OCT Image-Guided Smart Laser Knife - diagnosis and treatment of endometriosis

Endometriosis affects 10-15% of women worldwide and is a source of chronic pain and infertility. Diagnosis is usually performed laparascopically with a visual examination of the tissue, and confirmed by histology. However, there are many cases where endometriosis is suspected but cannot be identified by a visual examination. This occurs when the endometriosis is below the surface of abdominal structures, or does not have the classic visual appearance anticipated by the surgeon.

Optical coherence tomography (OCT) is an imaging technique that provides high-resolution, sub-surface imaging in real-time, without the need for ionizing radiation. It is already in use by many Ophthalmologists and Invasive Cardiologists. Drs. Feldman and Milner have demonstrated that OCT can be used to diagnose endometriosis and furthermore, by combining with a laser knife, are developing a powerful surgical tool that allows real time diagnosis of a pathology with immediate surgical intervention.

Comparison of OCT images with histological analysis of the same samples showed that OCT could identify the glandular structures typically seen in endometriosis. In addition, OCT was able to detect endometriosis below the surface of pelvic structures where it was not visible to the physician (see figure).

**Advantages**
- Diagnosis of endometriosis in real-time
- Visualization of sub-surface endometriosis that is not detectable using current methods
- The image-guided laser knife allows both the visualization and ablation of endometriosis in real-time

**In Development**
- Clinical validation of the technology for the diagnosis of sub-surface endometriosis
- Prototype formatted into standard laparoscopic instruments.

This technology is protected by several patent families: PCT/US14/30132, US62/049,955, PCT/US14/28403

Clayton Biotechnologies is seeking partners interested in licensing or collaborating to further develop this technology.

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