

Pain of Labor and Delivery



Pain Score of Labor Pain 83

Labor and delivery are complex processes resulting in the expulsion of the fetus and placenta from the mother. The cause of the onset of labor is unknown. Factors such as increased prostaglandin production, an increase in oxytocin receptors, and increased myometrial gap junction formation have been postulated as the causes of onset of labor.^{1,2} The labor and delivery process has been divided into three specific stages.

1. *The first stage starts from the start of regular uterine contractions (progressive cervical dilatation associated with regular uterine contraction) until the completion of cervical dilatation. It is commonly divided into a latent phase and an active phase, the latter being characterized by a rapid acceleration of cervical dilatation.*
2. *The second stage starts from full dilatation of the cervix until the delivery of the infant.*
3. *The third stage starts from delivery of the infant until the time of expulsion of the placenta.*

The distinction of labor into various stages is important to anesthesiologists because the pain impulses follow different pathways during each stage of labor. Labor pain has a visceral component and a somatic component. Uterine contractions may result in myometrial ischemia resulting in the release of potassium, bradykinin, histamine, and serotonin. In addition, mechanoreceptors are also stimulated by the stretching and distention of the lower segments of the uterus and the cervix.³ Pain during the first stage of labor is mediated through the afferent nerves supply of the uterus via sympathetic nerve, which ultimately reach the T10–L1 segments of the spinal cord. The first stage of labor pain has been described as referred pain to the back and anterior abdominal wall. This is because the lower back and anterior abdominal wall are innervated by the same spinal segments that receive pain impulses from the uterus.

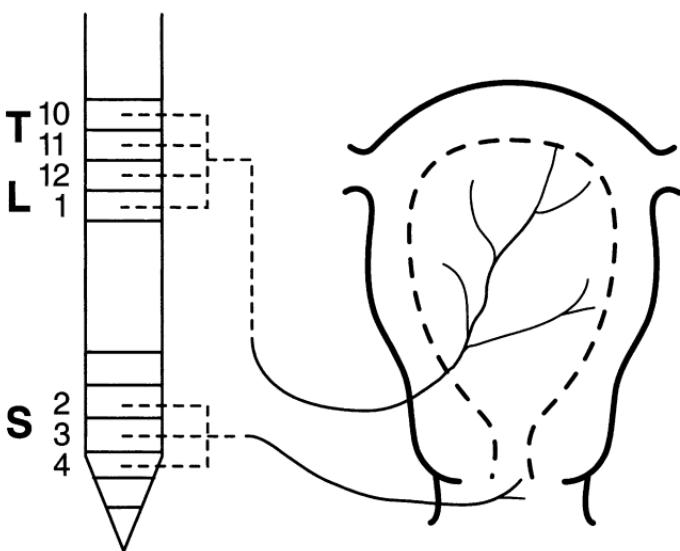


Figure 6-1. Pain pathways for the first and second stages of labor.

(Fig. 6-1). The nerves from the uterus together with other autonomic nerve fibers from the cervix form the inferior hypogastric plexus; fibers from this plexus traverse along the iliac vessels as the right and left hypogastric nerves. These nerves ultimately communicate with the superior hypogastric nerve and reach the sympathetic chain either directly or via the aortic plexus. These finally reach the spinal cord via the posterior nerve root ganglion. Some of the nerve fibers from the ovary, uterine ligaments, and fallopian tubes travel via ovarian nerves and ultimately reach the spinal cord via the aortic plexus and sympathetic chain. The nerves in the spinal cord relay to neurons of the posterior horn cells and ultimately reach the central nervous system via the lateral spinothalamic tract.

Pain during the second stage of labor follows a different pathway from the first stage of labor. Pain for the second stage of labor is carried by the pudendal nerve (S2, S3, S4). This nerve originates from the sacral plexus and accompanies the pudendal vessels and crosses the ischial spine to innervate the

perineum and the vagina. The nerve is easily accessible for local anesthetic block at the level of ischial spine.

Pain Score of Labor Pain

The McGill pain questionnaire ranks labor pain in the upper part of the pain scale between that of cancer pain and amputation of a digit (Fig. 6-2).⁴ The American College of Obstetricians and Gynecologists, in their committee opinion #118, summarize pain relief during childbirth as follows: "Labor results in severe pain for many women. There is no other circumstance where it is considered acceptable for a person to experience severe pain, amenable to safe intervention, while under a

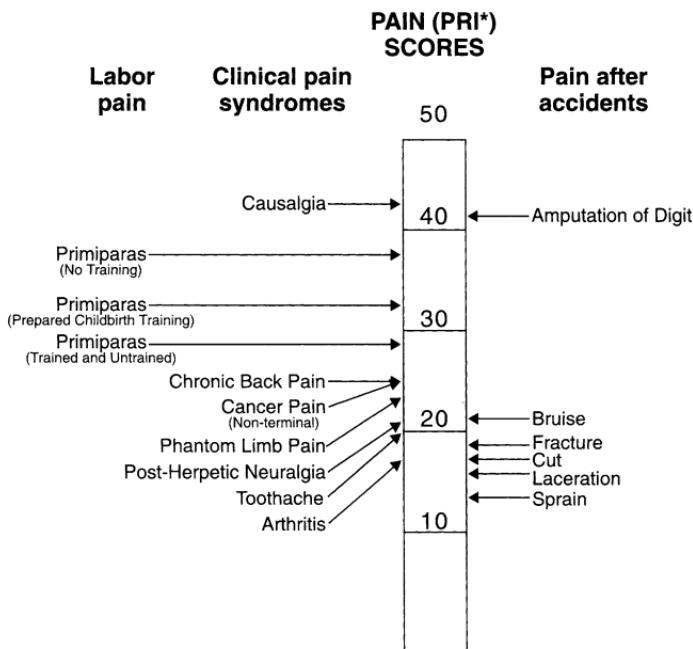


Figure 6-2. Comparison of pain scores by using the McGill pain questionnaire. (Adapted from Melzack.⁴)

physician's care. Maternal request is a sufficient justification for pain relief during labor.”⁵

References

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