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# Surgical management of pain

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Pain is transmitted from the periphery in a code which is translated in the central nervous system. This message moves along a complex system of relay stations; peripheral nerve endings are responsible for pain perception. Pain fibres, fast A-delta and slow C fibres carry the message to the spinal cord. Sensations are carried to the central nervous system through the dorsal column and the anterolateral tracts of the spinal cord. Gating takes place at the level of the substantia gelatinosa. Spinal ascending pathways include oligosynaptic systems like the spinotectal, spinoreticular and spinothalamic pathways. They form the spinothalamic tract. Multisynaptic systems like the spinal reticular core and Lissauer's. Higher impulses to thalamic nuclei. Higher projections reach the cerebral cortex. Downstream descending control mechanisms exist at all levels coming from the cortex, diencephalon, brainstem. Inhibition takes place through activation of the endogenous opiate mechanism.

Pain can be classified according to its source and localization:- Visceral pain, mainly transmitted through sympathetic nervous system, the cardiac and splanchnic. Deep somatic pain from proprioceptors. Different types. Disorder of the perception of pain including hyperalgesia, neuralgia, central pain like neuralgias and the thalamic syndrome. Psychological pain which should be excluded and treated. The clinical classification of pain includes: 1. Acute pain such as postoperative pain. 2. Chronic pain such as neuralgias, phantom limb pain, rheumatic pain and the intractable pain of malignant diseases.

Management of pain:- (1) Medical Treatment:- This includes different analgesic drugs and their adjuvants:- a) Mild non-addictive drugs. This includes analgesics with anti-pyretic and anti-inflammatory effects. The application of these drugs is for the control of low intensity pain and discomfort arising from certain structures such as headaches, arthralgias, myalgias. The main example of this group of drugs is paracetamol. b) Narcotic analgesics. These drugs cause addiction. The best example of this group is morphine. They are used to relieve severe pain. In chronic pain conditions they are better avoided because of the danger of addiction. Their use should be restricted to intractable pain conditions in patients having a short expectation of life. Among these drugs are pethidine. They may suffer from agitation, anxiety, depression and painful muscle spasms. They include tricyclic antidepressants, monoamine oxidase inhibitors, tranquilizers, hypnotics and muscle relaxants if needed. (2) Regional blocks

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They may be performed using local analgesic agents, which produce reversible block, to control acute postoperative pain or as diagnostic and prognostic. Neurolytic solutions cause destruction of nerve fibres. They are used mainly to relieve pain caused by inoperable neoplasms. These solutions include:

- Absolute alcohol used intrathecally for malignant pain.
- Phenol used in 5 - 10% solution in glycerine.
- Chlorocresol used as 2% solution in glycerine.

There are several forms of local blocks:

- 1 - Local infiltration by injecting 0.25% lignocaine or 0.5% Bupivacaine into the painful tissues to treat surgical incisions.
- 2 - Injection of autonomic nerves and ganglia. These are used in pain caused by sympathetic pathways, like vascular disorders of the limbs, cardiac and cancer pain. These techniques include:
  - Stellate ganglion block
  - Lumbar sympathetic block