

# Neurosurgical Interventions for Trigeminal Neuralgia

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# Trigeminal Neuralgia

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- Chronic neuropathic pain disorder
- 3 main criteria:
- **Paroxysms** of electric shock pain:
  - <1 sec to 2 mins
- Restricted to territory of one or more divisions of trigeminal nerve
  - Usually **unilateral**
- Clear **triggers** such as:
  - Touching the face, talking, chewing, brushing teeth, shaving, cold wind
- Clinical exam – **Normal**
- Diagnosis is clinical



# Classification

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- Classical (majority)
  - Intracranial vascular compression
  - Usually superior cerebellar artery
- Secondary (15%)
  - Multiple sclerosis (MS)
  - Tumour
  - More likely to have sensory loss
- Idiopathic (10%)
  - No cause found
- Clinically not distinguishable so **MRI required in ALL cases**

# Red Flags

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- May indicate tumour or MS – Urgent MRI & specialist referral
- Sensory loss on exam
- Corneal numbness
- Bilateral symptoms
- Age < 40 at onset
- Other cranial nerve symptoms
- Weight loss, systemic features

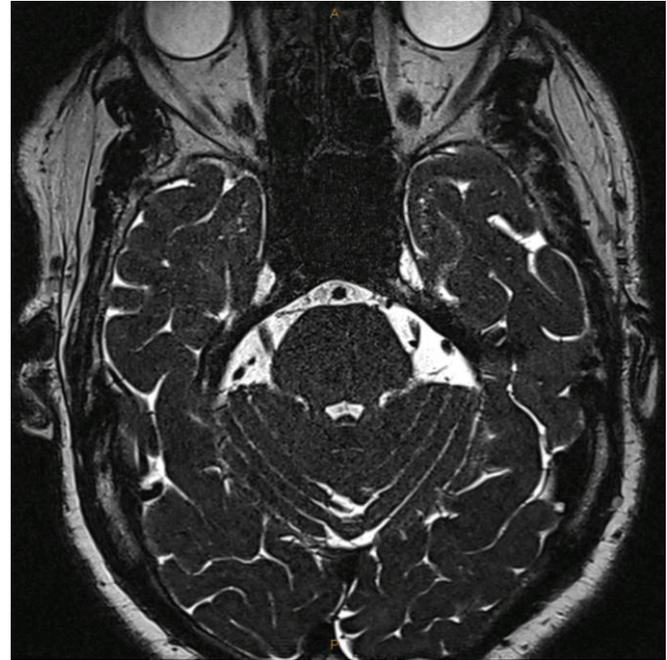
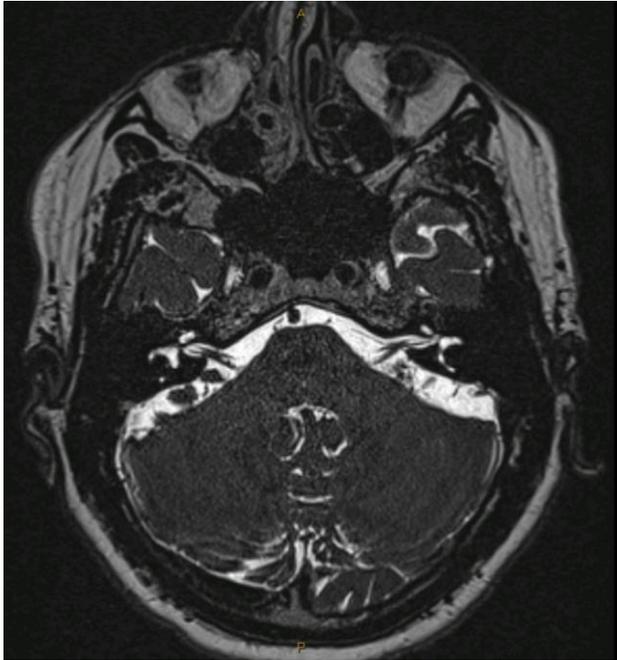
# TN management pathway

