

Research Article

Effectiveness of McRoberts and Rubin Maneuvers in the Management of Shoulder Dystocia: A Systematic Review

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Abstract: Shoulder dystocia is an obstetric emergency that occurs when the baby's shoulder becomes stuck behind the mother's pubic bone after the head has been delivered. It occurs in about 0.2–3% of vaginal births and can cause serious complications for both the mother and baby. Because it is difficult to predict, quick and effective management is very important. The two most common techniques used to manage shoulder dystocia are the McRoberts maneuver and the Rubin maneuver. The McRoberts maneuver involves flexing the mother's legs toward her abdomen to widen the pelvic outlet and help release the baby's shoulder. The Rubin maneuver involves applying pressure above the pubic bone or rotating the baby's shoulder to reduce the obstruction and assist delivery. The McRoberts maneuver is usually the first method used because it is simple, fast, and effective. It is often combined with the Rubin maneuver to improve the chance of successful delivery. If these methods do not work, other obstetric maneuvers may be needed. Studies have explored whether using the McRoberts maneuver before shoulder dystocia occurs can prevent the condition. However, current evidence is still limited, and more research is needed to confirm its effectiveness. Overall, the McRoberts and Rubin maneuvers are important techniques for managing shoulder dystocia. Early recognition, prompt action, and proper training of healthcare professionals are essential to reduce complications and ensure a safer delivery for both mother and baby.

Keywords: Effectiveness; McRoberts Maneuver; Rubin Maneuver; Shoulder Dystocia; Vaginal Delivery.

1. Introduction

Shoulder dystocia is an obstetric emergency that occurs when the fetal shoulder becomes impacted behind the maternal pubic symphysis after the delivery of the fetal head. This condition requires additional obstetric maneuvers because normal gentle traction is not sufficient to complete the delivery. The finding indicated (Tsikouras, et al., 2024), shoulder dystocia is defined as the “failure of the shoulders to spontaneously traverse the pelvis after delivery of the fetal head.” Based on (Alvez, Nozaki, Polido, & Knobel, 2022), shoulder dystocia is relatively uncommon, with an incidence ranging from 0.2% to 3% of vaginal deliveries, it remains a serious complication due to its potential maternal and neonatal morbidity. Common complications include postpartum hemorrhage, severe perineal lacerations, brachial plexus injury, fractures, and neonatal asphyxia. As stated by (Iaconianni, Bakhri, Gonik, Balasubramanian, & Singh, 2025), shoulder dystocia is an obstetric emergency that occurs when the anterior shoulder of the neonate becomes obstructed behind the maternal symphysis pubis, preventing delivery after the fetal head has emerged. The condition may lead to overstretching of the neonatal brachial plexus, resulting in neonatal brachial plexus palsy (NBPP), temporary or permanent paralysis, and other neonatal complications. Furthermore, the authors explained that several obstetric maneuvers, including the McRoberts maneuver, suprapubic pressure, Rubin maneuver, and posterior arm delivery, are commonly performed to relieve the obstruction and facilitate safe delivery. Evidence suggests (Alvez, Nozaki, Polido, & Knobel, 2022), to manage shoulder dystocia effectively, healthcare

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providers perform specific obstetric maneuvers designed to release the impacted shoulder and facilitate safe delivery. Among the most commonly recommended techniques are the McRoberts maneuver and the Rubin maneuver. The McRoberts maneuver is often used as the first-line intervention because it is simple, rapid, and effective, especially when combined with suprapubic pressure or Rubin maneuver. Therefore, understanding the effectiveness of McRoberts and Rubin maneuvers is important in improving the management of shoulder dystocia and reducing complications for both mother and baby. This systematic review aims to evaluate the effectiveness of these maneuvers based on existing literature and clinical evidence.

