

Is Endoscopic Treatment of Endometriosis and Endometrioma Associated With Better Results Than Laparotomy?

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Endoscopic treatment of endometriosis and endometrioma employing two different techniques was achieved on 20 infertility patients using the laser laparoscope with video augmentation or videolaseroscopy. Results of each technique are discussed.

Abstract

Twenty infertility patients with endometriomas, peritoneal endometriosis, and *grossly normal* tubes, underwent endoscopic treatment by two different techniques using the CO₂ laser with video augmentation or videolaseroscopy. Endometriosis was the only factor contributing to infertility in all 20 patients.

These 20 patients were divided into two groups with 8 patients in Group I and 12 patients in Group II. In Group I, peritoneal endometriosis was vaporized or removed, and endometrioma(s) aspirated and irrigated until the aspiration fluid was clear. In Group II, peritoneal endometriosis was also removed or vaporized, but, instead of aspiration, endometriomas were bivalved and the capsule of the endometriomas were removed. Both groups received danazol postoperatively for four weeks.

Five patients (62.5%) in Group I and 9 patients (75%) in Group II conceived.

Developing an endoscopic microsurgical technique that permits safe, effective use of a

CO₂ laser beam intraperitoneally has greatly eased laparoscopic treatment of endometriosis. Endometriosis and endometriomas have previously been treated successfully by operative laparotomy, hormonal therapy, laparoscopic electrocautery, or some combination of these treatments.²⁻⁷ The CO₂ laser used through the laparoscope is potentially an ideal instrument for situations requiring precise application, safety, and minimal tissue damage.^{8,9} The fine beam provides precise control for vaporizing or dissecting endometriosis through the laparoscope.

In the present study, we treated 20 infertility patients with endometriosis and endometriomas by an endoscopic microsurgical technique using the CO₂ laser through the laparoscope with video augmentation which we refer to as videolaseroscopy. This technique employs the super pulse mode of the CO₂ laser in conjunction with the laparoscope and a high-resolution videocamera and videomonitor.

Material and Methods

Twenty infertility patients between the ages of 23 and 39 with peritoneal endome-

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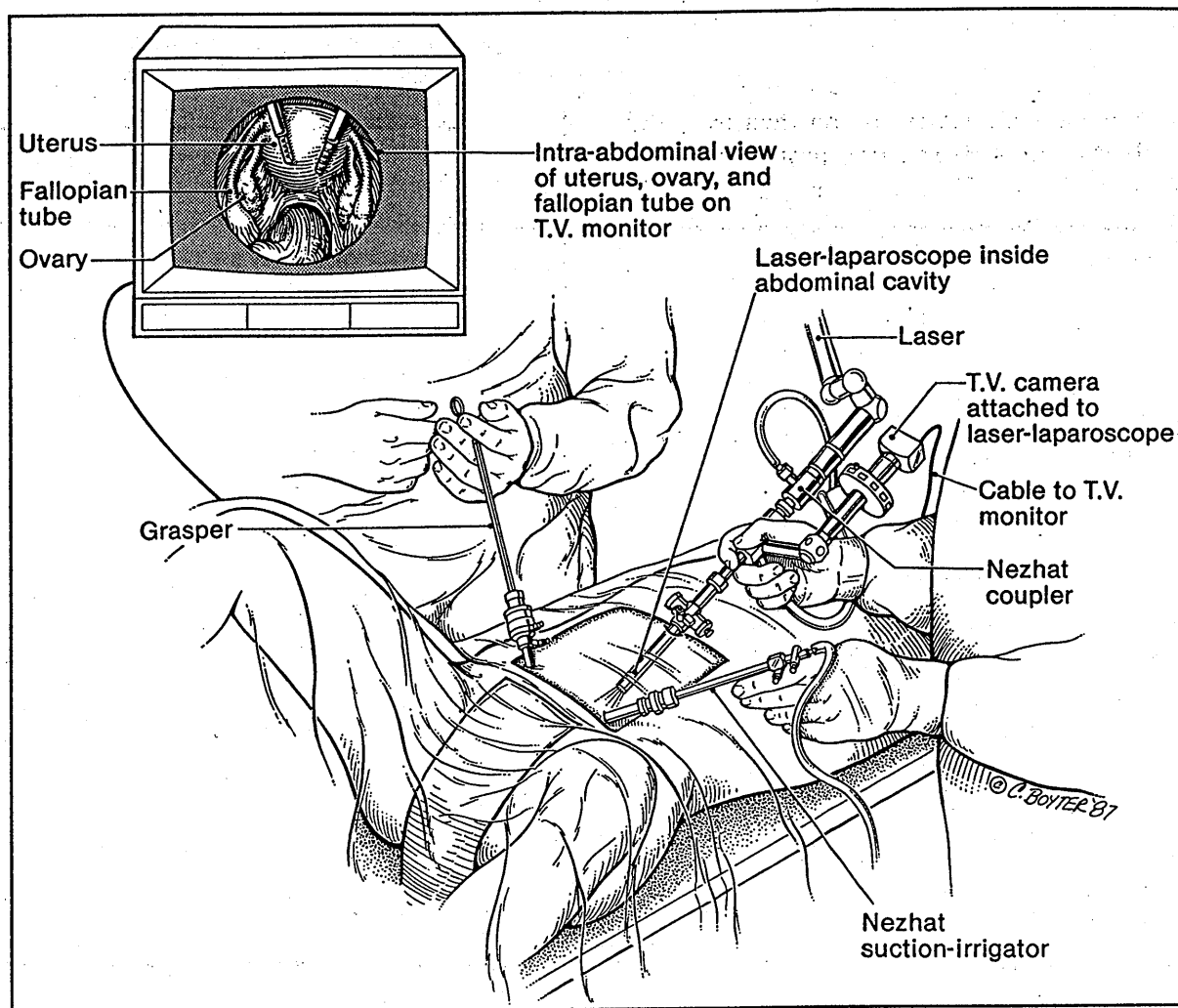


