

# The Benefits of Manual Rotation in the Treatment of Occiput Posterior Position: A Case Study of Iraq

Hamza Radhi<sup>1\*</sup>, Shaymaa Abdulhameed Khudair<sup>2</sup>, Miaad Adnan<sup>3</sup>, Muntaha Kadhem Mejbel<sup>4</sup>, Ahmed S. Abed<sup>5</sup>, Nizar Awish Jassem<sup>6</sup>

1. College of MLT, Ahl Al Bayt University, Kerbala, Iraq
2. Advanced Biomedical Science, Al Nisour University College, Baghdad, Iraq
3. Anesthesia Techniques Department, Al-Mustaqbal University College, Babylon, Iraq
4. Al Hadi University College, Baghdad, Iraq
5. Department of Prosthetic Dental Technology, Hilla University college, Babylon, Iraq
6. College of Pharmacy, Al-Ayen University, Thi-Qar, Iraq



## Article Info

doi: [10.30699/jogcr.8.3.249](https://doi.org/10.30699/jogcr.8.3.249)

Received: 2022/12/09;  
Accepted: 2023/01/14;  
Published Online: 23 May 2023;

Use your device to scan and read the article online



## Corresponding Information:

Hamza Radhi,  
College of MLT, Ahl Al Bayt University,  
Kerbala, Iraq

Email: [hamza\\_radhi@yahoo.com](mailto:hamza_radhi@yahoo.com)

## ABSTRACT

**Background & Objective:** The fetal head's persistent posterior position, which ranges from 1 to 5% during birth, has long been acknowledged as a significant challenge of intrapartum treatment. 10% to 20% of fetuses are found to be in the occiput posterior (OP) position at the beginning of labor; 90% of them rotate to the occiput anterior. This research aims to analyze the rate of delivery in the OP position (also called sunny-side-up) concerning the outcome of manual rotation carried out contingent upon the OP position remains persistent. Perinatal outcomes were the secondary goals.

**Materials & Methods:** This prospective cohort study was carried out in Obstetrics & Gynecology Clinic (OGC) at Faruk Medical City, Iraq. The study included all women who experienced a singleton pregnancy after 36 weeks, had an effort to rotate the fetus manually and had the fetus remain in the persistent OP position. The primary result was the delivery's occiput position. Perineal injuries, labor length, and the method of delivery have been the secondary outcomes. According to the outcome of manual rotation, two groups were contrasted.

**Results:** The overall number of women participating was 250, and the manual rotation success rate was 59.1%. The success was strongly correlated with a reduction in the OP position during vaginal, cesarean, operative vaginal delivery, episiotomy, and obstetric anal sphincter injury.

**Conclusion:** Reduced incidence of OP position at anal sphincter injury during operative vaginal delivery is linked to attempts at manual rotation in the case of persistent OP position.

**Keywords:** Cesarean section, Child labor, Perinatal care, Pregnancy



Copyright © 2023, This is an original open-access article distributed under the terms of the Creative Commons Attribution-noncommercial 4.0 International License which permits copy and redistribution of the material just in noncommercial usages with proper citation.

## Introduction

Before and during delivery, the majority of newborns are in a backwards-looking position. The baby's head has a larger profile in the birth canal when the baby is looking forward or sideways, making descending potentially more challenging (1). The transverse and posterior postures are connected with after the birth's uterus infection, bleeding after birth, higher vaginal tears of higher rates (including rectum and anus), the need for epidural pain relief, and more painful and longer labor (2). The baby's head can be manually rotated into an anterior position. The baby's head is rotated manually by the accoucheur using his or her hand or fingers (3). The posture is often held for two contractions, but it may take two or three to complete. Dystocia is frequently brought on by the fetal position being abnormal during birth (4, 5). Occiput posterior

(OP) position, which accounts for 33.3% of fetal malpositions in labor, and dystocia, which can occur at a rate of up to 93.5%, are the two most prevalent fetal malpositions (6, 7). Entering the pelvis in the occiput anterior position is typical for the fetus. Since they naturally rotate to the occiput anterior position, entering the pelvis in the OP position should not generally be regarded as abnormal (8-10). Nevertheless, spontaneous rotation cannot happen in some circumstances, and about 5% of infants have a persistent OP position (8). Early abdominal pressure might result in cervical edema and pregnancy tiredness, leading to arrested or delayed labor. Increased rates of assisted cesarean section and vaginal delivery are the outcome of complications with a fetus in the OP position (11). Unfortunately, this might also result in

poor neonatal outcomes and the pregnant woman suffering physical harm. Regardless of the delivery method, having the fetal head positioned posteriorly when the cervix is fully dilated and ready for childbirth (labor's second stage) is the defining characteristic of a persistent OP position (12). The frequency of deliveries in the OP position ranges from 5% to 12% (13). Delivery in the posterior position is linked to more incidence of operative delivery, as has been known for several decades (14, 15). To achieve an unassisted vaginal birth, prophylactic manual rotation comprises a vaginal examination along with the rotation of the presenting vertex from the OP position to the occiput anterior (OA) position (16). Some obstetricians and midwives frequently utilize this technique during the labor's second stage to lessen the operative birth's risk and the difficulties linked to the OP position.

