TENS vs. Opioid analgesics for Chronic Pain

Examples

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Brand Name</th>
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<th>Brand Name</th>
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</thead>
<tbody>
<tr>
<td>buprenorphine</td>
<td>Buprenex</td>
<td>TENS</td>
<td>Interferential Current</td>
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<tr>
<td>butorphanol</td>
<td>Stadol</td>
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<td>codeine</td>
<td>Tylenol with codeine</td>
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<td>fentanyl</td>
<td>Duragesic</td>
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<td>hydrocodone</td>
<td>Vicodin</td>
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<td>hydromorphone</td>
<td>Dilaudid</td>
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<td>methadone</td>
<td>Dolophine</td>
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<td>morphine</td>
<td>Astramorph</td>
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<td>oxycodone</td>
<td>OxyContin</td>
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<td>propoxyphene</td>
<td>Darvon</td>
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How Opioids Work
Opioid analgesics suppress your perception of pain and calm your emotional response to pain by reducing the number of pain signals sent by the nervous system and the brain’s reaction to those pain signals.

TENS
*The gate control theory states that small-diameter, slow-conducting, nociceptive nerve fibers that have little or no myelin (A-delta, C fibers) transmit painful stimuli to the spinal cord where they are then transmitted to the brain. The activity of these fibers can be inhibited by large-diameter, fast-conducting, highly myelinated proprioceptive sensory nerve fibers (A-beta fibers). Electrical stimulation may diminish the sensation of pain by increasing the activation of the A-beta fibers, thereby reducing the transmission of pain to the spinal cord. The opiate-mediated control theory is based on the presence of natural opiates in the body. These opiates, which act as the body’s natural pain suppressor, are produced in the pituitary gland as beta-endorphins and in the spinal cord as enkephalins. Stimulation of the sensory nerves promotes the release of these opiates. These endorphins then bind to specific receptor sites in the central and*
Peripheral nervous system where they block the perception of pain. It is most likely that what is occurring is a combination of these theories, with perhaps one being more prevalent than the other depending on which method, and the exact settings of the electrical stimulation, that is applied.

**Why Opioids Are Used**
Opioids are used to reduce moderate to severe chronic pain.

**TENS**
May be used to control several different types of pain including acute, chronic, phantom limb, postoperative, obstetric, cardiopulmonary, and neurological pain. TENS may also be effective for use during potentially painful treatments such as wound debridement by increasing one's pain threshold.

**How Well Opioids Work**
Opioids are effective in relieving moderate to severe chronic pain. Higher doses may work better, but higher doses also can cause more side effects. If one opioid does not reduce your pain, your doctor may prescribe a different opioid to treat your chronic pain. There is a low risk of addiction if you take opioids routinely as prescribed. Your risk of addiction is slightly greater if you have a history of substance abuse.

**TENS**
TENS, administered with a strong, subnoxious intensity at an adequate frequency in the wound area, can significantly reduce analgesic consumption for postoperative pain.

**Opioid Side Effects**
Opioids may often cause side effects such as:
- Constipation
- Drowsiness
- Dizziness
- Weakness
- Dry mouth
- Sedation
- Confusion
- Difficulty urinating

More serious side effects can include allergic reaction, such as swelling of the throat, a drop in blood pressure, seizures, tremors, or hallucinations.

**TENS**
Electrical stimulation in general has been found to have relatively few contraindications or side effects, which include the following: demand-type pacemakers,
application over the carotid sinus, and pregnancy or rare allergic reactions to the electrodes (hypoallergenic electrodes are available).

**Things to Consider if You Take Opioids**

In some cases, more than one type of opioid medicine may be prescribed to relieve pain without increasing the individual dose. Many combinations of opioids with non-opioids have been effective, such as combining opioids with aspirin or acetaminophen.

*You may become physically dependent on opioids if you take them regularly.* Physical dependence is not addiction but it is a gradual change in your body in response to the opioids. If you stop taking opioids abruptly, you may develop nausea, sweating, chills, diarrhea, and shaking. The physical dependence and withdrawal symptoms are not life-threatening. You can avoid withdrawal symptoms if you gradually stop taking the opioids over a set period of time, as prescribed by your doctor.

Opioid analgesics are potentially addictive, but the risk is small when they are properly prescribed and taken by people who do not have a history of substance abuse. In the past, opioids were used only for short periods for short-term pain or for cancer pain. Many experts now also use opioids for longer periods to treat chronic pain. You can take opioids to reduce pain and increase your functioning without becoming addicted to them.

If you are about to begin a long-term course of opioids, increase the amount of fiber in your diet and drink more water. This will help you avoid constipation. Also talk to your doctor about whether you should take a stool softener or laxative.

**TENS**

*Sensory level TENS is the most commonly used method; hence it is often referred to as conventional TENS.* This method is considered to work via the gate control mechanism. 

Conventional TENS is typically used during the acute stages of an injury, but it may also be used for controlling chronic pain. Pain relief is typically expected within 5 minutes of initiation.

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