“All-fours Maneuver for Reducing Shoulder Dystocia During Labor” (1999), by Joseph P. Bruner, Susan B. Drummond, Anna L. Meenan, and Ina May Gaskin

By: O'Reilly, Megan Keywords: Gaskin maneuver all-fours maneuver shoulder dystocia

In 1999, Joseph Bruner, Susan B. Drummond, Anna L. Meenan, and Ina May Gaskin published, “All-fours Maneuver for Reducing Shoulder Dystocia During Labor,” in the medical journal, Obstetrical and Gynecological Survey. In the article, the authors described a birthing technique named the all-fours maneuver, or the Gaskin maneuver, and explained its effectiveness in treating fetal shoulder dystocia as compared to other maneuvers. Shoulder dystocia occurs when the neonate's head has exited the vaginal canal, but the shoulders get stuck behind the woman’s pelvic bone, which prevents the birth of the neonate’s body. Healthcare practitioners’ use of previous methods to dislodge the fetal shoulders sometimes resulted in fetal and maternal injury. The all-fours maneuver differed from previous methods by positioning the laboring woman on her hands and knees rather than on her back. Through the article, the authors established the all-fours maneuver as a safe, fast, and effective technique for reducing shoulder dystocia.

In “All-fours Maneuver for Reducing Shoulder Dystocia During Labor,” the authors assessed how different maneuvers used for shoulder dystocia affected health outcomes for both the pregnant woman and neonate. Many of the authors worked in maternal and fetal health in some capacity. Bruner was an obstetrician-gynecologist who practiced at the Vanderbilt University Medical Center in Nashville, Tennessee, and later in Odessa, Texas. Bruner wrote numerous articles about maternal-fetal surgery, premature delivery, and birth complications. Drummond was a nurse who specialized in obstetrics and gynecology at Vanderbilt University in Nashville, Tennessee, and published several articles about complications during pregnancy. Meenan was a physician who specialized in family medicine at the University of Illinois College of Medicine in Rockford, Illinois, and published several articles about labor pain and the management of shoulder dystocia. Gaskin was a midwife and founder of the Farm Midwifery Center in Summertown, Tennessee. She also published multiple books about midwifery, pregnancy, and breastfeeding.

Bruner and colleagues divide “All-fours Maneuver for Reducing Shoulder Dystocia During Labor,” into five parts. The authors begin by describing shoulder dystocia and an overview of the methods practitioners use to manage it. Then the authors review multiple cases of shoulder dystocia, including the details of infant weight, health outcome, and methodology. Next, the authors state that the Gaskin maneuver, hereafter the all-fours maneuver, is effective and safe for reducing shoulder dystocia when first detected. Bruner and colleagues then give a brief overview of neonatal injury as it relates to shoulder dystocia, followed by an analysis of the other maneuvers used to manage shoulder dystocia. The authors’ retrospective review of cases using the other maneuvers follows, along with each maneuver's respective neonatal and maternal injury rates. They then include a history of the all-fours maneuver, along with the associated injury rates. Additionally, the authors describe in what situation each technique would be most effective, but claim the all-fours maneuver as the safest option.

Bruner and his colleagues state that shoulder dystocia is a complication that can occur during pregnancy and can result in the death of the fetus or pregnant woman during the late stages of pregnancy, delivery, or the week after birth. The authors describe that one technique to resolve the complication is the all-fours maneuver. During the all-fours maneuver, the laboring woman moves onto her hands and knees to deliver the infant. The all-fours position differs from the standard lithotomy position, during which women lie on their back with their feet in raised stirrups. Women often use that position when laboring in hospitals. As the authors state, the scientific community is uncertain exactly how the all-fours maneuver resolves shoulder dystocia and some physicians advise against the technique altogether. However, the authors note that often the shoulder dislodges as the woman turns to be on all-fours, and once in the position, gravity can assist in further facilitating the infant’s birth.

In the first section of the article, the authors discuss the results of eighty-two cases during which midwives and physicians used the all-fours maneuver as the primary technique to manage shoulder dystocia during childbirth. They found that in 83 percent of the eighty-two shoulder dystocia cases reviewed in which the laboring woman used the all-fours maneuver, the woman fully gave birth to the neonate in the next contraction without any additional intervention from the healthcare practitioners. In twelve cases, physicians rotated the fetal shoulders to assist in the delivery. In two cases, the women delivered the neonate's arm facing the back of the woman before the shoulders, enabling her to deliver the rest of the neonate's body. Physicians did not use forceps or vacuum extraction in any of the cases, which are medical instruments physicians sometimes use when childbirth is not progressing during the pushing stage of labor. Those instruments can sometimes lead to maternal and fetal injury, including tears of the woman’s vagina, bruising or swelling of the neonate’s scalp and face, or bleeding in the neonate’s head.