To decrease the number of deliveries requiring surgery, numerous approaches have been suggested to ease the transition during labor from an OP to an occiput anterior position (17). The best way to rectify the fetal head's misposition during labor is a matter of debate. Cesarean delivery, operative vaginal delivery, manual rotation, and maternal posturing are interventions that healthcare professionals utilize in pregnancies with fetal mal-positioning (18). Posturing procedures are typically low-risk interventions because they don't require instrumentation or intrusive manipulation. Due to the apparent diversity of the research on this subject, maternal posture has not proven beneficial, and we cannot validate the significance of manual rotation at this time (19). In actuality, manual rotation does not appear to be beneficial in observational research; however, this has not been able to be confirmed by randomized controlled trials, primarily due to a lack of power in the investigations. When should manual rotation occur? is the key unresolved issue that must be addressed in order to assess the benefit of manual rotation. While manual rotation (therapeutic) is only carried out in the event of labor arrest or prior to an instrumental delivery, prophylactic manual rotation is routinely carried out at the OP position diagnostic. According to several researchers, prophylactic manual rotation is more popular than therapeutic manual rotation since it raises the maneuver's likelihood of success and, as a result, lowers the likelihood of delivery in the OP position (20-23). Nevertheless, these OP to occiput anterior rotations probably happened on their own, and that persistent OP position corresponded to rotation occurrence failure (24). As far as we are aware, there haven't been any randomized trials or observational studies that have concentrated on the event of persistent OP position subjected to manual rotation.

The primary objective of this research has been to determine the rate of delivery in the OP position concerning the outcome of manual rotation performed

if the OP position remained persistent. According to the results of manual rotation, the secondary goals were perinatal outcomes, including labor length, the percentage of operations, and perineal tears.

## Methods

The research was done between January 2019 and April 2020 in Obstetrics & Gynecology Clinic (OGC) at Faruk Medical City, Iraq. Inclusion criteria were any woman who delivered a singleton following 36 weeks of gestation and throughout the labor's second stage had a fetus in the OP position, and also had a manual rotation attempt. The study excluded stillbirths and pregnancies that resulted in a fetus with a congenital defect. The digital examination was used to determine the fetal position, systematically followed by ultrasound. According to (25)'s description of the procedure, the operator placed their palm on the fetal ear, either the right or left side depending on how the head was positioned, and rotated from the symphysis to the sacrum while pushing. An experienced senior obstetrician skilled in performing this procedure would always carry out this maneuver. To define a persistent OP position, manual rotation was carried out at full dilatation if progress was not made for at least an hour. The procedure was conducted regardless of the severity of the fetal distress. The occiput anterior position shortly following the maneuver was used to determine whether manual rotation was successful, whereas ultrasonography verified this. Instrumental rotation may well be undertaken if instrumental delivery was required following manual rotation failure. The most significant finding was that the baby was in an OP position when delivered. Perineal tears, delivery method, and labor time were the secondary outcomes. The data gathered included neonatal, maternal, time of manual rotation, and obstetric data and outputs. Stata version 14.0 software (StataCorp LLC, USA) was utilized to conduct the statistical analysis. The results of the manual rotation were used to compare the collected data. Multivariate and univariate analyses were conducted to detect predictors of manual rotation performance predictors. Quantitative data were compared using the Student t-test, while categorical variables were compared using the Fisher exact and chi-squared tests. If  $P < 0.05$ , the results were deemed significant.

## Results

Number of 7% of deliveries after 36 weeks of pregnancy throughout the research duration involved women with a persistent OP position. At delivery, there were 3.1% OP positions. The manual rotation had a 59.1% success rate (Table 1).

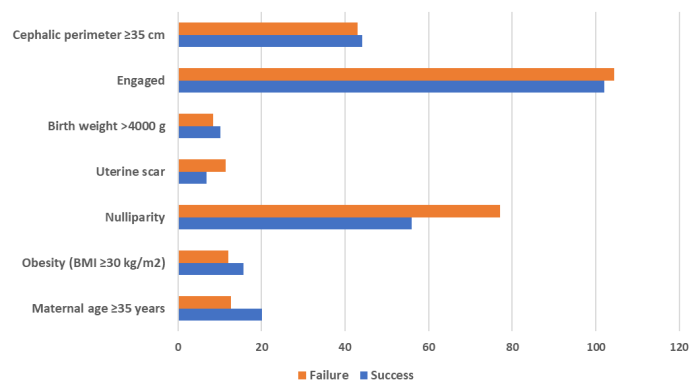
**Table 1.** The statistics of persistent OP deliveries more than 36 weeks of gestation

Persistent OP				
83.11% Manual rotation				16.89% No manual rotation
59.12% Success		40.88% Failure		
3.48% CS	96.52% VD	20.85% CS	79.15% VD	
43.23% Operative VD	56.77% Spontaneous VD	91.36% Operative VD		8.64% Spontaneous VD
		61.03% Instrumental rotation	38.97% No instrumental rotation	
OP at delivery= 3.16%		OP at delivery= 55.89%		

VD, vaginal delivery; CS, cesarean section; OP, occiput posterior.

