

NEEDLESCOPIC EXAMINATION OF THE PERITONEAL CAVITY — A CRITICAL EVALUATION

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SUMMARY

Needlescope of 2.2 mm is an inviting equipment for peritoneoscopy or laparoscopy. Though small diameter gives less morbidity and therefore permits the procedure under local anaesthesia or in high risk women, it will have disadvantage of limited field of vision. To find its place, 40 patients were subjected to needlescopic examination followed by laparoscopic examination with standard laparoscope of 7 mm. Findings were recorded by two different operators so as to avoid bias. Needlescopy proved useful in diagnosis when the findings were normal but did err in presence of pathology. Procedure gave less morbidity and could prove useful in high risk patients particularly when extensive pathology is suspected.

The general trend in modern medicine is to miniaturise all equipment, all with recent advances in fibre-optic technology, it has become possible to manufacture an extremely small bore diagnostic scope, called the needlescope. However, small is not always better, and the needlescope does have some disadvantages, including a very limited field of view. We carried out a study, comparing the diagnostic efficacy of needlescopy

versus conventional diagnostic laparoscopy with a 7 mm single puncture laparoscope.

Materials and Methods

Forty patients were subjected to a needlescopic examination of the peritoneal cavity, followed immediately by a diagnostic laparoscopy at the same sitting at KEM Hospital, Bombay. The aim of this study was to compare the accuracy of the findings by the two methods, using the laparoscopy findings as the standard for comparison. In order to avoid bias, the

needlescopic examination was performed first by the senior author alone, who recorded his findings immediately on completion of the procedure. This examination was then followed by a diagnostic laparoscopy by the second author, who was unaware of the needlescopic findings. The senior, who had finished recording his findings, then also had a look through the laparoscope, to be better able to appreciate what had been missed during the needlescopic examination. The indications for the diagnostic laparoscopy were infertility in 27 patients, suspected pelvic inflammatory disease in 10, ascites in 1, primary amenorrhea in 1 and suspected genital tuberculosis in 1.

General anesthesia with endotracheal intubation was used in all patients. A pneumoperitoneum was created through a Verres needle in the standard fashion, using about 3 litres of gas for insufflation. The diagnostic procedure involved a careful inspection of all pelvic structures, paying special attention to the uterus, tubes and ovaries. Chromopertubation with methylene blue was used to assess tubal patency when indicated, during the needlescopic examination. If the tubes were patent, with free spill of the dye into the pouch of Douglas, the methylene blue installation was not repeated during the laparoscopic examination.

Results

Since the field of view of the needlescope was much smaller, the needlescopic examination of the pelvis consistently took a longer time than diagnostic laparoscopy. The mean time for the needlescopic examination was 20 minutes (12 to 35 minutes) as compared to the mean time of 14 minutes (6 to 25 minutes)

for the diagnostic laparoscopy. Moreover, the clarity of vision through the needlescope, while adequate to appreciate abnormalities, was distinctly inferior as compared to the vision through the laparoscope. Moreover, the ability to manipulate pelvic structures and feel them through the laparoscope is lost during the needlescopic examination, since the needlescope is too delicate an instrument to be used for manipulation.

Of the 40 patients, the final diagnosis, as determined by the diagnostic laparoscopy was: normal pelvis in 24; chronic pelvic inflammatory disease in 12, of which 7 had minimal disease with thickened tubes and a few peritubal adhesions, 3 had a hydrosalpinx, and 2 had a tuboovarian mass; genital tuberculosis in 3 and streak ovaries in 1.

What was the correlation between the needlescopic findings and the laparoscopic findings? When the pelvic findings were normal, the correlation was excellent, in that the needlescope also revealed a normal pelvis in the 24 patients. Diagnosis of tubal patency could be reliably determined during the needlescopy. However, in the patients with disease, the results with needlescopy were unsatisfactory. Thus, one hydrosalpinx was completely missed on needlescopic examination, and one hydrosalpinx was grossly underestimated. The tubercles in one of the 3 patients with genital tuberculosis were also overlooked during needlescopy.

Discussion

Diagnostic laparoscopy has a well-established place in gynaecology today and the standard instrument used for diagnostic laparoscopy in a 7 mm diameter tele-

scope. We carried out this study in order to determine if we could evaluate pelvic findings reliably with an alternative instrument - the needlescope, which being only 2.2 mm. in diameter, offered the advantages of a much smaller incision, with consequently lesser morbidity and postoperative pain.

However, while we found that the needlescope is satisfactory for pelvic visualisation when the pelvic findings are normal, it has a limited role to play in clinical practice, because of the possibility of missing pelvic lesions. This is because of the very limited field of view it offers, as well as the poorer quality of vision through the needlescope.

Given the high cost of the needlescope, its delicacy and its limited optics, we feel that it is an instrument which offers no advantage over the conventional 7 mm diagnostic laparoscope in routine diagnostic laparoscopy, where subtle abnormalities must be accurately diagnosed and never missed.

The usual visual field of small fetoscope is limited. Patrick (1976) noted that the hand of an 18 week fetus fills the visual field of the needlescope.

Phillips (1978) finds that magnification imposed by the smaller diameter of the endoscope makes it difficult to examine the entire fetus. Sheth (1989) experienced similarly in trying to study fetus.

However, for high risk patients, where the introduction of the 7 mm diameter telescope may be considered to be so hazardous that the gynaecologist may be forced not to perform any diagnostic procedure at all, the needlescope may have a useful role to play as shown by Sheth (1989) in high

risk women with ascites. Thus, for example, we recently had a 65 years old patient with massive ascites who was considered at risk for general anaesthesia. The differential diagnosis included ovarian carcinoma and disseminated abdominal tuberculosis. Conventional diagnostic procedures such as ultrasound failed to reveal any pelvic mass. Diagnostic paracentesis showed straw coloured fluid, which did not contain either malignant cells or acid-fast bacilli. We performed a needlescopic examination for this patient, in order to rule out the possibility of abdominal tuberculosis, which would contraindicate an exploratory laparotomy. Needlescopic examination done under local anaesthesia with minimal morbidity showed an omentum and parietal peritoneum which were studded with multiple large tubercles. The patient was thus spared an unnecessary laparotomy, and was treated successfully with antituberculous chemotherapy, in response to which her ascites regressed satisfactorily.

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