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# A Brief History of the Clinical Applications of Botulinum Toxin

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Like most advances in medical therapy, the cosmetic and clinical applications of botulinum toxin type-A are the result of numerous individuals who observed clinical conditions and were able to translate these findings into significant medical advances. The organism *Clostridium botulinum* was originally isolated by Professor E. van Ermengem in 1895 after members of a music club in Ellezelles, Belgium, sustained systemic paralysis following the consumption of rare-cooked, salted ham, leading to the death of 3 members of their group.<sup>1</sup> In the 20 years that followed the initial discovery of *C botulinum*, different strains of the organism were identified that were thought to produce distinct forms of botulinum toxin.<sup>2</sup> Initial attempts to purify the causative agent from the organism that induced muscular paralysis were unsuccessful. Dr. Herman Sommer of the Hooper Foundation, University of California, was unable to produce a purified form of botulinum toxin, but was the first investigator to extract a sludge-like precipitate that was capable of inducing paralysis in laboratory animals. In 1946, Dr. Edward Schantz and his associates at Camp Detrick, Maryland, succeeded in purifying botulinum toxin type-A toxin in crystallized form.<sup>3</sup> This led to subsequent investigations into the mechanism of action of botulinum toxin type-A, first described by Dr. Vernon Brooks, who established that muscle paralysis was due to a blockade of the release of acetylcholine (ACh) from the motor endplate at the myoneural junction.

## CLINICAL APPLICATIONS

The first investigator to pursue the clinical application of botulinum toxin was Dr. Alan Scott of the Smith-Kettlewell Eye Research Foundation in San Francisco, California. In the late 1960s and early 1970s, Dr. Scott attempted to weaken the extraocular muscles of monkeys with botulinum toxin type-A and other chemical agents with the hope that these compounds could eventually be used for the nonsurgical treatment of strabismus in humans. His interest in finding compounds for this study led him to correspond with Dr. Schantz, who provided Dr. Scott with botulinum toxin type-A for his initial and subsequent investigations into this area.<sup>4</sup> The results of his first primate studies, which were published in 1973, confirmed that botulinum toxin type-A was the most effective of the agents that he had investigated to weaken extraocular muscles.<sup>5</sup> In the discussion