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- Start medication + arrange MRI
- First line: Carbamazepine; Oxcarbazepine
  - *Dramatic response to Carbamazepine or Oxcarbazepine – supports diagnosis*
- Poor control or intolerance: Refer to specialist
- Urgent referral if
  - Red flags
  - Severe refractory pain with dehydration, weight loss, suicidal ideation
- Common pitfalls:
  - Unnecessary dental extractions / root canals very common
  - Avoid endless opioid escalation - usually ineffective
  - Do not dismiss continuous pain within TN phenotype
    - Trigeminal Neuralgia with continuous pain
    - Old name: "Atypical trigeminal neuralgia" (note: NOT the same as atypical facial pain)

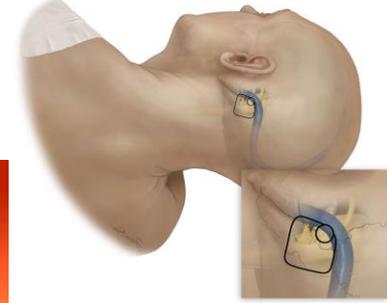
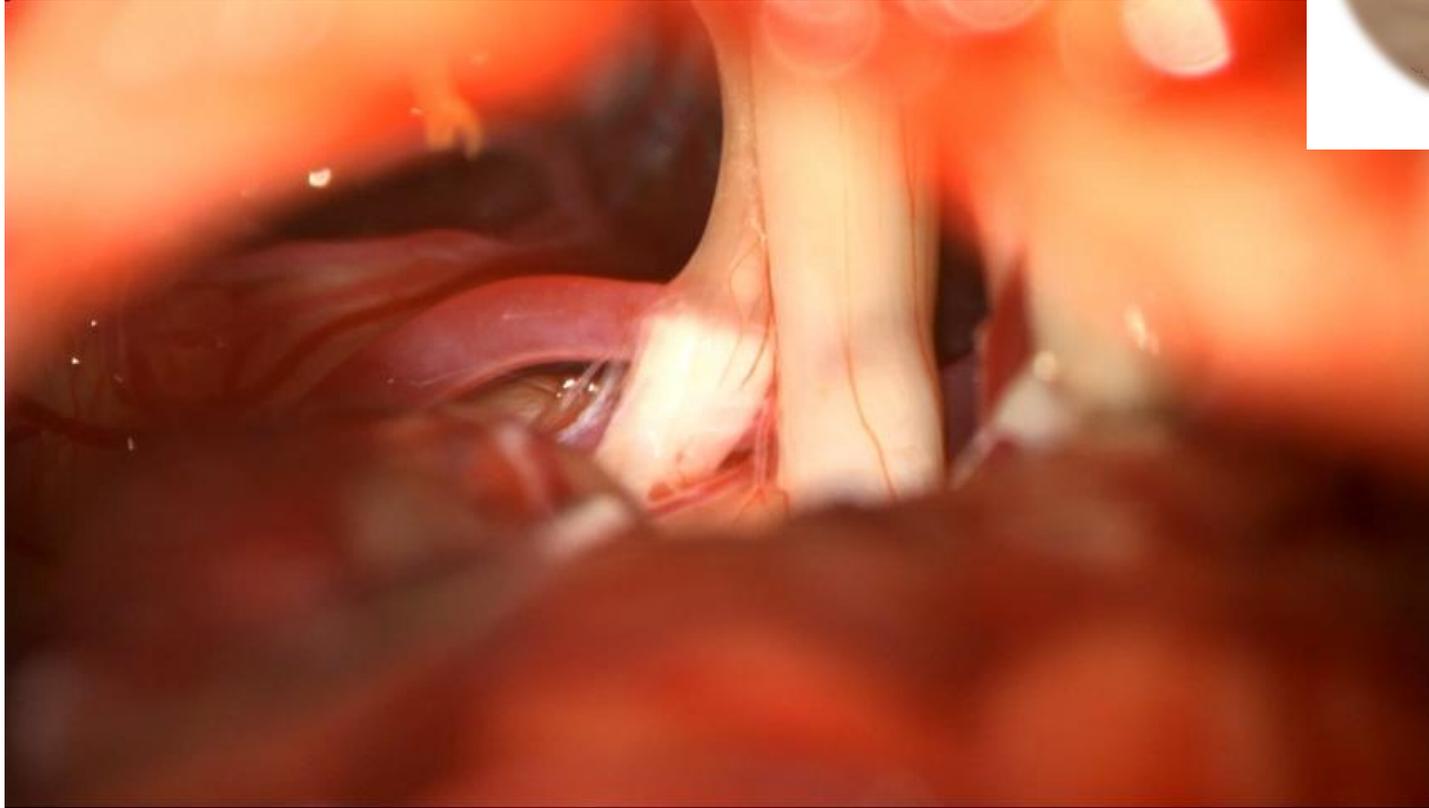
# MRI

