Récemment, on a accumulé de plus en plus de preuves montrant qu'un certain nombre de procédures avancées de CMI ont atteint les normes de soins. En outre, les procédures relatives à la technique NOTES, qui sont actuellement en cours d'élaboration, ont bénéficié de l'expérience antérieure en CMI du fait que toutes les données sont recueillies dans le cadre d'essais inscrits. Le *Natural Orifice Surgery Consortium for Assessment and Research* (NOSCAR) est un excellent exemple de la poursuite rigoureuse de nouvelles technologies en fonction de normes définies par des essais multicentriques internationaux en vue de guider la pratique des chirurgiens. À l'opposé, on constate que le développement de certaines nouvelles techniques en plein essor telles que la SILS se déroule parfois sans plan d'inscription des essais. Pourtant, la SILS révolutionne l'instrumentation et implante de nouvelles caractéristiques qui résultent, pour le chirurgien, en une perte de degrés de mouvement, et pour le patient, en incisions plus longues susceptibles d'entraîner des complications. Comme ce fut le cas au moment de l'évolution rapide de la CMI, les chirurgiens doivent faire preuve d'une grande prudence s'ils veulent éviter de répéter des erreurs qui pourraient entraîner des résultats sous-optimaux pour les patients.

Les établissements universitaires peuvent contribuer à l'élaboration de normes rigoureuses en créant des technologies de simulation. Il faudra encore beaucoup de recherches pour améliorer l'interface haptique entre les apprenants et les simulateurs de façon à dépeindre avec réalisme les difficultés que présentent les interventions. De plus, toutes les