

Pain syndromes

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Neurosurgical approaches to the relief of pain may address the underlying aetiology directly or may seek to interrupt or modulate the transmission responsible for the pain. The contrasting An essay on the shaking palsy in 1817. nal neuralgia. This manifests, generally in middle age or later, with paroxysmal lancinating pain in the distribution of one or more divisions of the trigeminal nerve. The pain occurs without other neurological disturbance and may be triggered by trivial stimuli such as eating or brushing the teeth. The pain is often attributable to impingement on the nerve by the superior cerebellar artery or other vessels, as first postulated by W Dandy . Occasionally another primary lesion is responsible; for example demyelination due to multiple sclerosis can result in nerve impulses 'jumping' from adjacent sensory nerves to pain fibres, a process termed ephaptic transmission. When medications such as gabapentin and carbamazepine cannot achieve control, surgical options include the following. /uni25CF Craniotomy and microvascular decompression (MVD): this is designed to address the proposed origin of the neuropathic pain by applying material between the nerve and adjacent vessel to prevent direct contact and stimulation. It achieves long-lasting relief of symptoms in over 90% of patients with evidence of neurovascular compression on MRI. In other patients success rates are lower, and for older patients the risks associated with craniotomy may be hard to justify . /uni25CF Stereotactic radiosurgery is non-invasive but symptom improvement can take weeks or months; overall efficacy is lower than for MVD. /uni25CF Percutaneous Gasserian rhizolysis involves needle placement under radiographic guidance at the Gasserian ganglion in Meckel's cave. This permits lesioning of the ganglion by glycerol injection, radiofrequency thermocoagulation or balloon compression, with the aim of disrupting aberrant pain transmission. Facial numbness and recurrence of pain within 2 years are common after these procedures, and overall efficacy is lower than for MVD. Treatment of pain elsewhere may also be based on lesioning of nerve tracts. For example pain related to brachial plexus infiltration or injury may be treated by sectioning the spinothalamic tract (cordotomy) or the dorsal root entry zone (DREZ operation). These approaches are limited by the potential for producing deficits, and especially by the occurrence of deafferentation ('phantom limb') pain syndromes, which are particularly unpleasant and difficult to treat. Electrical stimulation is used to modulate pain transmission: for example, spinal cord stimulators can be applied to a range of pain syndromes, especially those associated with failed spinal surgery . Deep brain stimulation targeting the periaqueductal grey and sensory thalamic nuclei has a role in chronic pain arising in the context of thalamic stroke. Implanted devices may also be used for intrathecal delivery of opiates for pain control or baclofen to alleviate spasticity . Johann Lorenz Gasser , 1723–1765, Professor of Anatomy , Vienna, Austria. Johann Friedrich Meckel (the elder), 1724–1774, German anatomist, has 'the elder' appended to his name to avoid confusion with his famous grandson, Johann Friedrich Meckel (1781–1833), who was also an anatomist. Hans Gerhard Creutzfeldt , 1885–1946, neurologist, Kiel, Germany . Alfons Maria Jakob , 1884–1931, neurologist, Hamburg, Germany . Functional neurosurgery - /uni25CF y /uni25CF alter /uni25CF

Intractable epilepsy can be treated surgically by implantation of a vagal nerve stimulator or by resection of one or more seizure foci. Deep brain stimulation using implanted electrodes has largely replaced lesioning of these structures for management of drug-refractory Parkinson's disease. Microvascular decompression is offered for trigeminal neuralgia, and other neuropathic pain syndromes may respond to lesioning of nerve tracts.

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Revision #1

Created 2025-12-31 15:17:58 UTC by Omar Ayman

Updated 2025-12-31 15:17:58 UTC by Omar Ayman