- MRI brain with high resolution MRI trigeminal plus contrast and MRA



71 yo Left TN for 5 years

# Microvascular Decompression (MVD)



# MVD

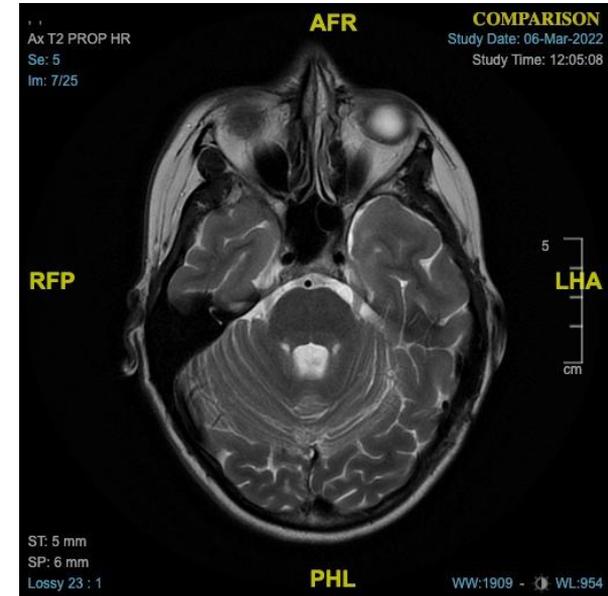
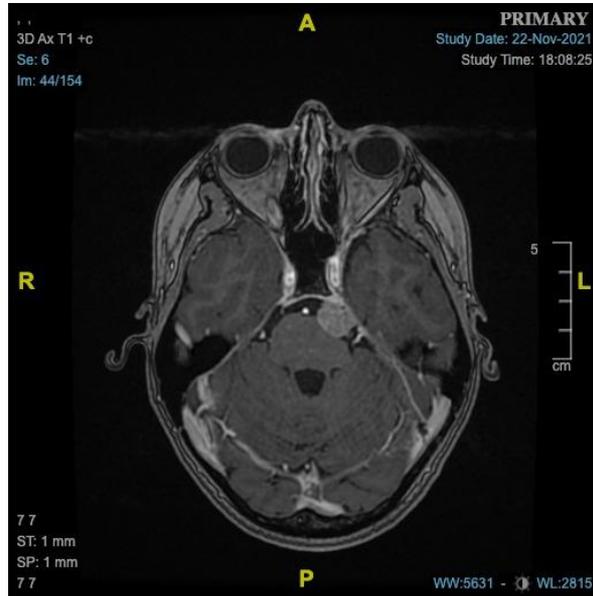
- Pain free & off medications approx. 80%
- Low recurrence rate
- No facial numbness
- Craniotomy risks
- Excellent outcomes even in elderly patients fit for GA

Clinical Trial > [Neurology](#). 2003 Feb 11;60(3):520. doi: 10.1212/wnl.60.3.520.

