Chapter 4
Open Microvascular Decompression

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ABSTRACT

Microvascular decompression (MVD) is a neurosurgical procedure used to treat various neuralgias of the cranial nerves. The clinical presentation, natural history, pathophysiology, and medical management of trigeminal neuralgia, hemifacial spasm, glossopharyngeal neuralgia, and nervus intermedius neuralgia is reviewed. A thorough discussion on the retrosigmoid approach for decompression of cranial nerves is presented, along with newer techniques and controversies on adjuvant therapies and neuromonitoring. The surgical outcomes of MVD are discussed, along with alternative techniques to open MVD.

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INTRODUCTION

Microvascular decompression (MVD) is a microneurosurgical procedure used to treat various neuralgias of the cranial nerves. Originally developed for patients suffering from trigeminal neuralgia (TN), MVD has found increasing utility in the surgical management of other cranial nerve neuropathies such as hemifacial spasm (HFS), glossopharyngeal neuralgia (GN), nervus intermedius neuralgia (NIN), and refractory positional vertigo or tinnitus. A brief history of the procedure, conditions where MVD is shown to provide benefit, surgical technique and outcomes, and alternative treatments are reviewed.

HISTORY OF THE PROCEDURE

Walter Dandy was pivotal in the development of the MVD procedure by performing the first retrosigmoid approach to access the cerebellopontine angle, which was subsequently used by future surgeons to manipulate nerves at the cranial base (Dandy, 1932). In describing the pathophysiology of TN, Dandy was the first to realize that the trigeminal nerve was often impinged by a nearby blood vessel in patients with the disorder, thereby causing the prototypical shock-like pain of the face. This was observed during the very first treatments for TN which involved sectioning the fifth nerve near the brainstem (DANDY, 1929). Although division of the trigeminal nerve resulted in relief of symptoms, permanent sensory loss was an unavoidable side effect. It was not until the 1960s when the first MVD operations for TN (GARDNER & MIKLOS, 1959) and HFS (Gardner & Sava, 1962) was described by Gardner and later popularized by Jannetta (Jannetta, 2007).

OPERATIVE INDICATIONS

Trigeminal Neuralgia

Trigeminal neuralgia was first described in 1773 by John Fothergill as brief, sudden bursts of sharp, excruciating pain, triggered by light touch or eating (Fothergill, 1776). Also known as tic douloureux, this was a syndrome defined by paroxysms of severe facial pain, often described as electric, lancinating pain with an abrupt onset and termination, with each episode lasting a few seconds to minutes (Prasad & Galetta, 2009). These episodes are often exacerbated by minor stimuli such as chewing, a breeze across the face, touching the upper lip, or brushing the teeth. Severe pain can also cause facial muscle spasms (“tics”). The pain was often so
What's Memory All About?: The Importance of Memory in Alzheimer's Patients
Aníbal Caixinha and Isabel Machado Alexandre (2016). *Handbook of Research on Trends in the Diagnosis and Treatment of Chronic Conditions* (pp. 263-278).
www.igi-global.com/chapter/whats-memory-all-about/136521?camid=4v1a

Spirituality and Aging
www.igi-global.com/chapter/spirituality-and-aging/201371?camid=4v1a