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REPRINT

REVOLIX™ 2 MICRON – REVOLUTION IN LASER SURGERY

World's First Robotic Laser for use in GYN

Today's challenge is to provide surgeons with a device that will allow superior clinical and financial results for patient and hospital alike, and which can be used within a multitude of specialties. The ***RevoLix™ 2 micron laser***, the latest device from **LISA Laser USA (Pleasanton, CA)**, provides answers to all of these requirements with a laser that can be used both laparoscopically and robotically. With the *RevoLix™ 2 micron laser***,** hemostasis is improved while thermal damage created in the tissue is minimized. This new laser is also cost effective, as the reusable fiber allows for a lower per-procedure cost.

Lasers were first introduced for surgical applications in 1982 and, since that time, laser technology has continued to evolve and expand into every medical modality. The *RevoLix™ 2 micron laser* represents a major advancement in that it provides more efficient incision of tissue and better hemostasis than any alternative. The *RevoLix™* laser can be utilized in a wide variety of gynecological applications, to include open, laparoscopic, and now robotic surgery.

Gynecology Lasers

The Carbon Dioxide (CO_2) laser has long been the workhorse and has been utilized in many GYN procedures, from adhesions to tumors. With a wavelength of 10600nm and a target chromophore of water, the CO_2 laser has had serious limitations for two reasons. First, the CO_2 laser has a very shallow depth of penetration into the tissue. While this may appear to be a positive feature, the lack of hemostasis far outweighs the shallow penetration and, in many cases, will force the surgeon to use alternative devices to obtain the necessary degree of hemostasis. The second drawback of the CO_2 laser is that for many years there has been no flexible delivery system for the laser energy. Therefore, delivery of the laser energy to the surgical site was limited to a direct line-of-sight via an articulated arm. A hollow waveguide has recently been developed for the CO_2 laser; however it is a single-use device, is very expensive, and does not provide the surgeon with adequate hemostasis.

The 2013nm RevoLix™ Jr. by LISA Laser is available with fibers as small as 0.273 mm.

Challenge and Solution

The challenge was to combine the best features of all laser technologies into one device. The physicists and scientists at LISA Laser achieved this and produced the *RevoLix™ 2 micron laser*. The continuous wave *RevoLix™* laser has a wavelength of λ=2013 and the target chromophore is water. With this wavelength, hemostasis is much better and the depth of penetration is about 0.3mm. The *RevoLix™* laser uses a forward-firing fiber optic for precise delivery of the laser energy. The fiber is reusable and autoclavable, which make is cost effective, at about $75 per procedure.

Practical Experience

Michael Fields, MD, is the Director of Robotic Gynecology at Mercy Health Hospital and an Associate Professor of Surgery and Gynecology at the University of Tennessee Hospital (Knoxville, TN). Dr. Fields has coupled the *RevoLix™* laser with the da Vinci Si™ Surgical System from Intuitive Surgery, Inc., and has been one of the first to do so in the United States. This past August, Dr. Fields performed the world's first hysterectomy using the robot-laser combination. Dr. Fields is excited about the technology and says, "This really puts control in the hands of the surgeon. There is minimal tissue disruption and minimal ancillary damage." Dr. Fields has used lasers in the past, but never as a cutting tool. The *RevoLix™*-da Vinci combination gives Dr. Fields much greater dexterity and precision, allowing him to point the laser exactly where he needs to.

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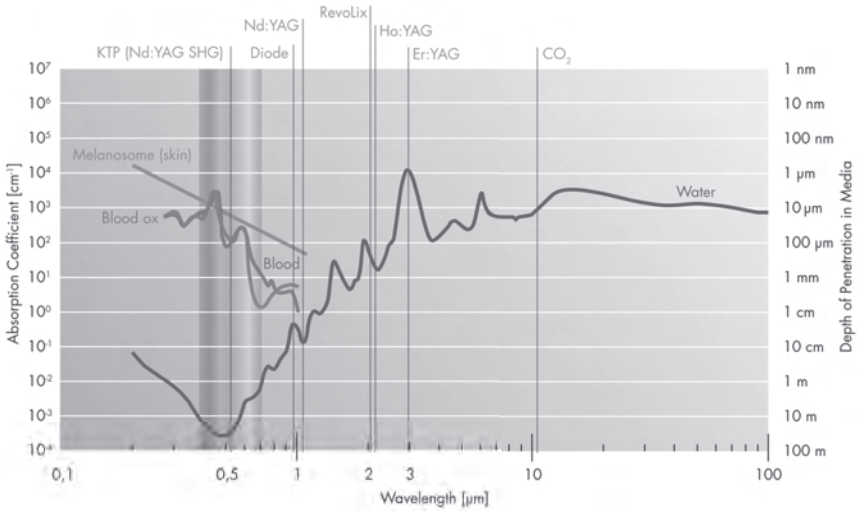
>
> **Michael Fields MD**



Absorption coefficient and depth of penetration for various lasers.

From the patient's point of view, recovery times following a procedure utilizing the *RevoLix™* laser are shortened and pain is minimized. A patient who recently received treatment for endometriosis, which is usually a very uncomfortable procedure, was quite comfortable following treatment with the *RevoLix™* laser and was able to go home go that same evening. This patient has since provided unsolicited testimonials about how well the *RevoLix™* procedure worked for her.

While there is no clear answer as to what is preventing other gynecologists from switching to the newer laser technology, Dr. Fields admits that it is a major paradigm shift, and that the *RevoLix™* laser is still new to many surgeons. Dr. Fields feels that the robot-laser combination technology will be embraced by his colleagues as they learn more about it, as he points out that the robotics offer a much safer and efficient way to perform gynecological procedures. "This was an improvement waiting to happen, and there is no question that it will take off."

Conclusion

Treatment costs are always a concern, but the development of the *RevoLix™* offers the surgeon a safe, superior and very affordable technology. The *RevoLix™* laser does not stop with GYN applications, as it is a multi-specialty device that can be used in ENT, Urology and General Surgery.

Surgeons will continue to seek out procedures that are less invasive, less expensive, and less painful, which will allow patients to return to their normal life as quickly as possible. The *RevoLix™* laser will be a key component in achieving that objective.

To learn more about the ***RevoLix™*** family of lasers, please call 1-888-573-5006, visit our Web site at www.lisalaserusa.com, or speak with a company representative at AAGL, Booth # 736.