



Occipital Nerve Stimulation

Cluster Headache 2025 Conference
Sunday 8th June 2025



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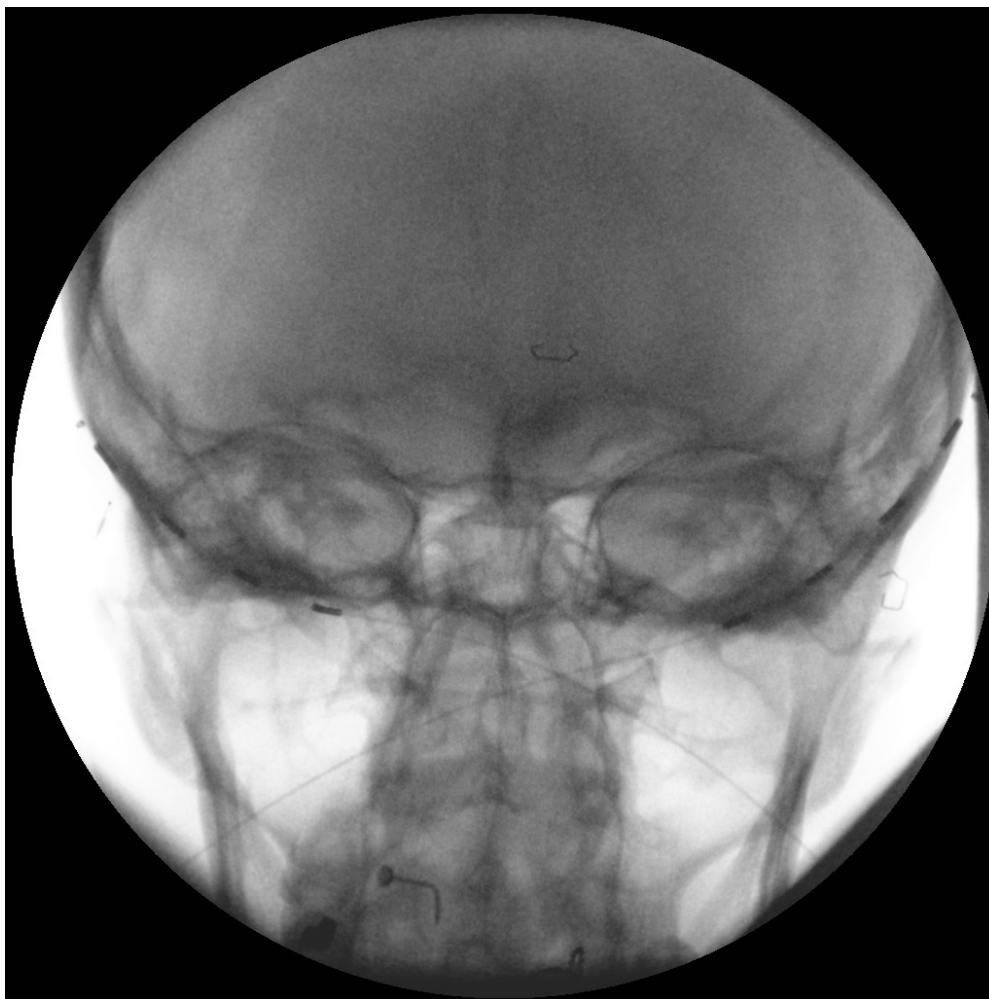
Occipital Nerve Stimulation