2. Literature Review

According to (Hill, Lense, & Roepcke, 2020), the American Academy of Family Physicians (AAFP) guideline, shoulder dystocia is detected when normal gentle downward traction on the fetal head fails to deliver the shoulders and additional obstetric maneuvers become necessary. The condition usually occurs because the anterior fetal shoulder becomes impacted behind the maternal symphysis pubis after delivery of the head. Less commonly, the posterior shoulder may become impacted against the sacral promontory. Based on the guideline, early recognition of shoulder dystocia is essential to reduce maternal and neonatal complications. One of the earliest clinical signs is the “turtle sign,” which refers to retraction of the fetal head against the maternal perineum after the head has delivered. Another indicator is failure of the shoulders to deliver spontaneously after routine traction. The guideline also proposes objective diagnostic criteria, including a head-to-body delivery interval greater than 60 seconds or the requirement for additional delivery maneuvers. Shoulder dystocia is an obstetric emergency that requires immediate and systematic management to minimize maternal and neonatal complications. Current guidelines generally recommend initiating management with external maneuvers, particularly the McRoberts maneuver combined with suprapubic pressure, followed by internal maneuvers such as rotational techniques (Rubin or Woods screw maneuvers) and posterior arm delivery if the initial measures fail. The review demonstrated, (Hill, Lense, & Roepcke, 2020), The McRoberts maneuver is widely recommended as the first-line intervention for shoulder dystocia because of its simplicity, rapid application, and effectiveness in facilitating delivery. The maneuver works by altering maternal pelvic anatomy through cephalad rotation of the pelvis and flattening of the sacrum, thereby increasing the functional dimensions of the pelvic outlet and promoting release of the impacted anterior shoulder. Evidence from the American Academy of Family Physicians (AAFP) guideline indicates that the McRoberts maneuver can achieve a success rate of up to 42% when used as a standalone technique. These findings support its role as the initial management strategy in the stepwise approach to shoulder dystocia. As reported by (Jakubowski, et al., 2025), The Rubin maneuver works by rotating the fetal shoulders and reducing the bisacromial diameter to release the impacted anterior shoulder. Based on the guideline, rotational maneuvers are indicated when the posterior arm cannot be accessed or when first-line maneuvers are unsuccessful.

(Jakubowski, et al., 2025), Emphasized that evaluation of both mother and newborn is necessary after successful delivery. After successful delivery, evaluation of both mother and newborn is necessary. The guideline states that maternal complications include postpartum hemorrhage and third- or fourth-degree perineal lacerations, therefore vaginal examination should always be performed after shoulder dystocia. Neonatal complications may include brachial plexus injury, clavicle fracture, humerus fracture, hypoxic-ischemic encephalopathy, and neonatal death. Therefore, the newborn should be evaluated by a pediatric specialist after delivery. The review by (Heinonen, Saisto, Gissler, & Sarvilinna, 2024), Identified the Rubin II maneuver as an important second-line technique in the management of shoulder dystocia. The maneuver is performed following unsuccessful first-line interventions, such as the McRoberts maneuver and suprapubic pressure. Its primary mechanism involves rotation of the fetal shoulders and reduction of the bisacromial diameter, which facilitates disimpaction of the anterior shoulder and supports successful delivery. These findings suggest that the Rubin maneuver plays a significant role in the stepwise management of shoulder dystocia. The Rubin maneuver is considered an effective second-line intervention because it facilitates rotation of the fetal shoulders into the oblique pelvic diameter while simultaneously reducing the bisacromial diameter. This mechanism decreases shoulder impaction and improves the likelihood of successful delivery in cases where external maneuvers are unsuccessful. The guideline recommends (Hill, Lense, & Roepcke, 2020), Clinical evaluation during the McRoberts maneuver includes assessing whether the anterior shoulder is released after maternal hip hyperflexion and gentle downward traction. The guideline recommends,

aggressive downward or lateral traction on the fetal head should be avoided because it may cause brachial plexus injury. If delivery does not occur immediately, suprapubic pressure should be applied concurrently while monitoring fetal response and the time interval from head delivery. Evaluation after the maneuver includes assessing successful delivery, neonatal condition such as brachial plexus injury or hypoxia, and maternal complications including postpartum hemorrhage or perineal trauma. The guideline also emphasizes the importance of documenting the head-to-body delivery interval and all maneuvers performed after shoulder dystocia. However, (Lau, et al., 2024), noted that this sequence is largely based on clinical practice rather than strong scientific evidence. Several studies reported that posterior arm delivery demonstrated the highest success rate among second-line maneuvers. Internal maneuvers are considered effective because they either rotate the fetal shoulders into the wider oblique pelvic diameter or reduce the shoulder width, thereby facilitating delivery. In contrast, the mechanism of the McRoberts maneuver remains unclear, although it is widely used because of its simplicity and rapid application. When conventional maneuvers fail, alternative techniques such as the all-fours (Gaskin) position, posterior axillary traction, or posterior axillary sling traction (PAST) may be considered. In severe and refractory cases, more invasive procedures, including the Zavanelli maneuver, abdominal rescue, or symphysiotomy, may be required as last-resort interventions. Successful management depends not only on the choice of maneuver but also on the operator's skill, prompt recognition of the condition, and the timely application of appropriate techniques to reduce the risk of neonatal injury and maternal morbidity.

