Why does Dr. Cook use laser vaporization as a secondary tool in addition to wide excision therapy for endometriosis?

- Wide excision of endometriosis is the best approach to remove most endometriosis and in the majority of cases is the only method needed. It offers the advantages of removing large amounts of disease quickly and provides tissue that is sent to the pathologist. It is important to have the tissue evaluated by an experienced endometriosis pathologist to confirm the presence of endometriosis and to rule out the possibility of another disease process, including cancer or other rare conditions.

- Laser vaporization is an important but secondary tool that can be used to enhance the outcome of endometriosis surgery. While wide excision removes a large amount of tissue at a time, laser vaporization is a very refined approach that removes small amounts of tissue at a time. In situations where endometriosis has invaded deeply and/or directly onto vital organs, laser vaporization is ideal. Since laser vaporization does not distort the appearance of endometriosis, it is easy to determine how deep the lesion extends by simply looking at it. The endometrial lesion can be removed layer by layer until only normal tissue remains. When removing disease located over the bowel, bladder, ureters, and major blood vessels, laser vaporization results in a reduced risk of damage to these organs and structures. Vaporization is similar to sanding in woodworking. Its primary advantage is that it allows maximum preservation of normal tissue and organs. In my hands, I believe that this reduces the need for bowel resection and ureteral resection. I have had cases of complete ureteral blockage that have been successfully treated with a combination of excision and vaporization, avoiding the need for removal of part of the ureter.

- An analogy of combining excision and vaporization that might help is that of an archeological dig. Excision is like the tractor backhoe removing large amounts of dirt and vaporization is like the use of a brush to gently clean the fossils of surrounding dirt, without damaging the fragile fossil.

- The laser offers several advantages for both excision and vaporization. The first advantage is the need to use one less hand (and one less incision) to perform the same function as high pure cut monopolar electrical current that is often used with excision. The high pure cut monopolar electrical current is delivered through either scissors or needle (looks like a needle on the end of a stick) which is inserted through a separate incision from the laparoscopy. One hand is required to hold each one. The laser is attached to the laparoscope and controlled through a foot switch. Thus a surgeon can use one hand to both look and excise or vaporize. This is important since the tissue being excised needs to be grasped and elevated with another hand. Laser excision and vaporization can be completely performed by the surgeon (two hands required), while pure cut electrosurgery cannot be entirely performed by the surgeon alone (3 hands are required). Secondly, since the laser is a beam of light it does not block the surgeon's view like is possible with the electrosurgery instrument. While the laser does not provide a sense of touch, this is a non-issue since all of the other laparoscopic instruments used by the surgeon during laser laparoscopy provide the sense of touch.

- Laser vaporization does not leave Carbon deposits (no charring). This fact is found in published scientific medical literature

- While the terms vaporization and coagulation are often confused and even used interchangeably, they are in reality completely different. Vaporization is an appropriate surgical technique as it gets rid of diseased tissue whereas coagulation is not an appropriate surgical technique as it melts the diseased tissue and does not completely remove it.

- Vaporization occurs when the water in the cell is turned into water vapor. As the water changes from a liquid to a gas, the volume increases over 1,000 percent. The cell explodes and the solid proteins are suspended in this vapor appearing as fog. The water vapor carries the heat away from the underlying tissue. As a result, there is very little conduction of heat and thus very little damage to the surrounding tissue.

- Coagulation occurs when not enough energy is delivered quickly enough to result in vaporization. With coagulation, the proteins in the cell melt into "Carbon goo" while the cellular water evaporates. This acts as an insulator, protecting deeper disease from destruction. Coagulation is more or less burning of the tissue.

- Outcomes with EVE procedure for the treatment of endometriosis and pelvic pain are successful and have a very low recurrence rate.

- Treatment of endometriosis laparoscopically with vaporization as the only technique is not practical. If I read an operative report where *only* laser vaporization was used I know that it is unlikely that all of the endometriosis was removed.

- Newer technology has greatly helped laparoscopic surgery. The advances in almost every aspect of laparoscopic surgery over the last 25 years have been phenomenal.

- If the only tool in your toolbox is a hammer, then you will use a hammer for everything. When a screw is encountered, it will be hammered in just like a nail. If one has a screwdriver in their toolbox, a screwdriver will be used when a screw is encountered and a hammer when a nail is encountered. It is not that one is great and the other is bad. Each is good for a specific situation and better than either one alone.

- The combined approach of excision and vaporization used in the EVE procedure has been shown effective in treating basal cell skin cancer. This approach was preferred as it removed all of the cancer but minimized the damage to the normal surrounding tissue. Reference link