Eloquent: history of a word’s adoption into the neurosurgical lexicon

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Nowadays, the so called silent areas of the brain are eloquent to those who know how to listen.

— MacDonald Critchley, Neurologist

The word “eloquent” is commonly used by neurosurgeons to reference areas of the brain “that speak to readily identifiable neurologic function and, if injured, result in a disabling neurologic deficit.” The term, however, dichotomizes neuroanatomy in a manner that does not reflect the true relationship between structure and function in the brain. In 1993, Itzhak Fried acknowledged this incongruity in a letter published in the Journal of Neurosurgery.8 Specifically, Fried worried that eloquent—when applied in the neurosurgical context as a synonym for “indispensable”—might tempt neurosurgeons to consider “non-eloquent” structures as effectively dispensable. He recommended that “this terminology should be excised from the neurosurgical literature.” In his critique of the word eloquent, Fried cited Charles Drake’s extensive use of the word in discussions of cerebral arteriovenous malformations (AVMs). John Jane, who at that time was the editor-in-chief of the Journal of Neurosurgery, wrote to Drake, stating that Fried “identifies (Drake) as the first user of the term ‘eloquent’” and inviting a response. Published alongside Fried’s letter was Drake’s reply, in which he offered an origin story for the term (Fig. 1).6 Drake tactily assumed credit for the coinage when he remarked “I do not believe I can or should retract or even perhaps ask for forgiveness for personalizing those areas of the human cerebral cortex that have such meaning for neurosurgeons....”

In the years since the publication of Fried’s and Drake’s letters, use of the word eloquent in the neurosurgical context has only expanded, even as our understanding of structure and function in the brain has become more nuanced. To better understand a term that has become a prominent component of our lexicon as neurosurgeons, we sought to thoroughly investigate the origins of the word eloquent as it is now commonly applied, including the question of whether Drake was indeed the one who coined this term.

Tracing the Origins of the Word Eloquent

To identify early uses of eloquent in the neurosurgical context, we performed a literature review, including scholarly indices and Google’s corpus of digitized English language books (Table 1). To focus the search, “eloquent” was combined with “brain,” “cortex,” “area,” “gyrus,” and “gyri.” We then conducted a more focused review through the search engines of individual neurosurgical journals, neurology journals, and general medical journals prior to 1986, the year of the earliest relevant citation identified in a PubMed search (Table 1).3 We evaluated references cited in those papers identified as the earliest relevant instances of eloquent. The search protocol was also applied to “non-eloquent” and “silent,” as well as to “eloquent” and “silent” in combination to explore the relationship between the two terms.

To quantify relevant citations in the scientific literature, we relied on searches of individual journals prior to 1986 and on PubMed’s search function after 1986. Of note, the PubMed search function searches within a paper’s title, abstract, and key words. We categorized citations according to their association with additional search terms related to specific subject areas (AVMs, tumors, and epilepsy).

Finally, in light of Charles Drake’s suggestion that he had coined the use of eloquent in the neurosurgical context, we hand-searched Drake’s personal archives at the University of Western Ontario.

The Birth of Eloquent from the Silent Brain

In the scientific literature, the earliest use of eloquent as
it is now commonly defined by neurosurgeons appeared in 1951 in a paper on management of cerebral abscesses from the neurosurgical group at Oxford. Specifically, in a discussion of excision versus aspiration, the authors wrote, “where an abscess is situated in an eloquent area of the brain and the abscess is unilocular, repeated aspiration is the better method of treatment.” Nowhere in the paper did the authors define the term.

The earliest instance of non-eloquent in the neurosurgical context appeared 5 years later in a 1956 paper on neurological manifestations of malignant hypertension, also from a center in the United Kingdom. The authors used the term “silent” to describe the clinical consequence of small lesions in “non-eloquent” areas of the brain. Just as with the earliest instance of eloquent in 1951, the authors did not bother to define the terms.

Charles Drake first used eloquent in a published manuscript in 1963, in a discussion of radiation of brain tumors. Just as with the earlier uses cited above, Drake did not define the term. He went on to use the term liberally—a total of 6 times—in a paper on cerebral AVMs published in 1979. In the same paper he referred to “silent” brain regions. Our search of Drake’s personal archives at the University of Western Ontario failed to reveal any unpublished references to eloquent pre-dating the 1963 paper.

By the time eloquent made its first appearances, silent was well-established as a reference to regions of the brain that are now more commonly referred to as non-eloquent. The earliest identifiable use of silent in this context comes from a paper on localization of intracranial tumors published in the journal Brain in 1898. The author wrote of “so-called ‘silent’ areas of the brain” in reference to the frontal lobes. In 1903 and 1905 papers referring to “silent cortex” and “silent areas” of the brain were published again in Proceedings of the Royal Society of London as well as in the Journal of the American Medical Association and the Boston Medical and Surgical Journal (now the New England Journal of Medicine). Alfred Campbell authored the 1903 piece and in it designated the “post-central area” as “silent” while correctly describing it as