According to the reviewed study, second-line maneuvers are essential in cases where first-line management of shoulder dystocia is unsuccessful. Internal rotational techniques, including the Rubin II and Woods corkscrew maneuvers, were shown to facilitate fetal shoulder disimpaction by altering shoulder orientation within the maternal pelvis. The study further demonstrated that delivery of the posterior arm showed the highest success rate among the evaluated maneuvers, while internal rotational maneuvers, including the Rubin maneuver, were also effective in resolving shoulder dystocia. These results indicate that rotational maneuvers represent effective management options and may contribute substantially to the resolution of shoulder dystocia when used within a systematic stepwise approach.

3. Research Method

According to the guideline by the German Society for Gynecology and Obstetrics (DGGG), Austrian Society for Gynecology and Obstetrics (OEGGG), and Swiss Society for Gynecology and Obstetrics (SGGG), shoulder dystocia is a rare but serious obstetric emergency associated with potentially far-reaching medical consequences for both the mother and the newborn. (Jakubowski, et al., 2025), Humanity really looked at childbirth and decided.

Maternal complications associated with shoulder dystocia include postpartum hemorrhage, third- and fourth-degree perineal lacerations, cervicovaginal lacerations, uterine rupture, and injuries to the bladder and urethra. The severity of maternal morbidity may increase depending on the number and complexity of obstetric maneuvers required during delivery. (Heinonen, Saisto, Gissler, & Sarvilinna, 2024), reported that the use of three or more obstetric maneuvers significantly increased the risk of severe perineal trauma, particularly third- or fourth-degree lacerations, with an odds ratio (OR) of 2.91 (95% CI 1.17–7.24). In their study, combined maternal morbidity was defined as deliveries complicated by obstetric lacerations, blood loss exceeding 1000 mL, or manual removal of the retained placenta. Furthermore, the review by (Lau, et al., 2024), emphasized that invasive third-line maneuvers such as cleidotomy, symphysiotomy, abdominal rescue, and the Zavanelli maneuver are associated with increased risks of severe maternal morbidity. This demonstrates that prolonged or unresolved shoulder dystocia may worsen maternal outcomes due to repeated manipulations and delivery-related trauma.

(Heinonen, Saisto, Gissler, & Sarvilinna, 2024), Published in *Acta Obstetrica et Gynecologica Scandinavica*, reported that neonatal complications are among the most concerning consequences of shoulder dystocia. Neonatal complications are among the most concerning consequences of shoulder dystocia. The literature identifies brachial plexus injury (BPI) as one of the most common complications, including Erb's palsy and Klumpke's palsy, occurring in approximately 2.6%–40% of deliveries complicated by shoulder dystocia. Other neonatal complications include asphyxia, hypoxic–ischemic encephalopathy (HIE), clavicular fractures, humeral fractures, and neonatal death. The study conducted by (Heinonen, Saisto, Gissler, & Sarvilinna, 2024), showed that increased use of obstetric maneuvers during the study period was associated with a significant decline in neonatal complications. The rate of

brachial plexus injury decreased from 50% to 24.2% ($p = 0.02$), while combined neonatal morbidity decreased from 91.4% to 48.5% ($p < 0.001$). Their findings also demonstrated that cases without appropriate obstetric maneuvers had the highest neonatal complication rates, with brachial plexus injury occurring in 52.9% and combined neonatal morbidity reaching 97.8%. Which is a deeply unsettling reminder that “doing nothing and hoping for the best” remains one of humanity’s favorite clinical strategies despite centuries of evidence suggesting otherwise. The review by (Lau, et al., 2024), stated that delayed resolution of impacted shoulders can lead to neonatal hypoxic brain injury or death, whereas excessive traction and inappropriate manipulation may contribute to brachial plexus palsy and fractures of the clavicle or humerus. Therefore, prompt recognition and the correct application of obstetric maneuvers are essential to minimize neonatal morbidity and improve clinical outcomes.

According to (Çalm, Ulaş, Demirci, & Tayhan, 2022), simulation-based training significantly improved healthcare providers’ knowledge and skills in managing shoulder dystocia. The study emphasized that appropriate training and adherence to management algorithms are important in reducing maternal and neonatal complications associated with shoulder dystocia. Because in emergencies lasting only minutes, “we’ll improvise” is generally not the inspiring medical philosophy people hope for. Shoulder dystocia is associated with significant maternal morbidity, particularly when multiple obstetric maneuvers are required during delivery.