## **Microvascular decompression for trigeminal neuralgia in patients over 70 years of age**

M Javadpour <sup>1</sup>, P R Eldridge, T R K Varma, J B Miles, T J Nurmikko

# Tumour



## Normal MRI report

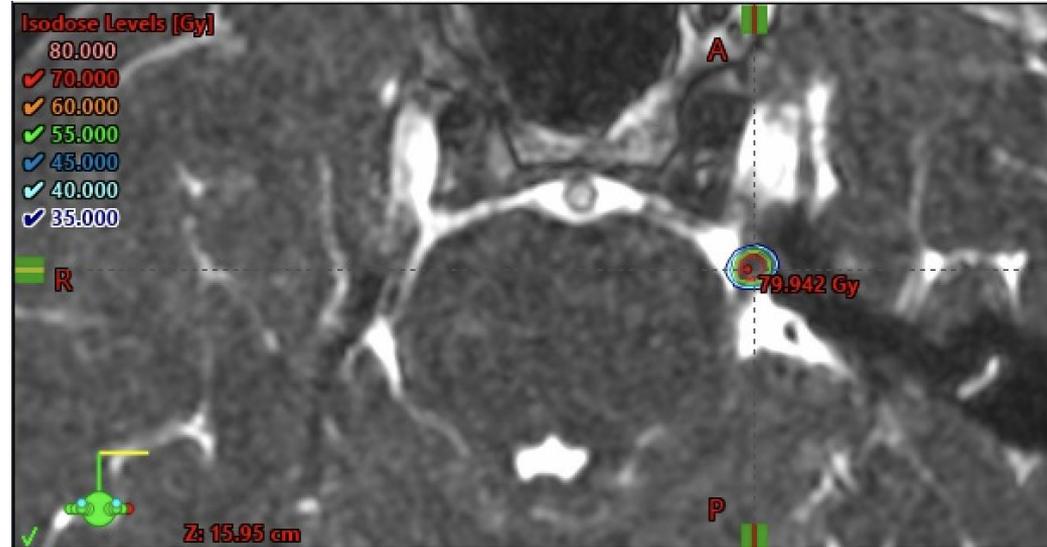
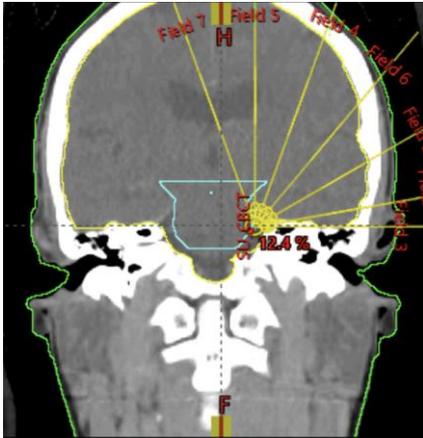
63 yo  
Severe Right TN  
3 years



