

Should laser vaporization and electrocoagulation of endometriosis be banned?

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This seems like a pointless question. Why should two forms of treatment which are used around the world be banned? The answers are straightforward and compelling:

1. Neither has been validated as being effective in eradication or reduction of endometriosis.

Validation of efficacy in eradication or reduction of endometriosis requires a systematic examination of disease extent in patients both before as well as after surgical treatment. In other words, at least two surgeries are required to validate the efficacy of a method of surgery (or medical therapy for that matter). At the first surgery, disease extent is measured, then the surgical modality is applied. At the second surgery, disease extent is measured and compared with disease extent noted at the first surgery. Both laser vaporization and electrocoagulation have been in use for over a quarter of a century, yet we still do not know how effectively either eradicates endometriosis. It is outrageous for those who promote these treatments to ignore the question of efficacy. The studies which have been published have measured only the response of symptoms, not the response of the disease.

2. Both violate common surgical sense.

Endometriosis can be a very invasive disease. In some cases, fibrotic disease can be located up to 3 cm beneath the visible surface, with impressive nodular spherical volumes to match. Endometriosis can invade the bowel, bladder, and ureter, and can be associated with fibrosis which can envelope tubular structures in the pelvis including arteries, veins, and ureters. During surgical treatment, it is necessary to separate healthy tissue from the diseased tissue. It is inconceivable that a surgeon can expect to completely and safely treat such a disease by shining a light at it or spraying electrons at its surface. This violates simple common sense.

3. Both convert all manifestations of endometriosis into superficial disease in the eye of the surgeon.

This is a corollary of #2. The surgeon who uses laser vaporization or electrocoagulation to treat the disease may be aware of its invasive potential but doesn't want to be accused of incompletely treating deep disease. Therefore, many will fool themselves into imagining that the disease they are treating is fairly superficial and is being destroyed by shining a light at it or by spraying electrons at it.

4. Electrocoagulation has never been described in the literature so no one can reproduce it.

For a surgeon to use electrocoagulation in a reproducible manner, he would have to know several things, including: 1. The type of electrosurgical generator used; 2. Power settings; 3. Type of active electrode; 4. Manner of use of the electrode; 5. Visual endpoint marking completion of treatment. No article on electrocoagulation contains all of these details. A surgeon must either cobble together a list of specifications or, more commonly, just use electrocoagulation in a hopeful manner.

Although laser vaporization has been described in more technical detail, the technique of complete treatment of all deep disease has still not been published.

5. Both rely too heavily on opinions of the surgeon:

a. What is being treated?

Neither shining a light at nor spraying electrons at endometriosis produces a pathology report. The surgeon has no idea what is being treated. In some instances, cancer, or carbon or scarring from previous treatments rather than endometriosis is being treated.

b. How complete was the treatment?

Surgeons using these techniques have no objective means of ensuring that all endometriosis of any depth of invasion has been eradicated. While occasionally a surgeon might accurately judge that extremely superficial disease has been adequately treated with photons or electrons, the question becomes more problematic with more invasive disease in parenchymal structures such as the uterosacral ligaments or muscularis of the bowel or bladder.

6. Both contribute support to an incorrect theory of origin, namely reflux menstruation.

Reflux menstruation is not the origin of endometriosis. If it were, it would not be called a theory. Reflux menstruation cannot be the origin of endometriosis for several reasons:

a. Endometriosis is not identical to endometrium.

It has been taught incorrectly for many generations that endometriosis is identical to endometrium because of reflux menstruation leading to pathologic autografts. Modern studies have illustrated the dozens of profound differences between endometriosis and endometrium.(1)

b. Endometriosis is curable by conservative surgery.

It has been taught incorrectly for many generations that endometriosis is a chronic, enigmatic, incurable disease. It is said to be “incurable” because of reflux menstruation: even if a surgeon really does destroy all disease, it will just come back because the pelvis will be re-seeded with refluxed endometrium during the next menstrual flow. Yet, it has been known for over half a century that endometriosis can be cured by conservative excision without the need for medical therapy.(2) The minimum cure rate following one conservative surgery is 41%. Following two conservative surgeries, it is 67% (Redwine, unpublished data.) If endometriosis is present after aggressive excision, it will be present in much smaller amounts. (3)

c. Robust photomicrographic evidence of initial attachment and secondary proliferation and invasion of the peritoneum by endometrium does not exist.