4. Results and Discussion

According to (Heinonen, Saisto, Gissler, & Sarvilinna, 2024), the McRoberts maneuver is commonly recommended as the first-line intervention in the management of shoulder dystocia because it is easy to perform, rapid, and non-invasive. The maneuver works by hyperflexing the maternal thighs to widen the pelvic outlet and facilitate delivery of the impacted shoulder. Humans discovered that occasionally solves an obstetric emergency. Medicine remains a deeply strange profession. Based on the findings of (Heinonen, Saisto, Gissler, & Sarvilinna, 2024), the use of the four most common obstetric maneuvers, including the McRoberts maneuver, suprapubic pressure, rotational maneuvers, and posterior arm delivery, significantly increased during the study period. The McRoberts maneuver demonstrated an individual success rate of 61.0%. Approximately 75% of shoulder dystocia cases treated with maneuvers were successfully resolved using the McRoberts maneuver and/or suprapubic pressure. According to the review by, (Lau, et al., 2024), the McRoberts maneuver has long been considered a simple and effective first-line maneuver for shoulder dystocia management. However, the review also noted that the mechanism of the McRoberts maneuver is not entirely clear, as it does not significantly increase pelvic outlet dimensions but instead changes pelvic orientation and flattens the lumbosacral angle. Despite this limitation, the maneuver remains widely used because of its practicality and rapid application in emergency situations. The review reported that the overall success rate of external maneuvers, including the McRoberts maneuver combined with suprapubic pressure, was approximately 56.0%, although reported success rates varied considerably among studies. Factors such as maternal obesity, instrumental delivery, and fetal macrosomia may reduce the effectiveness of the McRoberts maneuver.

According to (Lau, et al., 2024), Rubin maneuvers are categorized as internal rotational maneuvers that aim to rotate the fetal shoulders into the wider oblique pelvic diameter while simultaneously reducing shoulder width. The Rubin II maneuver is performed by inserting fingers vaginally to apply pressure on the posterior aspect of the anterior shoulder, thereby adducting and rotating the shoulder. Rotational maneuvers such as the Rubin maneuver demonstrated a higher overall success rate compared to external maneuvers alone. The reported success rate of rotational methods ranged from 42.9% to 76.6%, with an overall success rate of approximately 62.4%. These findings suggest that internal rotational maneuvers may be more effective in cases where first-line external maneuvers fail to resolve the shoulder impaction. According to (Heinonen, Saisto, Gissler, & Sarvilinna, 2024), the increasing use of appropriate obstetric maneuvers, including rotational maneuvers such as Rubin II, was associated with decreasing neonatal complications, particularly brachial plexus injury and combined neonatal morbidity. This highlights the importance of timely maneuver selection and adequate clinical training in improving maternal and neonatal outcomes during shoulder dystocia management. Based on the study by (Çalm, Ulaş, Demirci, & Tayhan, 2022), simulation-based training significantly improved healthcare providers’ ability to correctly perform primary and secondary maneuvers, including McRoberts and Rubin maneuvers, according to shoulder dystocia management algorithms. The study emphasized

that proper simulation training enhances clinical skills, increases confidence, and supports faster decision-making during obstetric emergencies.

5. Conclusions

Shoulder dystocia remains one of the most critical obstetric emergencies because it is associated with significant maternal and neonatal morbidity and requires immediate clinical intervention. Although several risk factors, including fetal macrosomia, maternal obesity, diabetes mellitus, and prolonged labor, are associated with shoulder dystocia, accurate prediction remains difficult because many cases occur unexpectedly during delivery. The reviewed literature demonstrates that the McRoberts maneuver combined with suprapubic pressure continues to be the recommended first-line management approach because of its simplicity, rapid application, low invasiveness, and relatively high success rate. When first-line interventions fail to resolve shoulder impaction, second-line maneuvers such as Rubin II, Woods corkscrew maneuver, and posterior arm delivery provide effective alternatives for facilitating delivery and reducing fetal shoulder compression.

The findings of this review also indicate that timely maneuver selection, avoidance of excessive fetal traction, and adherence to evidence-based management algorithms are essential to minimize maternal complications, including postpartum hemorrhage and severe perineal trauma, as well as neonatal complications such as brachial plexus injury, fractures, hypoxic–ischemic encephalopathy, and neonatal death. In addition, simulation-based training and multidisciplinary emergency drills significantly improve healthcare providers' technical skills, communication, and clinical decision-making during shoulder dystocia emergencies. Overall, successful management of shoulder dystocia depends not only on the effectiveness of obstetric maneuvers but also on prompt recognition, appropriate clinical judgment, and adequate healthcare provider preparedness. Continuous training and adherence to evidence-based guidelines are therefore essential to improve maternal and neonatal outcomes in shoulder dystocia management.

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