The authors state that they used Apgar scores to measure the health of an infant immediately after birth to determine if they
needed to intervene with treatment. Practitioner’s assign an Apgar score to evaluate a newborn’s health, based on heart rate, breathing rate, reaction to stimuli, color, and muscle activity, to determine whether the infant needs medical intervention. Practitioners score neonates on a scale of ten, with Apgar scores below four indicating a neonate needs life-saving interventions. Bruner and colleagues found that only one newborn infant delivered using the all-fours maneuver had an Apgar score of less than six, meaning the infant was considered in moderate condition and likely needed further treatment. That means all but one infant was in healthy enough condition to need little or no medical assistance after birth. From their review, the authors concluded that the all-fours maneuver was safe and effective for reducing or resolving shoulder dystocia.

In the following section, Bruner and colleagues assert that no other technique used to resolve shoulder dystocia had resulted in as little neonatal injury as the all-fours maneuver. The authors describe another study in which a different group of researchers looked at the association between the number and order of maneuvers used to manage shoulder dystocia, and the associated maternal and fetal injury rates. Those researchers found that as more maneuvers were used, meaning that if one maneuver did not work the practitioner would then use an additional technique to resolve the shoulder dystocia, higher maternal and fetal injury resulted. Bruner and colleagues proceed to describe a variety of other techniques and methods used to resolve shoulder dystocia.

The authors then proceed to report on a retrospective review of cases from 1991 to 1995, observing the outcomes of the deliveries, based on the type and sequence of maneuvers used by the physician or midwife. The first group was composed of cases resolved by the use of the McRoberts maneuver, suprapubic pressure, or episiotomy, or combination of those. The McRoberts maneuver involves a physician releasing the neonate’s shoulder by moving the woman’s legs to her chest to further open the pelvis, whereas suprapubic pressure is when a physician pushes on the neonate from outside the womb. An episiotomy is an incision made between the vaginal opening and anus of the laboring woman, during childbirth to assist in the delivery of the neonate. The second group consisted of cases that required practitioners to use maneuvers that directly manipulated the neonate, such as the Zavanelli maneuver.

In the Zavanelli maneuver the practitioner replaces the head of the neonate back into the vaginal canal, by applying firm pressure to the head, and is followed by an immediate cesarean section, or surgical removal of the fetus through an incision in the abdomen and uterus of the pregnant woman. Due to the high-risk nature of the Zavanelli maneuver, practitioners use the technique as a last resort. The authors describe that 25 percent of neonates with shoulder dystocia had nerve injury or bone fracture, although the incidence of long-term injury after birth was low at 1.4 percent. The primary nerve injury of the neonates was to the brachial plexus, which extends from the neck to the arm, and occurred regardless of which maneuver was used.

Bruner and colleagues found that in the eighty-two cases in which the all-fours maneuver was used by practitioners to manage shoulder dystocia, sixty-eight neonates were delivered without the need for an additional maneuver. However, one infant had a bone injury, a fractured humerus, and three had low Apgar scores. The authors concluded from the statistics that the all-fours maneuver was a rapid, safe, and effective technique to reduce shoulder dystocia. Although the exact reason that the maneuver works is unknown by the scientific community as of 2020, the authors hypothesize that the woman’s movement allows for the shoulder to be dislodged. Other scientists have proposed that the maneuver increases the diameter of the woman’s pelvic outlet, creating more room for the neonate to exit the birth canal.

Finally, the article culminates with the authors’ conclusion about which maneuver resulted in the safest and most effective delivery for neonates with shoulder dystocia. The authors state that in most cases, the McRoberts maneuver will enable the delivery of the neonate’s impacted anterior shoulders, with the addition of suprapubic pressure. Bruner and colleagues then say that the all-fours maneuver would be a good option to use before any other maneuver that requires an increased amount of physical manipulation of the neonate. The authors finally state that practitioners should know all of the techniques in order to have the best outcome when cases of shoulder dystocia occur.

After its publication, other researchers cited the article in other papers about fetal and maternal care, midwifery, further discussions on shoulder dystocia management, and obstetric training. Other researchers have used Bruner and colleagues’ review of the maneuvers that manage shoulder dystocia in further the discussion on the type of technique and order in which they are applied to prevent fetal and maternal injury. Further, books such as Jennifer Block’s Pushed: The Painful Truth About Childbirth and Modern Maternity Care, published in 2007, and Marsden Wagner’s Born in the USA: How a Broken Maternity System Must be Fixed to Put Women and Children First, published in 2008, cited the article when writing about maternity care in the United States and how it should change to promote safer deliveries.

Sources

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