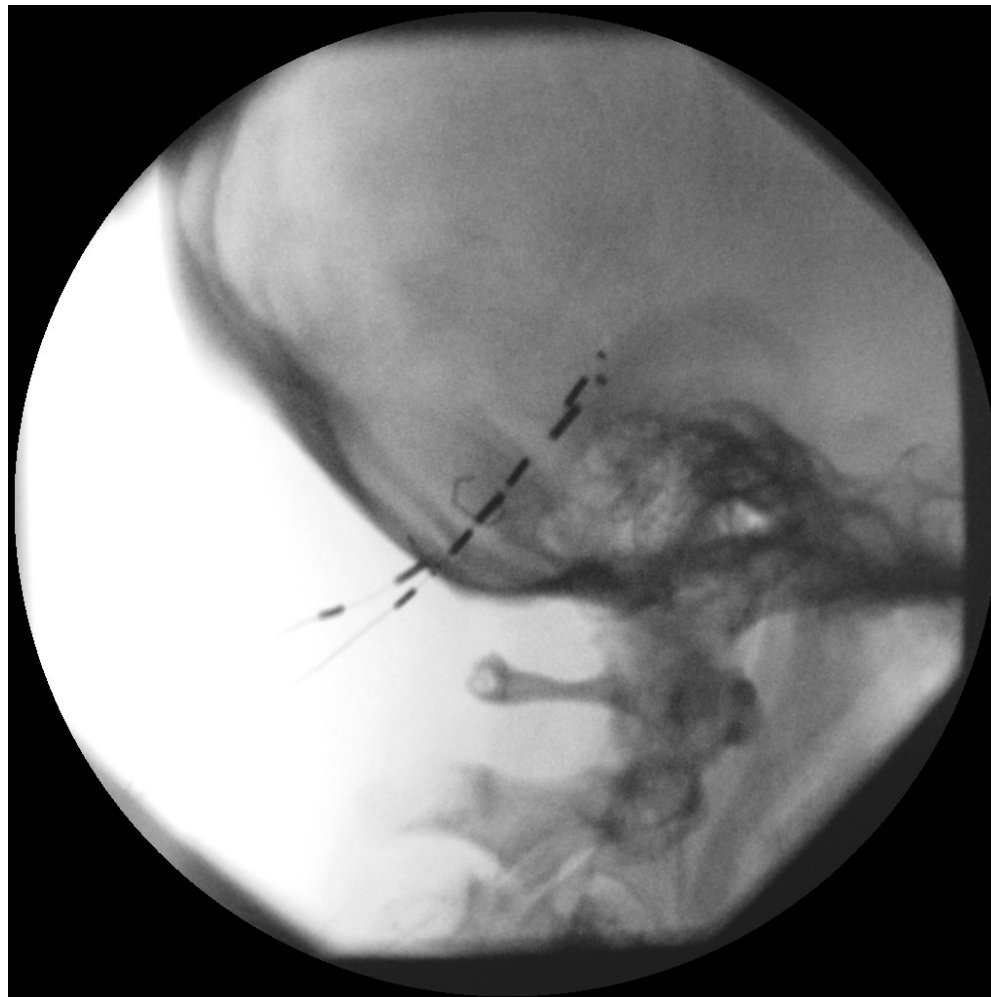
ONS Lead Implant



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Occipital nerve stimulation for intractable chronic migraine

Issued: April 2013

NICE interventional procedure guidance 452

guidance.nice.org.uk/ipg452

NICE has accredited the process used by the NICE Interventional Procedures Programme to produce interventional procedures guidance. Accreditation is valid for 5 years from January 2010 and applies to guidance produced since January 2009 using the processes described in the 'Interventional Procedures Programme: Process guide, January 2009' and the 'Interventional Procedures Programme: Methods guide, June 2007'. More information on accreditation can be viewed at www.nice.org.uk/accreditation

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NICE IPG-452 (2013)

- Evidence for ONS in refractory CM shows short term efficacy but little evidence for long term outcomes
- Procedure to be used with special arrangements of clinical governance, consent, audit or research

NHS England



**Clinical Commissioning Policy:
Occipital Nerve Stimulation for
Adults with Intractable Chronic
Migraines and Medically Refractory
Chronic Cluster Headaches.**

Reference: NHSEngland D08/P/c

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Published July 2015

Funding Occipital Nerve Stimulation

NHS England *will routinely fund* Occipital Nerve Stimulation for patients with *Chronic Migraine* and *Cluster Headaches* as long as strict criteria and governance measures as outlined in the policy are met.

NHS England Clinical Commissioning Policy

ONS is commissioned for adults more than 18 years who meet
criteria A or B as indicated below

ONS in CCH: Commissioning Criteria

Criteria A

☐ Chronic cluster headache diagnosis ICHD-IIIbeta 2013 for at least 2 years confirmed by a headache specialist

AND

- Failure to respond to the following treatment
 - Pharmacological treatment (4 out of following 5 classes)
 - ☐ Verapamil
 - ☐ Lithium
 - ☐ Methysergide
 - ☐ Topiramate
 - ☐ Sodium Valproate
 - ☐ Gabapentin

Criteria B

In All Patients

- ☐ Medication Overuse Headache (MOH) is excluded or treated
- ☐ Patient is able to engage in self-management strategies supported by MDT specialised in Headaches

