



## Fetal Pain; Cry Under Water

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Received 2022 September 07; Accepted 2022 September 17.

**Keywords:** Pregnancy, Pain, Fetal Pain

### Dear Editor,

Pain is an unpleasant sensory experience associated with actual or potential tissue damage generated from neural signals (1). Pain is the product of higher brain center processing. Reports of pain are not only a direct result of nociception but also involve interactions with numerous other factors, such as attention, affective dimensions, and autonomic or immune variables that can be more accurately depicted from a neuromatrix perspective (2).

The human body feels pain. Due to limitations of direct measuring of pain in fetuses, it is essential to elucidate the timeline of the development of pain perception. The thalamocortical pathway development is needed to produce a conscious perception of pain in a fetus. This path typically develops around the 23rd to 30th weeks of gestation (3). Fetuses are known to respond to external stimuli such as light, noise, or tactile impulses (4). Even fetal expressions of crying have been registered.

Although the typical hormonal stress response to pain is observed in fetuses after a painful intervention at 16 - 25 weeks of gestation, the hemodynamic responses and behavioral reactions to nociceptive stimuli coincide at around 26 weeks of gestation (5, 6). In invasive intrauterine procedures like in utero blood transfusion, it was identified that when the intrahepatic vein was used, the nociceptors were activated with a dramatic increase in cortisol, adrenalin, and beta-endorphins levels. However, with prior administration of fentanyl to the fetus, the increase in stress hormones was lower (7). During surgery, the fetus may respond to pain with bradycardia, but more research is needed to assess the actual fetal pain markers. Therefore, providing appropriate analgesia before fetal surgeries or invasive procedures is essential, and adverse effects on either fetuses or mothers due to fetal analgesia were rarely reported.

Also, in induced termination of pregnancy that takes hours or days, the non-viable live fetus may encounter severe distress due to uterus contractions and hypoxia, and there is no evidence of measuring pain and distress in them. Therefore, it may be reasonable to reduce the live fetus before induced termination of pregnancy.

In addition to the risk of long-term consequences of pain on the development of the fetal brain, the possibility of sudden movements induced by pain may distract the surgeon (8). Aside from medical indications, ethical and moral issues are also important. A fetus experiences pain without being able to express it verbally. We used the term cry under water in these cases to show how distressed and uncomfortable these fetuses are. Therefore, it seems that in the case of fetal surgeries, the use of analgesia to the extent of the dose that sedates the fetus without adverse effects must be recommended, and in cases of induced termination of pregnancy, reduce seems to be an effective method to reduce the pain and distress of the fetus.

### Footnotes

**Authors' Contribution:** Study concept and design: S.H. and M.G.; Drafting of the manuscript: M.G.; Critical revision of the manuscript for important intellectual content: E.G..

**Conflict of Interests:** Funding or research support: Employment: No; Personal financial interests: No; Stocks or shares in companies: No; Consultation fees: No; Patents: No; Personal or professional relations with organizations and individuals (parents and children, wife and husband, family relationships, etc.): No; Unpaid membership in a government or non-governmental organization: No; Are you one of the editorial board members or a reviewer of this journal? Yes.

**Data Reproducibility:** The dataset presented in the study is available on request from the corresponding author during submission or after publication.

**Funding/Support:** We did not receive any financial support.

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