

# Society for Maternal-Fetal Medicine Consult Series #59: The use of analgesia and anesthesia for maternal-fetal procedures: a reply



The Society for Maternal-Fetal Medicine, Publications Committee would like to thank Dr Thill for her interest in Consult Series #59: The use of analgesia and anesthesia for maternal-fetal procedures.<sup>1</sup> In that article, we applied the current understanding of the science of pain and neurodevelopment to provide guidance for providers caring for pregnant patients. In her letter, Dr Thill asserts that fetal responses to stimulation, including withdrawal and hormonal and hemodynamic responses, confirm that the fetus experiences pain as early as the first trimester. However, withdrawal is a subcortical reflex response, possible in the absence of a somatosensory cortex, whereas pain is defined as a sensory and emotional experience that requires a functional cortex. Subcortical neural activity associated with noxious stimulation does not indicate that pain has been perceived; it is appropriately described as nociception, or a protective reflex response to such stimulation. In her letter, Dr Thill discusses neonatal pain assessment tools, but neonatal and fetal responses are likely to be different, and again, even a neonatal (or later) response to stimulation does not confirm a sensory and emotional experience of pain. As discussed in the Consult, responses such as facial expressions, withdrawal, and hemodynamic changes are reflexes, and the presence of these reflexes does not equate with an experience of stimuli as painful. Instead, when tissue is injured, nociceptive pathways trigger protective behaviors including reflex movements mediated by motor circuits in the spinal cord and the brainstem. At the same time, the brainstem and the hypothalamic circuits are activated, which affects the cardiovascular, respiratory, and endocrine systems. These are subcortical reflex responses. For tissue injury to lead to a perception of pain, high-level cortical processing is needed for the unique sensory and emotional qualities that characterize pain and suffering.<sup>2</sup>

In addition, Dr Thill cites Chatterjee et al<sup>3</sup> incorrectly; this guideline recommends the use of opioids for invasive fetal surgeries to blunt fetal reflex responses. The recommendation does not imply that the fetus experiences pain, but is based on the desire to attenuate both acute (hemodynamic responses, movement) and potentially long-term consequences of nociception in the developing fetus.<sup>3</sup> It is increasingly recognized that pain is a complex phenomenon that involves more than simple physical responses to external stimuli. Optimizing care for our patients involves an understanding of fetal development and maternal risks to balance the risks and benefits and to assure optimal outcomes. ■

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## REFERENCES

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