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REVOLIX™ 2 MICRON – REVOLUTION IN LASER SURGERY

Advanced Laser Technology from LISA Laser USA

Lasers were first introduced for surgical applications in 1982. Since that time, laser technology has continued to evolve and expand to every medical modality; and the latest device from **LISA Laser USA (Pleasanton, CA)** represents a major advancement over other laser systems. The **RevoLix™ 2 micron laser** provides more efficient vaporization of tissue, better hemostasis and is most cost effective. It offers a wide variety of applications in urology, and most of the procedures can be safely performed in three locations: hospital, surgery center and office.

Urological Lasers

The Neodymium YAG laser (Nd:YAG – $\lambda=1064\text{nm}$) was used in urology in the early days because it was the first laser where energy could be delivered through a fiber optic. The target chromophores of the Nd:YAG are both hemoglobin and water. At that time, it was ideal for procedures such as BPH, strictures, and bladder tumors; however, the depth of thermal necrosis could be up to 2cm resulting in sloughing and prolonged post-operative irritative symptoms. As laser technology continued to evolve, it was replaced by the pulsed Holmium and KTP lasers.

The Holmium laser (Ho:YAG – $\lambda=2100\text{nm}$) is a pulsed laser with many applications. It offers procedures ranging from lithotripsy to strictures and enucleation of the prostate. The target chromophore is water and the optical penetration is 0.5mm. Even though the pulsed energy is high (5,000 – 10,000 watts), it is not the most efficient form of energy for soft tissue vaporization with hemostasis. The pulses create violent steam bubbles which tear the tissue rather than vaporizing it. However, the high peak power of the pulse is excellent for lithotripsy.

The Potassium Titanyl Phosphorous laser (KTP – $\lambda=532\text{nm}$) offers a better vaporizing effect than Holmium. The target chromophore is hemoglobin and the depth of penetration is very shallow where there is good vascularity, on which it is completely dependent for its effect. When treating devascularized tissue, such as scar tissue or blanched tissue this laser will create a deep layer of thermal necrosis similar to the Nd:YAG.



The Revolix™ 2 micron laser offers the surgeon a safe, superior and very affordable technology. Procedures can be performed safely in the office, saving the physician and patient both time and money.

The Diode laser ($\lambda=940\text{nm}-980\text{nm}$) targets both water and hemoglobin which makes it very similar to the Nd:YAG laser. It also is capable of producing deep thermal necrosis if no or little hemoglobin is present.

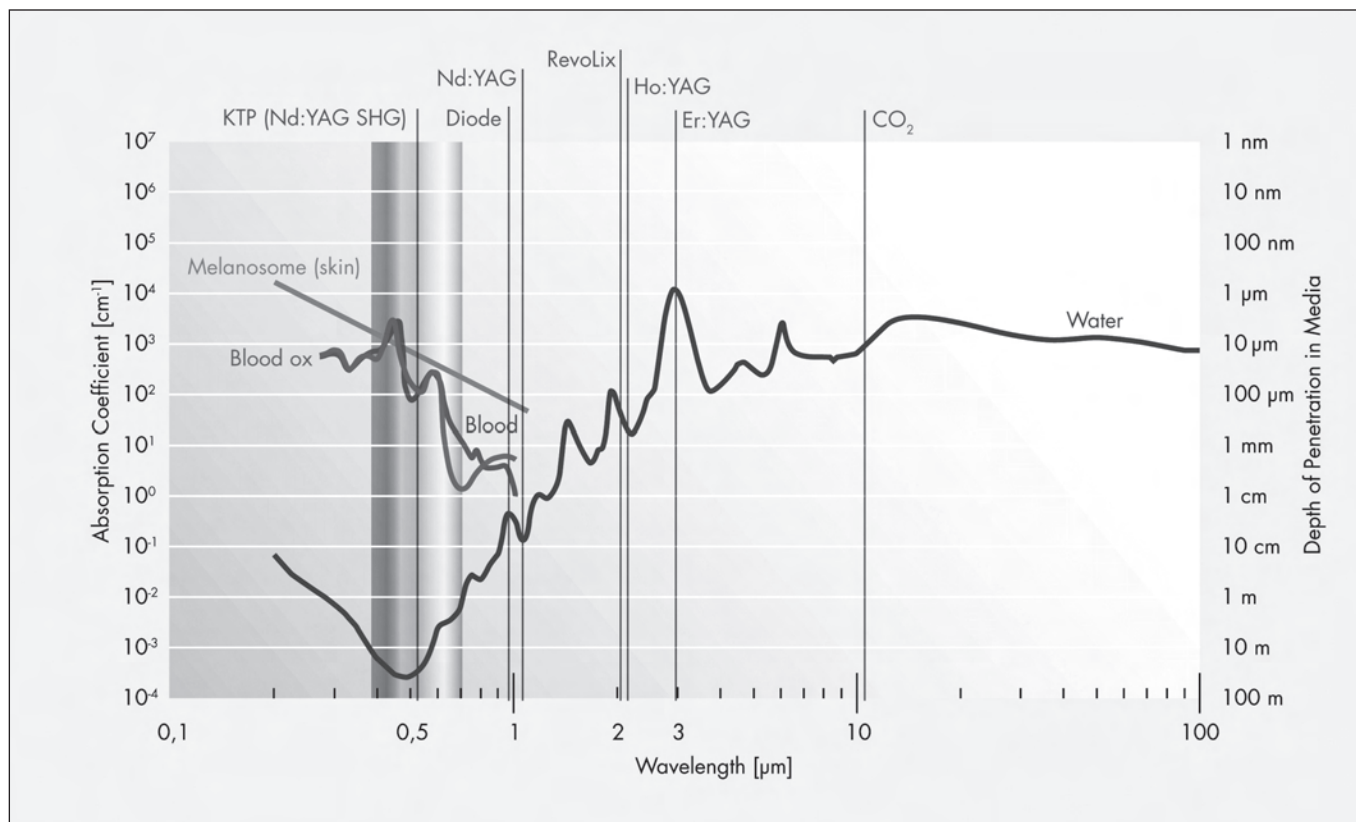
Both KTP and Diode lasers have poor absorption in water and can only be used safely with an expensive (\$900 per fiber) single use, side-firing fiber. Another concern with these lasers is damage to the bladder neck, the trigone and the bladder wall. Because the absorption of these lasers in water is very poor, when the side-firing fiber is traversed past the bladder neck, the energy is transmitted through the irrigant, injuring unintended structures.

