Loss of recent memory after bilateral hippocampal lesions: memory and memories—looking back and looking forward

Brenda Milner, Denise Klein

In 1957, Scoville and Milner reported a series of case studies describing the nature of the memory defect they observed following bilateral surgical removals from the medial temporal region. The paper highlighted that extensive bilateral surgical excisions from the hippocampus and hippocampal gyrus resulted in severe and lasting memory loss; it also focused attention on these brain structures as critical for the maintenance of normal memory function.

These findings ran counter to prevailing views at the time by linking a memory dysfunction to the hippocampal region of the brain. Milner and Penfield noted that it was only after the medial removal that the memory loss occurred. The paper by Scoville and Milner complemented that of Milner and Penfield, in that the damage in each case was known to be bilateral; but its real impact was that they were able to demonstrate that gradations of memory loss related to the extent of surgical excision. At a time without the aid of brain imaging, Scoville carefully delineated the extent of removal, and Milner determined the relationship between extent of removal and the kind and severity of memory loss observed. Having the same surgeon across a range of cases allowed for consistency within the frame of reference, thus permitting inferences to be drawn about the link between a well-defined focal lesion and specific memory impairments. It was clear that patients with hippocampal lesions retained their professional knowledge and skills, their understanding and use of language, and their ability to recall early experiences. What these patients had was continuous anterograde amnesia, forgetting of events as they lived them, of life as they lived it.

The hippocampal region was determined to be important, because PB had had his temporal lobectomy in two stages, 5 years apart, and Milner and Penfield noted that it was only after the medial removal that the memory loss occurred. The hippocampal region was critical in de

REFERENCES
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