

# Pain relief: A practical guide to obstetric TENS machines

By Sally Price

Sally Price RM, BSc NNEB is Practice Development Midwife at North Bristol NHS Trust

Most midwives working in today's maternity services will be familiar with transcutaneous electrical nerve stimulation (TENS) as a form of pain management in labour. Many maternity units provide this facility, but it is also likely that women may hire a TENS machine to use before they are admitted to hospital or for a home birth. Midwives may encounter a range of TENS machines, each with their own distinctive features. This article will examine some of the TENS machines currently available for hire and discuss the implications for practice.

## Background

The TENS machine has been described as a portable hand-held box containing a battery-powered generator which transmits electrical pulses. A low voltage electrical current is transmitted to the skin using surface electrodes covered in contact gel, resulting in a tingling sensation (Hawkins, 1994). By positioning the surface electrodes at T10-L1 and S2-S4 levels of the spinal cord, stimulation can be provided to address the pain of both the first and second stages of labour.

Women are able to modify the level of electrical pulses to suit their own requirements. A boost button is available to increase both the intensity and frequency of the stimulation during a contraction.

TENS machines are believed to work in two ways:

- Based on Melzack and Wall's gate theory of pain (1988), TENS is thought to stimulate nerve pathways, decreasing the ability of transmission cells to carry messages of pain to the brain.
- TENS stimulates the release of endorphins from the brain which have a pain-relieving action.

The main advantages of TENS machines are that women are firmly in control, able to

move freely and remain mobile, and can use other forms of pain relief in addition to TENS if necessary. Critics would argue that there is no evidence to support the use of TENS as an effective form of pain relief. Indeed, a systematic review of randomized controlled trials suggests that it has no significant effect on pain in labour (Carroll et al, 1997). However, as Coates (2000) rightly points out, this ignores the views of women who use TENS. A study of over 10 000 women evaluating their views after experiencing TENS in labour, found favourable reports of satisfaction, with 91% of respondents stating that they would use TENS again (Johnson, 1997). Perhaps it would be more appropriate to view TENS not as a form of pain relief, but as a method for women to self-manage their pain.

## Hiring a TENS machine

For women who choose to manage their pain with TENS, the optimal time to commence use is in early labour, before hospital admission. This early use will promote the cumulative effect of endorphins, building up the body's pain tolerance levels. Women will require easy access to a TENS machine to gain maximum benefit. Many women choose to borrow or hire a machine from their local maternity unit from about 37 weeks of pregnancy. In some areas this service may be so popular that demand outstrips availability. This may result in women hiring TENS machines from other sources.

The Obstetric Pulsar TENS machine is available to hire direct from Spemby Medical, at a cost of £26.99 for 5 weeks. The hire period can be extended at no extra cost if the baby is overdue.

The hired machine is supplied with four self-adhering electrodes, although should maternity units wish to purchase this machine, reusable rubber electrodes are available. The Pulsar TENS machine is dual channelled, allowing each pair of electrodes

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to be individually adjusted in terms of frequency and power, in response to the site and degree of pain. A separate boost button is available to give a 10% lift in power for extra pain relief during a contraction.

BabiTENS by Rehabicare UK Ltd is available to hire direct, or through Boots at a cost of £27.50 for a month. It is available from 3 weeks before the EDD, and should the baby not be born within the hire period, this can be extended free of charge. BabiTENS has four self-adhesive electrode pads, and a hand-held boost button, separate to the pocket-sized generator box. The rate control or frequency of the pulse can be adjusted, giving a faster or slower pulse. The width control, which operates the duration of the pulse, can also be adjusted to give an increased area of deeper stimulation. The instruction leaflet for users is comprehensive. Particularly useful is the table that indicates some possible causes and solutions to potential problems.

The Freedom TeNS unit by Shire Design is available to hire from Lloyds Pharmacy at a cost of £27.50 for 6 weeks. The hire package includes the TENS hand-held unit, two self-adhesive transvertebral electrodes, instructions for use and an information video. The Freedom unit has an interesting feature, making it different to other types of machine, by having one integral control panel. It is small and comfortable to hold in the hand, avoiding the need for a separate generator box and boost button. Women may view this as advantageous, since there is less equipment for them to manage. By having only two transvertebral pads, the pulse rate cannot differ between the T10-L1 and S2-S4 levels. Very tall women may find two pads are not sufficient to achieve the coverage they require.

### Implications for midwives

Midwives may, on their own responsibility, manage pain relief in labour by the use of TENS, providing they have received adequate and appropriate instruction, and safety standards conform to those laid down by the Department of Health (UKCC, 1991).

All TENS machines should conform to British Standard 5724. If midwives are to advise women appropriately, it is important that they familiarise themselves not only with the evidence base on the use and effectiveness of TENS machines, but also

the different types available. This is particularly important in areas where women are hiring TENS machines of a type that the midwife is unfamiliar with.

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What is perhaps more relevant is for midwives to inform women of the need to ensure that electrodes are correctly applied. Incorrect application may reduce the effectiveness of the TENS machine (Coates, 1998). Each of the hire services mentioned above provide written information, with Freedom and Pulsar supplying a video, but this may not be a substitute for the professional expertise of the midwife.

Should midwives have concerns about the safety of a particular TENS machine, either one that the client has hired, or one provided by the maternity unit, they should immediately advise discontinuation of use. If possible, the midwife may offer a substitute machine.

### Conclusion

TENS machines are widely available and commonly used by women in labour. This article examines three types of TENS machine that are offered for hire, but midwives may wish to research what is available within their own areas of practice. Given the variety of machines, it is essential that midwives become familiar with different types and their functions, if they are to give appropriate advice, and assist women to use TENS machines to their maximum effect. BJM

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