It is estimated that 10% of women have endometriosis which will be symptomatic during their reproductive years. In the industrialized world, it seems likely that there are probably at least 25,000,000 women with endometriosis at any one time. These women will have monthly menses for at least 10 to 20 years. If we take 17 years as a conservative estimate of a woman’s menstrual lifespan, then such a woman will have about 200 menstrual cycles between the age of 13 and 30. If a typical flow lasts four days and on each day of flow 10 endometrial cells are refluxed into the pelvic cavity, then each woman will have 8,000 endometrial cells refluxed into her pelvis in her menstrual lifetime. If this is true, then during the menstrual lifetime of our cohort of 25,000,000 women with endometriosis, there will be $8 \times 10^3 \times 2.5 \times 10^7$ or 2×10^{11} instances of endometrial cells being refluxed into the pelvis in those women. If the rate of attachment of refluxed cells during any one menses is only 1%, then 2×10^9 instances of attachment will have occurred during the menstrual career of these women, or 1.2×10^8 instances of attachment annually. The actual numbers would be higher if previous generations of women are considered or if some women have more than 17 years of menstrual flows or if some women have flows lasting longer than 4 days or if some women have heavier flows. These calculations may seem to be on the low conservative side to some. In any event, if conservative estimates are that several hundred billion possible instances of attachment of refluxed endometrium will occur in this cohort over their menstrual careers, and if over one hundred million instances of attachment occur annually, isn’t it strange that no photomicrographs exist to confirm this supposedly ubiquitous and common phenomenon? The lack of photomicrographic proof of the initial two steps (attachment and

proliferation/invasion) of the theory of reflux menstruation is the strongest evidence that this is not the origin of endometriosis.

The theory of reflux menstruation as the origin of endometriosis and ineffective surgical treatments such as laser vaporization and electrocoagulation share a symbiotic relationship. Neither can exist without the other. So long as the theory of reflux menstruation exists to explain all treatment failures, surgeons don't have to consider whether their treatments are effective since they can blame all failures on the theory of origin. So long as ineffective surgical treatments exist, the persistent disease which is left behind can be called "recurrent" disease because of this theory and surgery will be considered ineffective or futile. As a result, many surgeons will prescribe medical therapy, which we know does not eradicate the disease.

7. Both aggravate the rising cost of health care around the world.

It is axiomatic that ineffective treatments applied repeatedly are more expensive than effective treatments applied once or twice, especially when one of the treatments requires an expensive machine.

8. Both reduce a surgeon's skills.

Shining a light at endometriosis or spraying electrons at it are easier than taking the time to remove the disease from the pelvis by careful dissection. As a result, surgical skills will erode since less skill is required for thermal ablative techniques. Removal of the disease, on the other hand, requires meticulous pelvic dissection, knowledge of anatomy, courage, and mental as well as physical stamina.

9. Laser can cause pain by leaving behind carbon which can cause a painful foreign body giant cell reaction.

Carbon left behind by laser vaporization is more problematic than just the question of being mistaken for recurrent disease. Carbon can stimulate a foreign body giant cell reaction which can be its own cause of pain and lymphadenopathy. Further attempts at treatment by laser can aggravate the problem.

10. "Everybody does it."

Don't forget what your parents told you: "Just because everybody does it doesn't make it right." With a disease which seems so mysterious such as endometriosis over the last 80 years, if everybody thinks alike and treats alike, then it is likely that everyone is wrong. Otherwise if everybody was right, it would be obvious by now. Progress is not made without change.

11. Both contribute to the belittlement and medical oppression of women.

How can we as a profession justify treatments with so many flaws provided to so many women for so many times over so many years? We cannot hide behind the notion that "endometriosis is a mysterious, enigmatic, chronic, highly recurrent disease which is difficult to treat." We cannot continue to ignore the ill effects of these treatments on women. We must face the fact that these treatments are a large part of the problem in so many ways. Until they are abandoned, our patients will not be freed from our prejudices and from our mistakes.

Most who read the twelve conditions above will immediately understand all of them, will abandon laser vaporization or electrocoagulation of endometriosis at once, and adopt excision which is the recognized treatment of choice for endometriosis. Excision is associated with a permanent cure rate of over 50% per procedure. All patients will select excision as their preferred treatment if given proper informed consent. If proper informed consent is not obtained, patients are at risk of being subjected to illogical and ineffective treatments such as laser vaporization, electrocoagulation and medical therapy.

References

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