Refer to Neurosurgeon even if MRI reported as normal

# Stereotactic radiosurgery

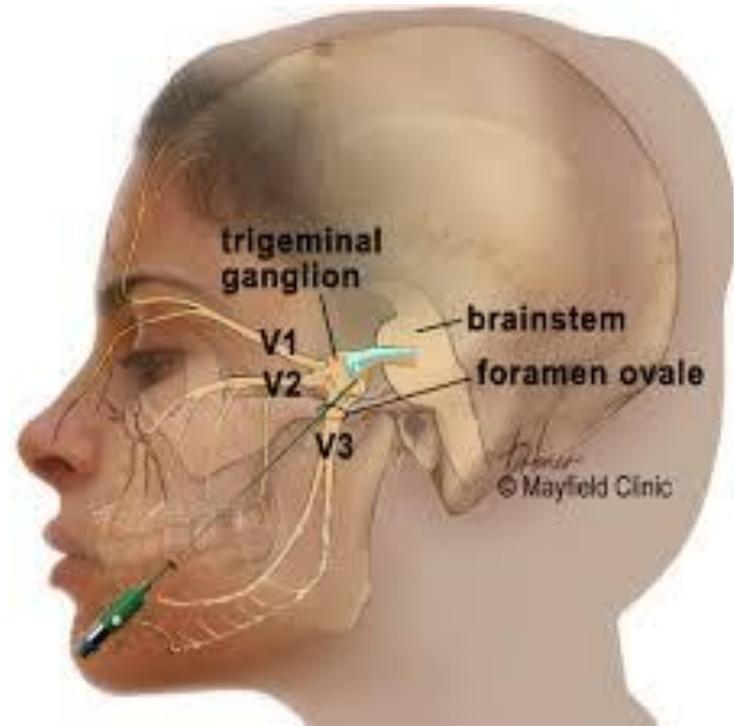
Gamma knife, Cyberknife,  
Novalis, Varian



Non-invasive  
Delayed effect  
Recurrence  
Facial numbness – moderate risk  
Useful in MS patients

# Percutaneous procedures

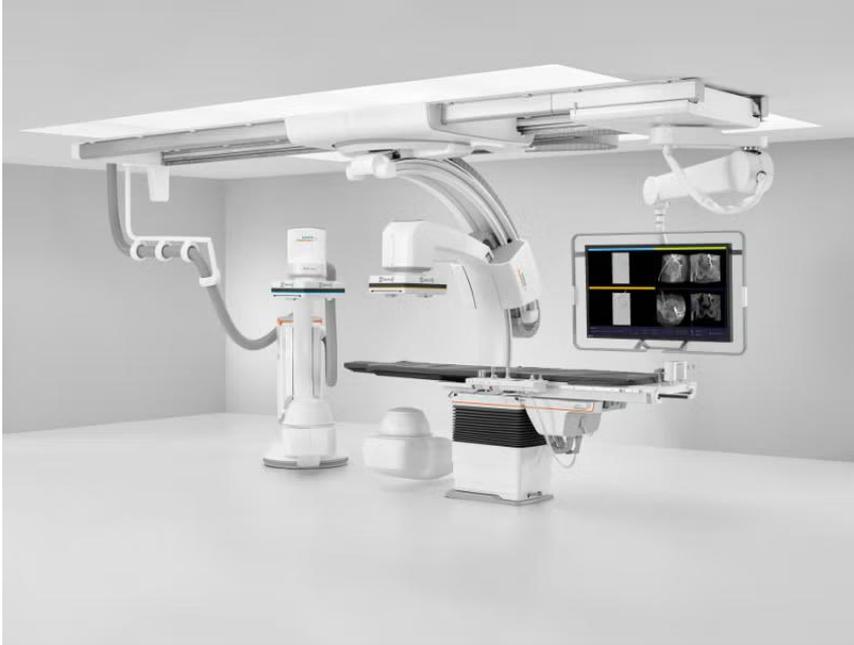
- Radiofrequency Rhizotomy
- Glycerol
- Balloon compression
  
- Rapid response
- Repeatable
- High rate of facial numbness



# Conclusions

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- Classical TN: Usually ipsilateral, paroxysmal, electric shocks in trigeminal nerve distribution, with clear triggers; No sensory loss
  - Start carbamazepine or oxcarbazepine
  - Refer for MRI trigeminal and brain with contrast and MRA
  - Poor response or intolerant – refer to neurosurgery even if MRI reported as normal
- Red flags (e.g. sensory loss) – Refer for urgent MRI
- Effective neurosurgical procedures are available



NEURO-IR suite



HYBRID Neurosurgical theatre



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## INTERVENTIONAL NEURORADIOLOGY



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Dr. Alan O'Hare



Dr. Sarah Power



Dr. Matt Crockett

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# Thank you