

Oxytocin and Birth Injuries

By Max Freeman

Oxytocin's misuse in the United States causes thousands injuries of babies. Oxytocin is the drug most commonly associated with preventable adverse perinatal outcomes.

The package insert lists permanent CNS or brain damage and fetal death as adverse reactions to a baby whose mom receives Oxytocin during labor.

Overdosage of Oxytocin depends on uterine hyperactivity. Hyperstimulation with strong or prolonged contractions can lead to uterine rupture, utero-placental hypoperfusion, and variable deceleration of fetal heart, fetal hypoxia, hypercapnea, or death.

Excessive uterine activity can manifest in many ways:

- **Contractions that are too long**
- **Contractions that are too strong**
- **Insufficient resting tone**
- **Insufficient resting time**

Excessive uterine activity from the use of Oxytocin can cause permanent neurologic injury to a child by three separate mechanisms, or a combination of the three.

- **Insufficient resting tone**
 - o Uterus does not relax enough between contractions
- **Excessive uterine activity**
 - o The use of Oxytocin can cause trauma and excessive molding to the child
- **Intra-Uterine pressure**
 - o Causes a corresponding increase in intra-cranial pressure

If nurses wait until there are changes in the fetal heart rate pattern to turn off the Oxytocin, it might be too late to avoid injury.

Hypoxic Ischemic Injury

If there is not sufficient resting tone between contractions to allow for re-oxygenation of the baby, the cumulative effect is hypoxia, and ultimately acidosis.

Trauma & Excessive Head Molding

Premature birth, difficult labors, and mechanical injuries to the head and neck are succeeded by an effect on the limbs of the child, which is spastic rigidity of the limbs.

Forces of labor are potentially dangerous to the fetus.

Trauma, uterine hyperstimulation, and compressive forces on the fetal skull have great possibility to injure the baby during labor and delivery.

One of the mechanisms by which abnormal forces of labor impact traumatic physical damage to the neonatal brain is through excessive head molding. Head molding during labor and delivery refers to the changes in the cranial bone relationships that occur in response to the comprehensive forces or uterine contractions.

Cranial molding can produce lesions on the fetal brain. Displacement of cranial bones is an obvious cause of subdural hemorrhage. Molding increases intracranial pressure. This decreases blood flow to the brain. Molding also depresses the venous sinus return and, decreases the blood flow to the brain. Excessive head molding from excessive forces of labor causes a decrease in blood flow to the fetal brain and also traumatic injury.

Fetal head molding is a phenomenon which may contribute to satisfactory progress during delivery as it allows the fetal head to accommodate to the geometry of the passage. In contrast, excessive head molding can result in cranial birth injuries.

Excessive molding can occur from the following:

- **Labor is prolonged**
- **When contractions are too forceful**
- **When there is a malposition of the fetal head**
- **Inept instrumental interference**

As the mother dilates, the pressure on the fetal head increases dramatically; as does the potential for excessive molding and injury.

More than 5 contractions in a 10-minute period are considered hyperstimulation.

The compression of the fetal skull can produce brain damage by one of three mechanics:

- **Increased pressure**
 - o The ensuing development of anoxia and asphyxia may damage the brain as well as the blood vessel walls, making them liable to rupture when exposed to hypertension
- **Severe compression**
 - o Can cause fracturing of the skull bone or laceration of underlying brain tissue
- **Stretching**
 - o The pulling and stretching of the tentorium may cause the falx to tear.

Hyperstimulation and Decreased in Cerebral Perfusion- Ischemia

Abnormal strength and/or frequency of contractions may cause devastating injury to a baby's brain even absent excessive molding and apart from the effect upon the placenta. An increase in intracranial pressure above the mean-arterial pressure results in a decrease in perfusion to the brain.

Compression of the fetal head by an externally applied force caused severe cerebral ischemia due to a marked reduction in cerebral blood flow. The obstruction to flow prevents well-oxygenated blood in the carotid artery from reaching the fetal brain.

Maternal pushing during the second stage of labor is associated with a significant decrease in fetal cerebral oxygenation. The concept of resting time between contractions is critical to keep a baby out of harm's way during parturition. If there are too many contractions, there will not be enough time for the baby to catch up on the oxygen necessary for the brain to survive.

Oxytocin is listed as a "High Alert" medication with potentially serious consequences if misused.