

DR. AYUB KHAN OMMAYA: A LUMINARY NEUROSURGEON

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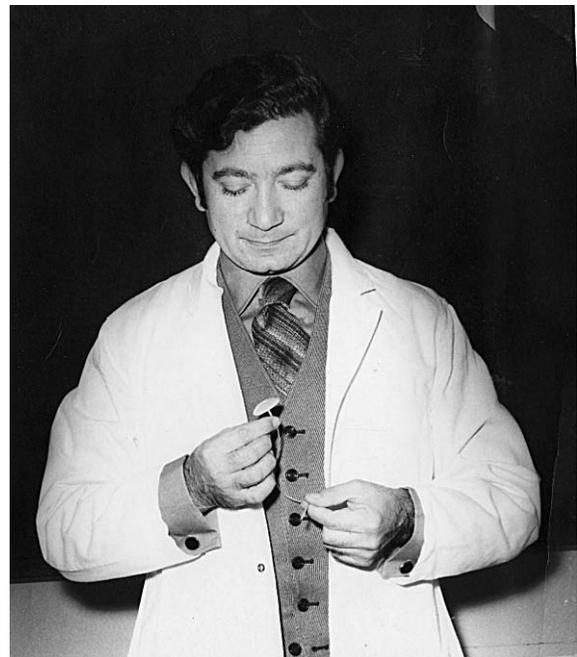
Pak J Neurol Sci 2009; 4(2):90-92

Edward J. Sylvester writes in his book, *The Healing Blade: A Tale of Neurosurgery*,¹ To crack open a living human's skull and put a razor to his brain. Make that his soul. What kind of people does this sort of thing for a living? Indeed, the world of neurosurgery is such a fascinating one where fact meets the fabulous and the edges of life and death blur. A brain surgeon requires both physical strength and mental toughness in his/her armamentarium to carry out operative procedures lasting sometimes for 10-12 hours and then be there at the time of sheer emergency with full mental force. Dr. Ayub Khan Ommaya was undisputedly one of those overarching and powerful personalities who shaped the story of neurosurgery during the second half of the last century. Who would have thought that a young boy raised in a small town of Punjab will become an outstanding neurosurgeon in United States and an authority on traumatic brain injury worldwide?

Born on April 14, 1930, in Mian Chanuu, Pakistan, Dr. Ommaya received his medical degree in 1953 from the prestigious King Edward Medical College, Lahore, where he was the Harper-Nelson Gold Medalist. Later on, in 1956, he received his master's degree from Balliol College, Oxford University, where he was a Rhodes Scholar. During medical school, he trained as an amateur boxer and at Oxford; he was a member of the rowing team. He was also the national champion swimmer in Pakistan in 1953.

Dr. Ommaya came to United States in 1961 as a visiting scientist at the National Institutes of Health (NIH) and later became an associate neurosurgeon. He, later on, became the Head of Neurosurgery at the National Institute of Neurological Disorders and Stroke (NINDS), NIH and was also a Clinical Professor of neurosurgery at George Washington University (GWU), Washington, DC.

Dr. Ommaya was a leading neurosurgeon of his era. He contributed significantly to neurosurgical literature and



Dr. Ayub Khan Ommaya

Photograph courtesy Alex Ommaya

published over 150 articles in peer reviewed scientific journals. While at NINDS, in 1966, he devised the first coma scale. Though effective, it was never used outside the institute. Dr. Ommaya's prime achievement, however, was the invention of Ommaya reservoir. Any health care professional who has ever been associated with a neurosurgical unit must have come across the term, Ommaya reservoir. Back in 1960s, there was no effective way to deliver chemotherapy treatments for brain tumors. His invention of Ommaya reservoir, a mushroom shaped, silicone dome with an attached catheter solved the problem of delivering chemotherapy to the brain and spinal cord. The reservoir was also the archetype of all medical ports used today.^{2,3}

While at Oxford, Dr. Ommaya became interested in traumatic brain injury. Later, in U.S., he developed the *centripetal theory of traumatic brain injury*. This theory developed the scientific understanding and modeling of the role of forces and their contribution to injury and outcome in brain. His model of traumatic brain injury led to improved design of safety devices in motor vehicles. This improvement has resulted in reducing injury and preventing death of thousands of people globally.

