

Use of Trans-cutaneous Electric Nerve Stimulation (TENS) can alleviate labour pain and delay the use of neuraxial analgesia

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Madam, labour pain is perhaps the most severe pain that a woman experiences in her lifetime.¹ During the process of labour, it is important to relieve pain in order to minimize the harmful effects associated with it, such as increased oxygen consumption and hyperventilation which may lead to respiratory alkalosis and hypocarbia.¹ Moreover, activation of the autonomic nervous system may result in increased peripheral vascular resistance, blood pressure and cardiac output which may lead to diminished placental perfusion.^{1,2} The most common and effective method for labour pain relief is neuraxial analgesia, but is expensive and associated with numerous adverse effects including pyrexia, itching, maternal hypotension, prolonged labour, diminished placental perfusion and decreased foetal heart rate.^{1,2} Non pharmacological pain management on the other hand is associated with minimum contraindications and can delay the use of pharmacological pain management and its associated side effects.¹ One of the non pharmacological pain management options is the "Trans-cutaneous Electric Nerve Stimulation" (TENS), for which pregnancy was once thought to be a relative contraindication,³ but now is commonly employed for relieving labour pain in European countries.¹ Recent studies have shown no harmful effects of TENS on both mother and foetus.^{1,4} TENS can be used in the active phase of first stage of labour by placing two pair of electrodes laterally on both sides of spine at the level of T10-L1 and S2-S4, as nociceptive information from uterus, perineum and birth canal is received at these spinal levels.¹ The suggested settings that can be used is a high frequency (100Hz), modified biphasic asymmetric pulse current with a pulse width of 100 μ s,¹ causing an effect known as electro-analgesia, which is proven to be a potent method for pain relief.⁵ The intensity however can be altered depending on the individual response. A study published recently in 2016 showed a significant difference

in pain levels for parturients receiving TENS and the ones not receiving TENS. On an average participants requested neuraxial analgesia 7 \pm 1.7 hours after the termination of TENS, which was on average 5.1 hours greater than the parturients not receiving TENS.¹ Another study published in 2017 conducted on 1041 women experienced excellent pain relief with the use of TENS to manage pain during the first and second stage of labour.⁶ In Pakistan TENS is commonly applied by physical therapists in alleviating pain of neuromuscular and musculoskeletal origin, however is not practiced for managing pain during labour. Based on the positive effects of TENS in managing pain during labour without any adverse effects, as well as postponing the need of pharmacological analgesia, it is recommended that TENS should also be used in Pakistan as well for the mentioned purpose.

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References

1. Santana LS, Gallo RBS, Ferreira CH, Duarte G, Quintana SM, Marcolin AC. Transcutaneous electrical nerve stimulation (TENS) reduces pain and postpones the need for pharmacological analgesia during labour: a randomised trial. *J physiother.* 2016; 62: 29-34.
2. Reynolds F. Labour analgesia and the baby: good news is no news. *Int J obstet anesth.* 2011; 20: 38-50.
3. Khatri SM. *Basics of Electrotherapy.* 2nd ed: Jaypee; 2012; pp 175.
4. Dowswell T, Neilson JP, Lavender T. Transcutaneous electrical nerve stimulation (TENS) for pain relief in labour. *Cochrane Database Syst Rev.* 2009, DOI: 10.1002/14651858.CD007214 pub2.
5. MacDonald AJ, Coates TW. The discovery of transcutaneous spinal electroanalgesia and its relief of chronic pain. *Physiotherapy.* 1995; 81: 653-61.
6. Veyilmuthu R, Govindan S, Venugopalan M, Panicker S. Effect of transcutaneous electrical nerve stimulation on labour pain relief among primigravida and multigravida mothers. *Int J Reprod Contracept Obstet Gynecol.* 2017; 6: 980-5.

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