ONS in Migraine: Commissioning Criteria

Criteria A ☐ Chronic migraine diagnosis ICHD-IIIbeta 2013; confirmed by a headache specialist

AND

- Patients with CM diagnosis need to fulfill the following
 - Pharmacological treatment (4 out of following 5 classes)
 - ☐ Beta-blockers
 - ☐ Anticonvulsants,
 - ☐ TCA,
 - ☐ Serotonergic modulators,
 - ☐ Angiotensin receptor inhibitors (NICE CG 150, 2012)
 - ☐ Failure to respond to acupuncture (NICE CG 150, 2012)
 - ☐ Failure to respond to cranial Botox (NICE TA 260)

Criteria B **In All Patients**

- ☐ Medication Overuse Headache (MOH) is excluded or treated
- ☐ Patient is able to engage in self-management strategies supported by MDT specialised in Headaches

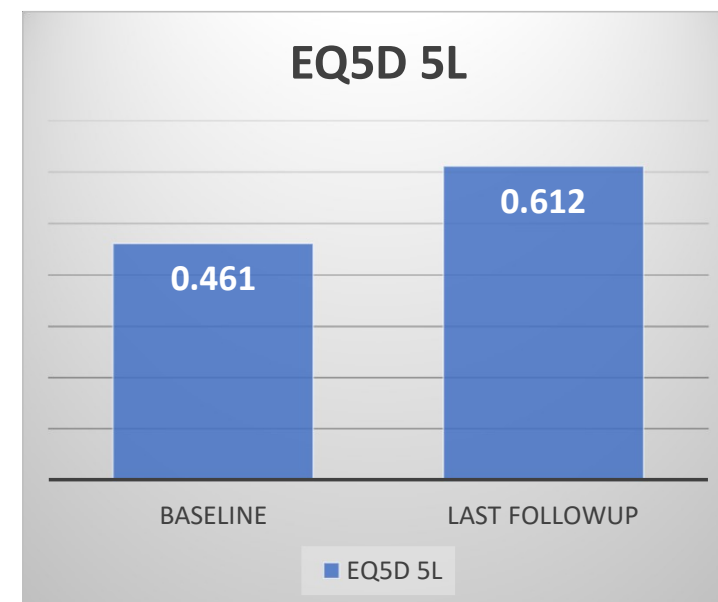
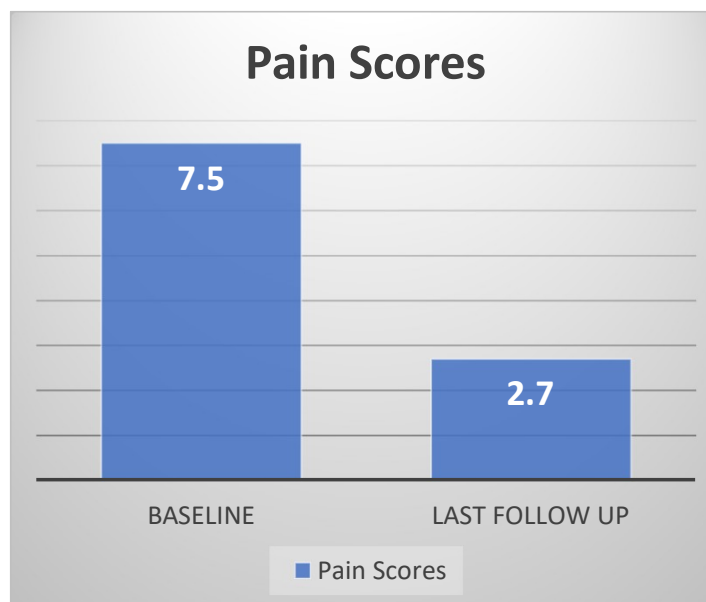
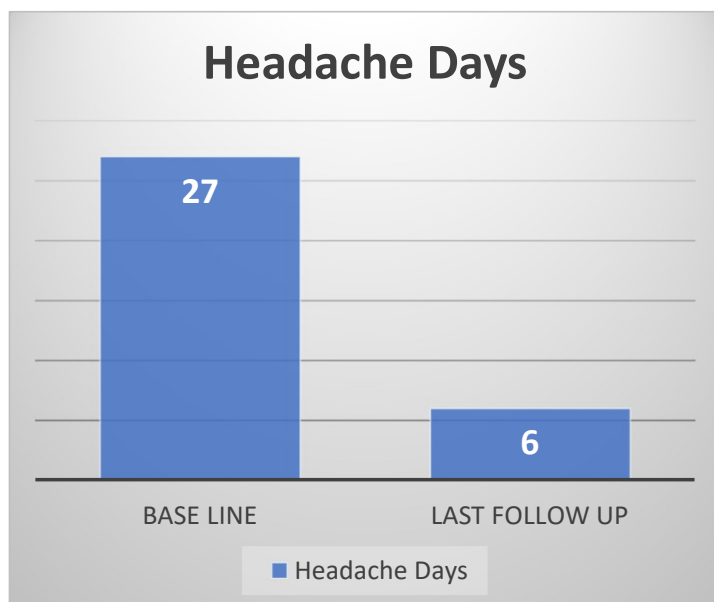
Patient Pathway