Dr. Ommaya's work on traumatic brain injury paved way for the integration of various avenues of scientific research such as neuropathology, mechanical engineering, and crash analysis which resulted in a multidisciplinary approach towards better understanding of traumatic brain injury prevention and control.

During 1980-85, while holding a chair in neurosurgery at GWU, Dr. Ommaya also acted as the chief medical adviser to the U.S. National Highway Traffic Safety Administration. During this period, he commissioned a report, titled *Injury in America*, which brought the consequences and prevention of road traffic accidents (RTAs) on the medical and political agendas. The subsequent development can best be described as nature's help towards Dr. Ommaya's cause. One of Dr. Ommaya's patients was the daughter of a Congressman, William Lehman, who was then the chair of the Transportation Appropriations Subcommittee. Dr. Ommaya convinced William Lehman regarding the dearth of funds for injury research. This led to a new grant of U.S. \$10 millions to U.S. Centers for Disease Control (CDC) to create a new center for injury control. Thus, came into being, the National Center for Injury Prevention and Control.^{2,3}

Faris Bandak, a director of head injury for the U.S. Department of Transportation, and also a friend of Dr. Ommaya acknowledged his work related to the traumatic brain injury in the following words: Rotational acceleration has certain effects on the brain that can't be caused any other way. The understandings of trauma before Ayub's contributions and following them are quite different. ²

In 1977, Dr. Ommaya was part of a team of GWU surgeons that saved the life of a Rochester, New York teacher by removing a snake-like tangle of blood vessels at the base of his brain. This was a rare abnormal growth that had paralyzed both his arms and legs and was threatening his breathing. In a landmark surgery lasting for 18 hours, the patient was chilled for a time to 65 degrees, his heart and lung were stilled and his brain activity was halted.^{2,3} Ommaya's successful operation has become a neurosurgical classic. This surgery was one of the initial forms of the Neurosurgical standstill which was later on excelled by the legendary neurosurgeon Dr.

Robert Spetzler for giant aneurysms involving the base of brain at the Barrows Neurological Institute (BNI), Phoenix, Arizona.¹

In 1997, Dr. Ommaya and a colleague Dr. Ronald Uscinski were called as defense experts in the famous trial of Louise Woodward, a British au pair accused of killing an 8-month-old baby in her care. They maintained that the injuries revealed by a scan of Matthew Eappen's brain, could not have been caused by violent shaking, as prosecutors claimed. Sitting in the witness stand of a Cambridge, Mass., courtroom, Dr Ommaya bounced a wad of Silly Putty on the floor to illustrate the damage that could be caused by impact. This demonstration elicited a burst of laughter both by the jurors and the observers. The jury found Louise Woodward guilty of second degree murder, but the judge later overruled the decision, changing the verdict to involuntary manslaughter.^{2,3}

Known as the "singing neurosurgeon," Dr. Ommaya was a trained opera singer. He often sang before and after surgery, to the delight of patients and his hospital colleagues.

Born to a Pakistani Muslim father and a French Catholic mother, Dr. Ommaya was diverted towards Islamic Sufism. His religion shaped his scientific ideas about the nature of consciousness. In 1995, Dr. Ommaya was the keynote speaker at the meeting of the Committee on Science and Technology (COMSTECH) of the Organization of Islamic Conference. He spoke on the topic, Requirements of the Renaissance of Science and Technology in the Islamic Policy. He lectured frequently on reform, science, and politics in the Islamic world.

Dr. Ayub Khan Ommaya died on July 11th, 2008, in Islamabad, due to the complications of Alzheimer's disease. He was deeply loved by his friends and colleagues due to his kind nature. Despite being one of the busiest persons in his field, he always had time for people who needed his assistance, his patients, family, and friends. Geoff Watts writes in a recent issue of *The Lancet*,² To many more-friends, patients, and colleagues-Ommaya was simply the talented neurosurgeon who would seize any opportunity to deliver an operatic aria, whether across the dining table or in the operating theatre .

Khalid Hassan wrote in *Friday Times*,⁴ Utterly unmarked in Pakistan was the recent death of Dr Ayub Ommaya, which is ironic because with him is gone from the scene one of the world's greatest neurosurgeons, who pioneered several life-saving procedures, and who is remembered here to this day as having performed a legendary 18 hour operation on a 36-year-old man came as close to doing the impossible. Undoubtedly, this was just another overt

expression of our nation's callousness towards its academic heroes.

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