Fig. 1. Instrumentation and puncture sites for laser laparoscopy with video augmentation (videolaseroscopy).

ditional backstop when using the CO₂ laser in this area where extreme precision is required. The laser is then used in a circular fashion delineating the entire area of endometriosis and then lazing and removing the implant in its entirety, if possible, to send for pathological evaluation. The laser is used to thoroughly remove any remaining endometriosis.

A 40 W power setting of the super pulse mode of the CO₂ laser with 500 pulses/second and a 1.0 msec pulse width was used continuously to remove or vaporize peritoneal endometriosis from the ovaries, pelvic sidewall,

cul-de-sac, rectosigmoid colon, tubes, uterosacral ligaments, bladder flap, and the capsules of the endometriomas.¹⁶ No invasive sutures were used on the tubes or ovaries, as they may cause adhesion formation.¹⁷

Treatment of Endometriomas

Before treating a large endometrioma, we carefully assessed its status with the laparoscope to reduce the chance of draining a pelvic malignancy. Peritoneal washing was performed if suspicion of malignancy existed. Cysts that had the appearance of endome-

rate was 50% in Group I and 8% in Group II. In addition, one patient in Group I had mild periovarian adhesions (see Tables I & II).

The CO₂ laser has been successfully used for the endoscopic treatment of endometriosis.^{8,9,11-13,18,19} The laser offers precise application, safety, minimal tissue damage, and excellent hemostatic control. Through the laser laparoscope, it is possible to control precisely the dissection of vaporization of endometriosis implants with little risk of thermal damage to adjacent structures by using the laser's fine beam.

In addition to the established benefits of using laser laparoscopy for endometriosis, we find that video augmentation provides the surgeon a magnified view of the peritoneal structure and pathology. This modality enables the surgeon to perform microsurgery and gives patients the benefit of microsurgery vs. macrosurgery. Although it is currently true that looking through the laparoscope with the naked eye may be better; a camera with Macrethan 550 lines of resolution with a clarity similar to the naked eyes, is currently under development to improve visualization for endoscopy.

Discussion

We believe that all disease (endometriosis) should be treated no matter how mild it may appear. A patient's complaint of pain should always be taken seriously and the pelvis thoroughly evaluated at the time of endoscopic treatment.

What, consequently, are the advantages of endoscopic treatment over laparotomy? First, there are faster recovery periods and a shorter hospital stay, resulting in less expense and inconvenience for the patients. Video-laseroscopy patients are generally discharged within 24 hours of surgery compared with a routine hospital stay of four to five days for laparotomy patients. Secondly, the CO₂ laser seals off blood vessels less than 0.5 mm, re-

sulting in minimal blood loss. Third, because there is minimal handling of the tissue through laparoscopy, less trauma to the abdominal tissues results. The necessary incisions are one large enough to accommodate a 10 mm primary trocar at the umbilicus and as many as two or three smaller ones to accommodate ancillary instruments 5.5 mm in diameter along the pubic hairline.

Moreover, endoscopic treatment significantly lessens the exposure of the abdominal cavity to the air, thus reducing secondary dryness, eliminating glove powder, requiring less suturing of tissue and, overall, reducing the chance of contamination and the possibility of postoperative adhesion formation.

Using the laser also enables the surgeon to avoid the complications associated with cautery use. Because the energy of the CO₂ laser is focused very precisely, the tissue beyond 100 microns is unaffected. This precision enables the surgeon to vaporize endometriosis close to vital structures such as the ureter, bladder, or bowel without causing tissue damage often associated with cautery.²⁰

The super pulse mode of the CO₂ laser provides a cleaner cut and less smoke and possibly less tissue damage and adhesion formation. This provides a peak power 5 times that which the wattage power readout indicates. Our experience with the Argon and KTP 532 lasers has provided us with the opinion that these lasers are not as effective as that of the CO₂ due to the lack of power output and poor cutting ability.²¹ At 12 to 14 watts of power with these lasers, we have experienced breaking and melting of the flexible fibers. The fiber lasers are also much more cumbersome to use than that of the CO₂. The primary disadvantage of the CO₂ laser is its enormous smoke production²² although all of the lasers do produce some smoke, especially if higher powers are used. However, the suction irrigator probe significantly reduces this problem.

Although the number of patients in this study is small for definite conclusions, in

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