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EDITORIAL

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Avoiding complications in gynaecological endoscopy: an enigma

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It is well established that minimal access surgery presents many advantages over conventional surgery: smaller scars, less postoperative pain and minimal impact on psychological well-being. No surgery is without risk. Both laparoscopic and hysteroscopic procedures have in common the necessity of introducing instruments and distention media to create a favourable surgical environment before the operation can begin. Once the set-up has been completed, the procedures themselves require specific operative skills that differ from those required for conventional surgery. As a result, minimal access surgery (MAS) carries a potentially higher risk of iatrogenic complications, especially during the learning phase of the surgeon. MAS is also susceptible to all the complications that can occur in conventional surgery, i.e., bleeding, infection and electrical burns.

One of the most controversial subjects in laparoscopy remains the mode of introducing the primary trocar. This area has been the subject of different techniques over the years: the conventional technique uses the Veress needle, inserted in a blind fashion, to achieve a pneumoperitoneum before the insertion of the primary trocar, making optimum use of the anatomic and physical environment. Approximately a third of trocar-related injuries are due to the Veress needle. As an alternative insertion technique, the direct technique was created. This makes use of the negative pressure in the abdomen elicited by elevating the abdominal wall. Again with this technique, the primary trocar is inserted blindly, making it possible to penetrate viscera or major blood vessels. The "open technique" described by Hasson represents an attempt to circumvent the potential risk of blind entry, and while studies have demonstrated that this is true for major blood vessel injury, the incidence of bowel injury does not seem to be decreased. Other techniques recently described use radially expanding sleeves or modified Veress needles and trocars to enable entry under direct vision.

Spoilt for choice? Not really. Molloy, having performed a meta-analysis of all the relevant English language studies of laparoscopic entry, reports that the "direct entry technique" is associated with a significant reduction in the incidence of major injury when compared both to "open" and "Veress entry" procedures. Open entry is statistically more likely to be associated with bowel injury than either Veress needle or direct entry; however, open entry appears to minimize vascular injury at the time of entry. Chapron compared the open entry (n=1,562) vs. the classic one (n=8,324) and found the risk of failure requiring conversion to laparotomy significantly higher in the former, while the risks of major complications were comparable.

Only 2 months ago, Jansen published the results of a comparison of open vs. closed entry (either by needle or first trocar) from data relating to 187 gynaecologists in 74 hospitals in The Netherlands from January 1997 to December 2001 and concluded that the number of complications that were found at open-entry laparoscopy was significantly higher.

Once the initial set-up for laparoscopic surgery has been completed, the main operative procedure will take place. This stage is not free of complications. Injuries to the bladder, ureters, major blood vessels and bowel can occur, and the surgeon must be vigilant and able to repair the damage laparoscopically if possible or otherwise proceed to laparotomy. Unfortunately, in situations in which the ureter's course has been altered because of adhesions, myomas or endometriosis, the recognition of a ureteral injury is likely to be missed. Ostrzenski, in a review of the literature concerning ureteral injury, found that ureteral damage was identified intraoperatively in 8.6% of the cases, postoperatively in 70.0% of the cases and in the rest, 21.4%; the time of diagnosis was not specified. The same is true for thermal injuries to the bowel from electro-surgery or laser. In both situations, pelvic pain and symptoms of peritonitis will manifest 48–72 h postoperatively—a cause for constant vigilance.

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In contrast to laparoscopy where the CO_2 used to distend the peritoneal cavity is rarely a cause of concern due to its high solubility, in hysteroscopy, a whole spectrum of complications can arise because of the distention medium. Excessive intravasation of the distention medium will lead to fluid overload, congestive heart failure, pulmonary and brain oedema and death. This is particularly true of operative hysteroscopy.

Complications occur also during the hysteroscopic surgery, including air embolism, haemorrhage and uterine perforation. Air embolism is possible usually when air has been left in the tubing system, but it can occur because of re-insertion of the resectoscope or, rarely, if the patient has been placed into a steep Trendelenburg position, thus creating negative pressure in the vena cava. Haemorrhagic complications occur during endometrial, septal and submucous myoma resection. Small venous bleeding is usually suppressed by the pressure of the uterine distention medium. Moderate to major bleeding will require a ball electrode, bipolar needle or laser fibre to coagulate the vessel and occasionally the insertion of a Foley catheter balloon to create tamponade. Uterine perforation can be diagnosed easily by direct visualization, but it will also be suspected when the hysteroscope passes to a depth greater than expected or when suddenly there is insufficient distention of the uterine cavity. When perforation of the uterus is purely mechanical, usually it is without consequences, but when it occurs with an electrosurgical device, injury to organs and structures adjacent to the uterus cannot be excluded. This situation requires exploratory laparotomy in order to rule out damage to intra-abdominal viscera. Despite the above, international surveys have shown that in practice hysteroscopic surgery is associated with very few complications. Aydeniz, reporting data from a multicenter survey of 21,676 operative hysteroscopies performed in 92 centers, found that the rate of complications such as perforation, fluid-overload, infection and peri-operative bleeding was small, although in most German hospitals hysteroscopy was just being established. Jansen, reporting data from 82 hospitals in The Netherlands, had 38 complications among 13,600 diagnostic and operative hysteroscopic procedures (rate 0.28%), half of them being entry-related.

Although the overall complication rate is low, it appears to be on the increase, and data from recent publications reflect a similar trend. We can only speculate as to the reasons: is it due to cases where the morbidity was intrinsically higher due to pre-existing pathology? Is it due to the learning phase of the increasing number of new surgeons being trained in the new techniques? Or is it because experienced surgeons find it tempting to perform more complex procedures and at the same time show less reticence to report their complications as MAS has become more widely accepted in the surgical community? Our inability to explain this trend underlines the need for continuous audit of these techniques, proper case selection and appropriate emphasis on training and accreditation.

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