- Diagnosis, Investigations, pharmacological management and Botox if applicable done by Headache Neurologist
- Tertiary Pain Referral Centre: Occipital Nerve Blocks, PENS → Headache MDT for ONS assessment
- MDT comprising of:
 - Headache neurologist
 - Interventional Pain Specialist +/- Neurosurgeon
 - Pain Psychologist
 - Specialist Neuromodulation Nurse
 - Neuromodulation Fellow / Neurology Trainee

ONS Personal Experience

- A single-site, retrospective chart review
- 25 patients implanted with an AnkerStim™ Occipital Nerve Stimulator system between 2018 and 2024
- Mean follow-up: 45 months (range 2-92 months)
- Diagnoses
 - Cluster headache (n=14)
 - Migraine (n=6)
 - Hemiplegic migraine (n=3)
 - Occipital neuralgia (n=1)
 - Paroxysmal hemicrania (n=1)

ONS Personal Experience



88% patients had >50% reduction in headache days per month
11/25 patients reported <5 headache days per month

ONS Personal Experience

- HIT-6 improved from 69.6 ± 5.5 to 57.1 ± 11

Medication Use:

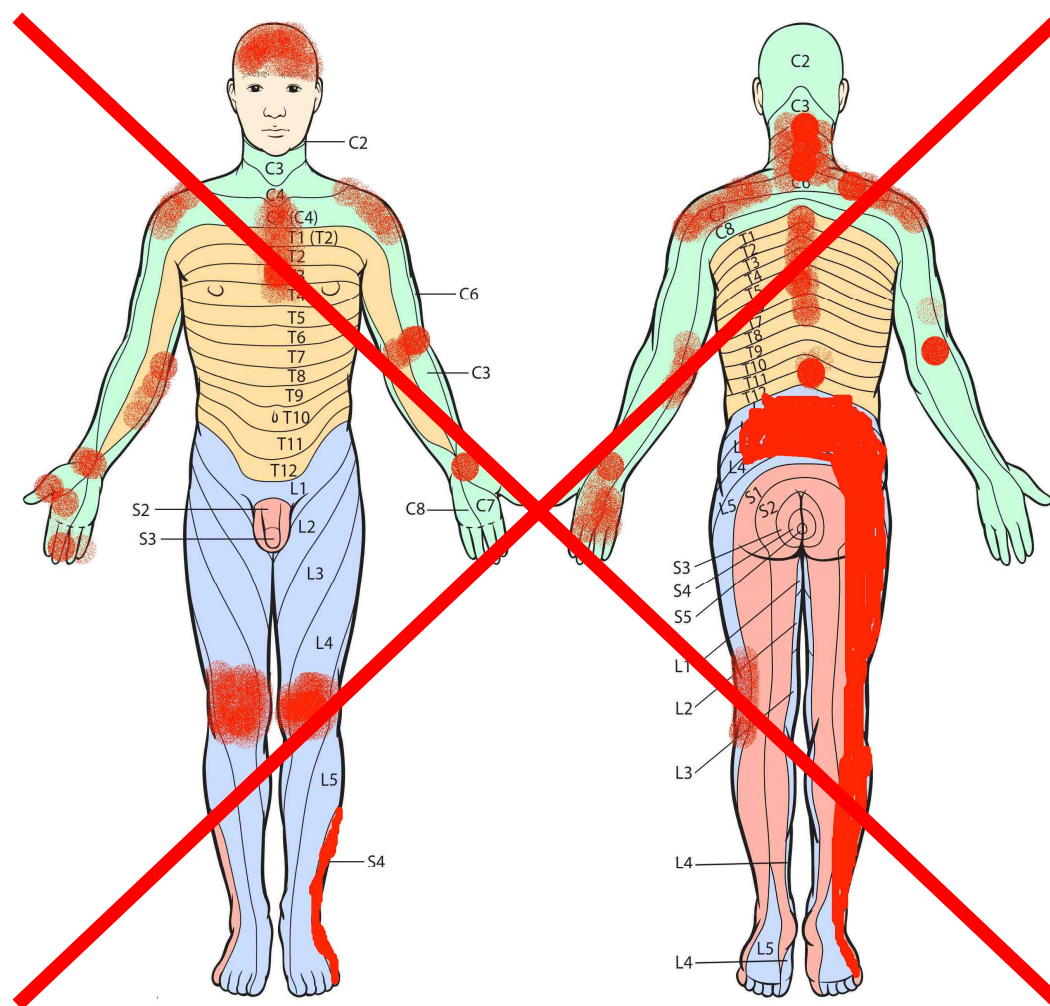
- None of the patients increased the medication
- 8 patients decreased
- 3 patients had no change in medication consumption
- 2 out of 3 patients using oxygen for cluster headaches discontinued its use