The 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 have achieved this and produced the **RevoLix™ 2 micron laser**. The continuous

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Brian Parker, MD, Urology Consultants, Knoxville, TN



wave **RevoLix™** laser has a wavelength of $\lambda=2013$ and the target chromophore is water. It is a full contact laser and employs a forward firing fiber for precise delivery of the laser energy. The fiber is reusable and therefore cost effective—about \$75 per procedure. The tissue can be vaporized or resected for histology. There is no concern of injuring unintended structures because the energy is absorbed within 1.0 mm from tip of the fiber in the irrigant.

The **RevoLix™** is available in a wide variety of configurations ranging from 50 watts to 120 watts. The **RevoLix™ Duo** combines the 2 micron laser with a Ho:YAG for soft tissue and lithotripsy applications in one device.

Practical Experience

To date over 10,000 BPH procedures have been performed in the United States with excellent clinical outcomes. There are many applications in urology for the **RevoLix™** and most can also be performed in the physician's office.

Brian Parker, MD, Urology Consultants, Knoxville, TN has used the **RevoLix™** and confirms the many advantages to this technology. He prefers the end-firing capability and the precision afforded for the resection

of tissue. There is no guessing the volume of tissue removed and little to no necrotic tissue is generated.

This is one of the most important attributes. "Because there is very little necrotic tissue, you can see the target area much more clearly," he says. "For example, this enables sections of the prostate to be removed for biopsy." Another outcome that he cites with the KTP and Diode lasers, is that with side-firing fibers it is easy to unintentionally impinge on the bladder, causing post-operative irritation to be prolonged. The end-firing **RevoLix™** allows this problem to be resolved.

Patient outcomes are superior with the **RevoLix™**, and they return home the same day reporting little or no pain. Dr. Parker and his colleagues have come to appreciate the technology and he feels that "if more physicians knew about **RevoLix™**, the more they would use it!"

Profs. Andreas Gross, MD and Thorsten Bach, MD (Hamburg, Germany) have been using **RevoLix** laser technology since 2005 for soft tissue surgery and say that with the latest developments, significant improvements can be made in how conditions such as BPH are treated. Depending on prostate size, they can perform vaporization, resec-

tion or enucleation of the prostate. They note that intra- and post-operative bleeding have become rare events; and that patients experience immediate de-obstruction and relief from symptoms. The risk of complications is very low and patient satisfaction is very high. Many of them comment that they do not feel that they have undergone surgery. They are impressed not only with the results to date, which they say are very promising, but with Lisa Laser and how they have worked with them and their colleagues to meet their needs. High praise indeed!

Conclusion

Treatment costs are always a concern, but the development of the **RevoLix™ 2 micron laser** offers the surgeon a safe, superior and very affordable technology. Procedures can be performed safely in the office saving the physician and patient both time and money. More physicians need to know about this exciting breakthrough!

To learn more

For more information about the **RevoLix™** family of lasers, call 1-888-573-5006 or visit our Web site lislaserusa.com.

Please visit our company representatives at the AUA booth #2240.