

Non-Invasive Method for Treatment of Atrial Fibrillation and Arrhythmias How all started

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Description

It all began on June 20th, 2002 when Federico Benetti, Michail Pankratov, and Judie Vivian attended the Surgical Treatment of Atrial Fibrillation (STAF) live teleconference in New York. Ralph Damiano was a great surgeon and teacher. He explained to the audience how atrial fibrillation was usually due to ectopic electrical pathways in the atria, allowing the electrical signal generated by the Sinoatrial node has many extra pathways to cross the atria. That caused the atrium to fibrillate. He described how his colleague, Dr. James Cox, had developed a way to surgically sever these ectopic pathways by cutting the atrium into pieces, like a maze, and then suturing them back together. He also showed ways to sever connections by freezing parts of the atria and by cauterizing other parts.

Judie had been sitting next to Federico in the audience and had watched his expression as he studied the techniques on the screen. Federico kept wincing I'm finally leaned over and said, "There must be a better way! These surgical techniques or worse than the underlying problem".

That afternoon, the three of them signed the pledge to come up with a solution. Federico felt that's a magic laser or some similar energy source must be able to ablate the cells around the pulmonary vein. He charged Michail and Judie as engineers to find and develop the device.

During the ensuing months of 2002, Michail and Judie worked diligently to review energy sources across all medical specialties. Simultaneously, Judie was researching cancelled therapies for her close friend Suki Berro, a young mother who had breast cancer that had metastasized to her brain. Judie talked with Dr. Christopher Duma, a neurosurgeon at Hoag Hospital, about the Gamma Knife for Suzuki's tumor. In the process of this discussion, Judie asked if the Gamma Knife could be used in other parts of the body, specifically the heart.

Dr. Dumas replied that it could not be used as the radiation would damage the surrounding parts of the heart. However, he went on to explain that there was a new device named the Cyberknife, which could be aimed by computer to target tissues down to the cellular level. Judie was fascinated and luckily Dr. Chris Duma's clinic in Newport Beach was a beta site the testing one of the first of these devices.

The following week, Judie joined Dr. Duma to see the Cyberknife and realize that this might be the solution. She discussed the device extensively with Michail and they decided to go ahead and develop a provisional patent with the patent attorney Robert fish while investigating Accuray, the company building and marketing the Cyberknife.

The world works in mysterious ways! Judie discovered that her friend and colleague from Intuitive Surgical, Terry Thaire, had moved to become VP marketing for Accuray.

She rapidly contacted him to set up a meeting at the Cyberknife center at the Norris Cancer Center in Los Angeles to demonstrate the Cyberknife device to Federico Benetti. The neurosurgeon who invented the Cyberknife was a brilliant surgeon from Stanford University, Professor John Adler. Terry arranged for Pr. John Adler to fly down from Stanford meet with Federico and Judie at the facility on January 8, 2002.

John Adler explained the Cyberknife device and its history to Federico and Judie. He gave them a tour of the facility and the key physicians. Federico then explained to Dr. John Adler about atrial fibrillation and his goal of ablating cells in the pulmonary artery junction with the left atrium using this device and John Adler's immediate reply was "Yes, in my opinion, this will work".

Dr. Thomas Fogarty at this time was a faculty member at Stanford University and also was on the board of Accuray, the company manufacturing marketing the Cyberknife. He had been invited to

be the owner of a guest speaker at the March 2002 Interventional Cardiology program in Colorado, which Judie was attending. Judie set up a luncheon with him to broach the subject of how to develop a Cyberknife System for non-invasive cardiac surgery, which was no small task and something way beyond her, Michail, and Federico's capabilities. Tom was fascinated as she explained the idea of targeting tiny rays of radiation to stop the cells in the atrium conducting ectopic electrical signals.

Dr. Fogarty said he would talk further with Professor. John Adler when he returns to Stanford University undetermined the feasibility of this futuristic approach since clearly it was the ideal opportunity for him.

Dr. Fogarty then funded a start-up company, named Cyber Heart [1] in Palo Alto and the team there started to develop the software to program the Cyberknife to ablate the cells around the pulmonary artery. Animal studies ensued and the first clinical studies began, [2-5] today is a reality that can change the life of many people, more investigation is needed to improve more our original idea [1].

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