

A Maltese Neurosurgeon in London

by Marika Azzopardi

There is nothing positive about a tragedy, or so it may seem. But a tragedy ignited a young boy's desire to emulate his father and become a neurosurgeon. This is the story of Ludvic Zrinzo.

Meeting the 37-year-old surgeon in Malta recently, I feel lucky to have him for a couple of hours, free from his busy schedule working at the National Hospital for Neurology and Neurosurgery in Queen Square, London. Operating in the first hospital in the world to be dedicated to neurosurgery has been especially significant for the career of 'Zrinz', as his colleagues call him, who has been a neurosurgeon for the past decade.

His father, Laurence Zrinzo, established neurosurgery in Malta with the help of his mother, Sylvia, a neuroradiologist; his uncle Antoine Zrinzo is also a neurosurgeon. "My parents went to the UK in 1971 so that dad could follow his specialisation and I was born there. We eventually returned to Malta when I was 10. My dad always encouraged me to become an architect or an engineer – my own love for maths and physics at school made these sensible choices. His father loves neurosurgery but always felt that there was insufficient local political and infrastructural support for the speciality – he was practically running a one-man show at the time."

Ludvic Zrinzo with his family



However, fate had something up her sleeve. When the Egyptair plane was hijacked in Malta back in 1985, Laurence Zrinzo was in hospital for three whole days, working round the clock to mend the cranial damage caused to the three hostages who had been shot in the head. "I remember dad returning home after his marathon stint at the operating table sporting a beard and visibly exhausted, yet elated. Two of three patients survived and he received commendations from neurosurgeons around the globe. For me, this impressive feat of humanity in a time of tragedy was awe-inspiring. As a result of the teamwork that existed between my parents I immediately set my heart on becoming a Neurosurgeon. Suddenly it seemed a very cool thing to do."

Ludvic Zrinzo qualified in 1996 and stayed in Malta for a while but eventually went up to London with his wife, Mirella, who is a lawyer and had started working in the city. He opted to go for neurosurgical training, taking the opportunity to delve into research, something that he would scarcely have been able to do had he stayed in Malta. He could carry out clinical research directly with patients rather than with test animals in laboratories. He was also awarded a Distinction in his Masters degree in Clinical Neuroscience, which subsequently led him to discover functional neurosurgery and deep brain stimulation.

During the process of his research he came across stem cell transplant results that had surfaced in Sweden and which were especially significant on a specific category of patients who surprisingly manifested symptoms of Parkinson's disease. "These were people still in their 20s and 30s. They had experimented with home-engineered heroin that included the poisonous ingredient MPTP which destroys the same brain cells that die in Parkinson's disease. It was observed that direct injection of stem cells into the brain of these patients worked successfully and it seemed a natural consequence to consider the same treatment to patients with Parkinson's disease. Unfortunately, stem cell therapy in Parkinson's disease has not yet lived up to

expectations. However, a different approach, deep brain stimulation, has had remarkable results where stem cell treatment has failed."

The experience got him thinking about the way the brain works and on how research could effectively help to improve surgery. A few rogue psychiatrists and the indiscriminate use of frontal lobotomy practised in the 1950s had shed a dark shadow on the use of brain surgery in psychiatric disorders; yet recently, deep brain stimulation was doing wonders thanks to the implantation of electrodes which worked deep within the brain and could be operated through an implanted pacemaker. Ludvic Zrinzo started work on improving a technique developed by Victor Horsley at the turn of the 20th Century. This neuroscientist and pioneer in neurosurgery had fashioned the Horsley-Clarke apparatus, which was developed together with Robert H. Clarke in 1908. It was used for performing the stereotactic neurosurgery, whereby a set of precise numerical coordinates are used to locate each brain structure. "Thanks to this apparatus and recent research developments carried out in clinical studies, it has been shown that a good percentage of patients with Parkinson's disease can benefit enormously from deep brain stimulation carried out with the help of the stereotactic technique. Whilst medication works well for the first years, its effects may diminish considerably in subsequent ones, eroding patients' quality of life."



"... simply by turning a patient's pacemaker on and off, one can immediately see the results".

Ludvic Zrinzo... deep within the brain



A video demonstrates how Mr Zrinzo operates – the patient remains awake throughout the keyhole surgery procedure, which is assisted by MRI guidance. The operating team can actually see how the electrode being implanted immediately stops the tremor and stiffness of the affected limbs.

"The procedure may appear to be extremely expensive costing a total of £30,000 including £12,000 of hardware value (namely, the pacemaker). However, in the long-term the money that is saved in expensive medication and medical care is phenomenal. After just two to three years it proves to lead to net savings in healthcare expenditure. In fact it is provided free through the NHS in the UK. This surgery has a strong evidence-base – simply by turning a patient's pacemaker on and off, one can immediately see the results. The human brain still requires much exploration, most of it being as yet uncharted territory. I have seen the potential of deep brain stimulation and each operation is a unique opportunity to learn a bit more about how the human brain works. We know it can offer relief to patients with chronic neurological conditions including cluster headaches, depression, Tourette syndrome and a wide range of movement disorders, including the symptoms of Parkinson's disease ... the brain is a truly magnificent mechanism. We have merely started scraping the surface."

Mr Ludvic Zrinzo was interviewed when he was in Malta to give a talk on 'Surgical Neuromodulation – Helping patients, advancing knowledge' at the 7th Malta Medical Conference held in November 2009.