

The well lubricated proctoscope is inserted in the rectum through the anus in the direction indicated by the digital examination, the plunger is removed, and the field is brought under direct observation. The great value of the inverted position is that, as soon as the plunger is removed, air passes into the rectum and the walls balloon out, making the insertion of the proctoscope under direct vision much easier for the examiner and less distressing for the patient. After the instrument has been inserted as high as possible, the mucosal surface is minutely examined as the instrument is slowly withdrawn. The use of suction apparatus or long cotton applicators is essential to keep the field clean. The proctoscope should be withdrawn as gently as it is inserted. Painless proctoscopy will inspire the patient's confidence if any operative procedure is to follow.

## PERITONEOSCOPY

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Peritoneoscopy is being recognized as a valuable diagnostic procedure. In the few cases which are difficult to diagnose without exploratory laparotomy endoscopy of the peritoneal cavity and its contents may prove advantageous.

Although many uses for the peritoneoscope have been described, its practical use seems to be limited to the investigation of (1) ascites in the differential diagnosis of cirrhosis of the liver, generalized abdominal carcinomatosis, and tuberculous peritonitis and (2) liver disease, especially with hepatomegaly.

The value of the procedure is necessarily limited by what can be seen in the peritoneal cavity. The liver, falciform ligament, omentum, anterior surfaces of the small and large intestines, fundus of the gallbladder, pelvic viscera, parietal peritoneum, and occasionally the cecum and appendix can be seen.

Most authors agree that peritoneoscopy is contraindicated in (1) acute inflammation in the abdominal cavity, lest the infection spread; (2) distention, which increases the likelihood of perforating the bowel; and (3) the presence of known adhesions, although previous surgery does not absolutely contraindicate the procedure. In several cases adhesions from previous surgery in the upper right quadrant prevented observation of the part in question. Although it is not a contraindication, obesity may be troublesome since a large, fatty omentum may float over or adhere to the visceral or parietal peritoneum or both.

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Preoperative preparation is the same as that for abdominal exploration. The abdominal wall is shaved, the bladder is emptied, and sedation adequate to allay apprehension and reduce susceptibility to pain is administered.

In the operating room the patient is placed on an adjustable operating table and is partially immobilized with shoulder braces and footboard. The abdomen is prepared with a suitable antiseptic and draped. Most patients cooperate very well under local anesthesia without supplemental intravenous or general anesthesia. The skin, subcutaneous tissue, and adjacent musculature in the midline just below the umbilicus are infiltrated with novocain. A 0.5 inch incision is made approximately 2 inches below the umbilicus, and by blunt dissection the subcutaneous tissue is separated down to the anterior sheath of the rectus muscle. At this point incision of the fascia facilitates introduction of trocars into the peritoneal cavity. A small trocar is inserted, the stilet is removed, and the abdominal cavity is distended with air. This trocar is then replaced with a large, lubricated trocar in its sheath. The stilet is removed, and after the lenses and the light have been tested, the telescope\* is inserted. Since air may escape during the introduction of the second trocar and the peritoneoscope, the peritoneal cavity is redistended with air. The operating room is darkened, and the position of the patient is altered to expose the suspected lesion. At the end of the examination the telescope is withdrawn, the air is allowed to escape, the sheath of the trocar is removed, and the incision is closed with one or two clips.

When ascites is present, it is not necessary to produce pneumoperitoneum until the fluid has been removed. A blunt metal suction tube with multiple perforations is introduced through the sheath of the trocar. A specimen of fluid is obtained in a sterile bottle for examination for tumor cells, protein content, bacterial content, and so forth. The tubing is then attached to a sterilized gallon bottle so that the amount of ascitic fluid may be accurately measured. The rest of the procedure is carried out as previously described.

As experience with peritoneoscopy increases, the need for biopsy of the lesion decreases. In most cases the diagnosis is established by inspection alone.

This procedure as well as other forms of endoscopy is not without danger. The most frequently recorded complication is perforation of a loop of small intestine. For this reason it is well to be prepared for im-

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\*Ruddock Peritoneoscope

mediate surgical exploration. Hemorrhage, which is the second most frequent complication, usually occurs after biopsy and also necessitates exploration. When specimens for biopsy are taken, bleeding is controlled with electrocautery. Fortunately, these complications are not common and have not occurred in my experience.

Occasionally abscesses are inadvertently entered during the procedure with dire consequences. One death resulted from this complication. Preoperatively carcinoma of the liver was suspected. After the peritoneoscope was introduced, a mass was found in the subhepatic space. While an attempt to determine the nature of the mass was being made, the telescope lens suddenly became clouded indicating perforation of an abscess. Exploration was immediately carried out and an abscess drained. In spite of supportive measures the patient died. Although the same result might have followed exploratory laparotomy, peritoneoscopy must nevertheless be considered as the primary factor causing the patient's death.

Syncope and collapse have resulted on several occasions and have been controlled easily with routine measures for shock. Occasionally minor complications are seen, such as subcutaneous emphysema, mild wound infections, continued drainage of ascitic fluid, and transient shoulder pain. Air embolism must be considered, although no cases have been reported. Peritonitis has not been a complication in my experience.

#### SUMMARY

Peritoneoscopy has been established as a diagnostic procedure. The examination is made with ease and with little discomfort to the patient. In most cases the procedure permits accurate diagnosis without subjecting the patient to exploratory operation. The patient need not be hospitalized for longer than one day and usually is able to leave the hospital on the same day. On the other hand, the efficacy of peritoneoscopy is limited by what can be seen. If there is any question about the diagnosis, the patient's abdomen should be explored and the lesion investigated.

The procedure is especially useful in the diagnosis of ascites. The telescope is introduced after paracentesis, and in most instances the underlying cause of the ascites is determined. Usually biopsy is not necessary, but a specimen can be easily secured with little discomfort to the patient when doubt exists as to the nature of the lesion.