



Short Report

Laparoscopy and Low-Income Countries

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Laparoscopy has become the standard of care in different procedure such as cholecystectomy, appendectomies and many gynecological procedures [1-3] and has an important role in colonic and rectal surgery too [4]. Abdominal wall surgery, splenic, gastric, esophageal as well as pancreatic and liver surgery are incrementing the rate of minimally invasive approach [5]. More laparoscopic surgeries are also performed on emergency surgery cases [6,7] This approach is generally very common in High-Income Countries (HICs) [8] while it is still not available in many Low- and Middle-Income Countries (LMICs) due to the high cost of purchasing and maintaining the equipment, lack of stable electricity, limited consumable items such as medical-grade carbon dioxide and the lack of trained surgeons [9]. On the other end, implementing laparoscopic surgery in such countries, at least to provide the adequate standard of care, should surely bring advantages in term of complications, especially to minimize post-surgical infection, use of antibiotic, postoperative pain and to reduce recovery time and return to normal life as demonstrated [10,11]. The advantage of laparoscopy is more evident in settings with limited access to blood transfusion, clean water, and poor healthy living conditions. Considering the lack of modern diagnostic imaging in LMICs diagnostic laparoscopy may also be more economical and clinically effective [12]. Moreover, the perioperative reduced bleeding risk and the lower occupational hazard risk for health workers support the application of laparoscopy in HIV endemic areas [13].

The challenge is how to develop minimally invasive surgery in a sustainable and correct way. In our recent experience in St Jean de Dieu, Afagnan Hospital in Togo we performed laparoscopy with camera and instruments we used years ago in western

countries according to other experiences [8]. At the beginning our practice was very difficult due to problems with devices and materials. We adapted instruments to a rural setting. During our 8 days mission, we performed the first four laparoscopic procedures in Afagnan Hospital (2 pelvic exploration, 1 appendectomy, 1 cholecystectomy). Conversion to open surgery in 1 case (25%) due to small bowel involvement in perforated appendicitis with abdominal abscess. Median postoperative length of stay 3 days (2-6). Mean operative time 76 minutes (45-135). No major morbidity in postoperative period. Some considerations must be done after this first experience. To allow widespread of laparoscopy it's necessary to choose adaptive strategies combined to efforts to improve equipment [15]. Companies producing trocar and instruments should continue to produce multi-use materials and the instrumental devices un-used in developed countries could be useful in LMICs. In fact, the use of reusable instruments has helped in reducing the financial load in LMICs compared with disposable instruments [9] Strategic investment in technicians training during implementation of new technologies should increase the availability of the surgical service [16]. Finally, we must deeply evaluate which laparoscopic procedures must be acquired first in rural hospital. In our opinion we should start with appendectomy, cholecystectomy, exploration for acute abdominal pain of unknown origin and suspected ectopic pregnancy in which laparoscopy could have a diagnostic role too. [8-14] Surgical community should increase the know-how transmission to colleagues organizing meeting and stages period in both HICs LMICs to share knowledge competence and techniques with direct presence in OR and/or web meeting (Figure 1-2). The training programmes should be structured to include standardizing

skills, workshops, and short-term courses. Global connectivity through technology can also facilitate learning [9]. The benefit of experience from visiting or locally trained surgeons will provide insight into potential short and long-term problems with solutions. The way of training surgeon is still a debated topic [17]. UN states that every human being has the right to access adequate medical care [18] but this is still not true in all countries as the accessibility for laparoscopic procedures in LMICs demonstrates. We think that this is an opportunity to do something in this field.



Figure 1: First appendectomy in St Jean de Dieu Hospital Afagnan, Togo; in the box creative adaptive connection for energy.



Figure 2: Low-cost pelvic trainer for laparoscopy

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