Gamma Knife surgery: the best is yet to come

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The 15th International Meeting of the Leksell Gamma Knife Society was held in Athens, Greece, in May 2010. This location seems quite fitting. Much as the Parthenon (Fig. 1) has had a lasting impact on modern culture, the Gamma Knife has stood the test of time and forever changed the way in which neurosurgery is practiced. This special supplement to the Journal of Neurosurgery is composed of scientific material presented at the conference.

The theme for the meeting was “At Least Do No Harm” from the Hippocratic oath many physicians take. In keeping with this concept, there was a focus on preservation of neurological function in patients undergoing Gamma Knife surgery (GKS). Preservation of cranial nerve and pituitary function was among these topics. With improvements in neuroimaging, a more comprehensive understanding of radiobiology (for example, the effect of dose rate), and refinements in Gamma Knife technology, the benefit-to-risk profile of radiosurgery has never been more appealing.

The meeting pushed the boundaries of traditional GKS. In particular, meeting topics included radiosurgery for patients with more than 5 metastases, stereotactic radiotherapy using the Perfexion Gamma Knife (Elekta AB), spinal radiosurgery, and fractionation using the Extend system (Elekta AB). Nevertheless, the practice of GKS still remains true to the core principles and design elements devised by Lars Leksell.

Those who use the Gamma Knife certainly need to heed Hippocrates’ words “at least do no harm.” However, “the best is yet to come,” words sung by a modern philosopher of sorts, Frank Sinatra, seem more in keeping with the meeting’s optimism regarding Gamma Knife surgery. Multisession radiosurgery performed using the Gamma Knife Extend is now feasible. New indications such as GKS for mesial temporal lobe epilepsy and other functional disorders are now being rigorously explored. Moreover, for traditional indications such as skull base tumors, the roles of complementary approaches, including microsurgery, radiotherapy, embolization, neuroendoscopy, and GKS, are much better defined.

The current Journal of Neurosurgery supplement consists of peer-reviewed manuscripts from the 15th International Meeting of the Leksell Gamma Knife Society. Tremendous gratitude must be given to the special panel of Journal of Neurosurgery reviewers who assisted in the evaluation and selection of these articles. Each paper contains research that was presented at the meeting. The supplement represents a snapshot of contemporary radiosurgery practice using the Gamma Knife. (DOI: 10.3171/2010.7.GKS101200)

Fig. 1. The Parthenon in Athens, Greece, which was the host city for the 15th International Meeting of the Leksell Gamma Knife Society.