The use of TENs in the overactive bladder

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How TENS works in pain

• TENS works by producing electrical impulses that travel along the same nerve pathway as your pain.
• These impulses interfere with the pain message getting to the brain and override the pain sensation
Idiopathic Overactive Bladder (OAB)

- Urinary frequency, urgency with or without day and nighttime wetting.

- Anti-cholinergic medications; first line treatment of choice.

- Bladder re-training.

- Electrical stimulation now an alternative therapy to treat OAB.
Why do we think it works on OAB?

The mechanics of electrical stimulation for OAB seems far from being established.

- Electrical stimulation acts on the muscle fibres and the reflexes.
- Activation of the sympathetic nerves (store) and the inhibition of the parasympathetic nerves (pee) may have a role to play.
- This would relax the bladder and inhibit detrusor overactivity.
Another thought

Sustained sacral root stimulation may reorganise the human brain and its ability to excite the motor cortex and as a result modulate LUT function.

Para-sacral transcutaneous electrical stimulation (TENS) for overactive bladder (OAB)

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Levels of principal dermatomes

- **C5**: Clavicles
- **C5, 6, 7**: Lateral parts of upper limbs
- **C8, T1**: Medial sides of upper limbs, Thumb
- **C6, 7, 8**: Hand
- **C8**: Ring and little fingers
- **T4**: Level of nipples

**T10**: Level of umbilicus
- **T12**: Inguinal or groin region
- **L1, 2, 3, 4**: Anterior and inner surfaces of lower limbs
- **L4, 5, S1**: Foot
- **L4**: Medial side of great toe
- **S1, 2, L5**: Posterior and outer surfaces of lower limbs
- **S1**: Lateral margin of foot and little toe
- **S2, 3, 4**: Perineum
How long do we use it for?

- Every night for 12 weeks.
- 2 hours a day.
- Pulse width 170.
- Pulse rate 80-100.
- Mode N.
How we start?

• Bring them into the ward.

• Mini bladder assessment/update.

• Show family how to use TENS (machine given to family to keep)

• Place pads on child and demonstrate to the child how to use machine.
Nottingham Study

So far we have seen

• Girls x 20
• Boys x 4

Age

• Girls 9-14 years; mean age 11.1 years
• Boys 7-10 years; mean age 8.5 years
Previous UTIs

- Girls 2/20 - had previous UTIs.
- Boys - none.
- 2 x girls had a UTI when they started on TENS.
- None of the children had Botox
- Bio-feedback girls x 8
Continued

• Urodynamics x 10 all girls of which 6 of them went onto have bio-feedback.

• Medication used in 22 at start of treatment.
To Summarise

- 6/24 Dry
- 11/24 Improved
- 6/24 No improvement (2 need additional treatment - Botox)
- 1 didn’t like the sensation of the TENS
References

• Outcome of Treatment with Transcutaneous Electrical Nerve Stimulation (TENS) for Paediatric Bladder Over activity Arch Dis Child 2014;99:A168-A169 doi:10.1136/archdischild-2014-306237.385