Summary Results

- Six patients were explanted
- 5: Lack of response
- 1: Infection
- 2: Do not use it due to lack of efficacy
- 1: Death due to brain tumour 3 years after implant

Diagnosis	Non-responders
Cluster Headache	2 out of 14
Migraines	2 out of 6
Hemiplegic Migraine	1 out of 3
Paroxysmal Hemicrania	1 out of 1

Patient Profile



Key to Long-term Success

Which patients do better?

Pure Cluster / Migraine Headache or other TACs

Migraines with visual / sensory aura

Cutaneous allodynia / hyperalgesia

No other co-morbid pain conditions

Low depression score on HAD

No psychological overlay

No opioids

Lepus A et al. Long-term efficacy of occipital nerve stimulation for medically intractable cluster headache. Neurosurgery. 2021 Jan 13;88(2):375-83.

Key to Long-term Success

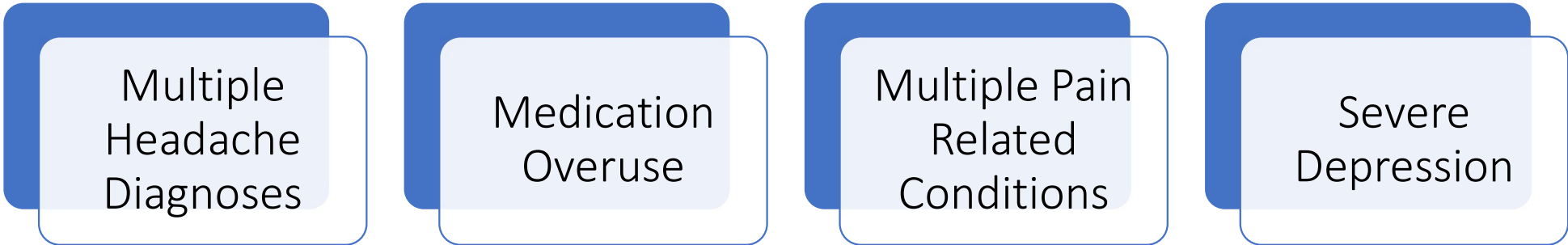
Which patients do better?

Minimal dosages & classes of medications

In employment despite the headache

Leplus A et al. Long-term efficacy of occipital nerve stimulation for medically intractable cluster headache. Neurosurgery. 2021 Jan 13;88(2):375-83.

Poor ONS Outcomes



Multiple
Headache
Diagnoses

Medication
Overuse

Multiple Pain
Related
Conditions

Severe
Depression

Doesn't matter

ONS Outcomes are not affected by

- Age, gender, obesity
- Anxiety as measured on HAD
- Professional status
- Duration of headache
- Number of headache days per month
- MIDAS / HIT / EQ5D score

Leplus A et al. Long-term efficacy of occipital nerve stimulation for medically intractable cluster headache. Neurosurgery. 2021 Jan 13;88(2):375-83.

Thank you