Except for a more common nulliparity in the failure group, obstetric and maternal features were comparable (77% vs. 55%,  $P < 0.001$ ) (Figure 1). A considerable drop in delivery in the OP position from

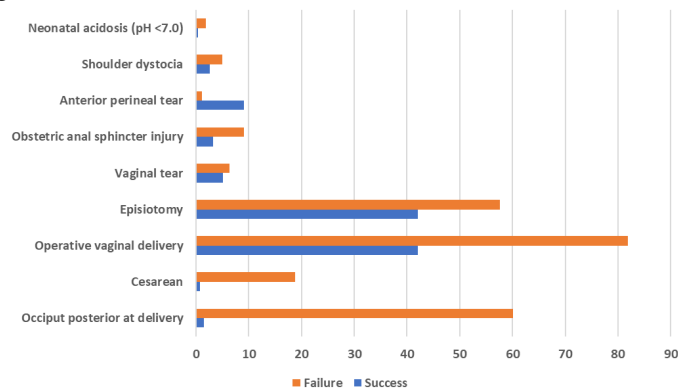
failure to success group (60.1% to 1.5%) was linked to the success of manual rotation ( $P < 0.001$ ). Compared to the failure group, the success group's operative vaginal and cesarean deliveries rate was much lower.



**Figure 1.** Obstetric and maternal-fetal characteristics for failure and success groups of manual rotation.

A 3.2% in the manual rotation success group versus 9.1% in the failure group showed a statistically significant reduction in sphincter injury, indicating that manual rotation was successful. Compared to the failure group, the success group considerably reduced

the rate of anterior perineal tears (1.2% vs. 9.1%,  $P = 0.001$ ). Comparing the success group to the failure group, the episiotomy rate in the success group was much lower. (42.1% vs 57.6%,  $P < 0.001$ ) (Figure 2).



**Figure 2.** Perinatal outcome in case of manual rotation failure or success.

## Discussion

According to the findings of this research, the use of manual rotation while the OP position is persistent was related to a considerable reduction in OP position at delivery in the successful group (1.5% vs. 60.1%,  $P < 0.001$ ). Compared to other studies, ours found a rate of 3.1% for OP position at delivery (7, 8). Comparing the failure group to the success, there was a noticeable decline at delivery in the OP position (60.1% vs. 1.5%,  $P < 0.001$ ). Given that rotation of complimentary instruments takes place in almost every case, at delivery the failure group's rate of OP position may be underestimated. Instrumental rotation using a spatula or vacuum may be used whenever manual rotation fails. Without instrumental rotation, the distinction between the failure and success groups might be even more pronounced. The manual rotation success rate in this research was only 59.1%, which is lower than the reported rate range (63-89%) found in the literature (22, 26). This finding may be explained by the population chosen for the study, which was prophylactic manual rotation in most trials as opposed to persistent OP position with labor arrest. There's a chance that some of these successful rotations turned independently. A considerable drop in operative vaginal deliveries, caesareans, and perineal tears, such as episiotomies, was linked to the success of the manual rotation. The literature and these observations are in agreement (11, 27). While Iraq's current objective is to greatly restrict this practice, the episiotomy rate was relatively high in both groups. Since episiotomy rates have sharply declined in Iraq recently, the research period can be used to explain the outcome. Over the past ten years, there have been significant developments in episiotomy practice (28, 29). The current research showed a much-decreased OASI (obstetric anal sphincter injury) following the success of manual rotation. However, such finding is connected to the frequent use of operative vaginal delivery that is known to increase the risk of obstetric anal sphincter injury, especially when done in the OP position. In both groups, the rate of operative vaginal delivery stayed quite high, which would most likely be justified by the availability of instrumental rotation in the event that vaginal delivery was unsuccessful. In

contrast, the success group's rate of cesarean section was significantly reduced, coming in at an extremely low rate of 0.8%. As far as we know, this is the only study conducted with sizable sample size and specifically focused on a population of persistent OP positions. It is necessary to investigate the value of manual rotation in this particular group since the literature lacks these data. The best time to perform the maneuver will not be determined by the recently completed or ongoing randomized controlled trials (11, 27, 30). Since it is a variable that is dependent on the procedures of the medical centers and challenging to compare across research, the selection of the main result of these investigations can be contested, e.g., operative delivery rate.

Additionally, the delivery's occiput position is related to the rate of assisted vaginal birth. Due to this fact, at delivery the rate of OP position was decided to be the primary outcome that would be measured in this research. Although choosing a homogeneous group is a strength, the biggest drawback of the current research was its observational design.

## Conclusion

The positive effects of manual rotation despite having a group with persistent OP position was supported by the results. The maneuver's success rate does not appear to be affected in a trained team. Consequently, without lowering the likelihood of having a vaginal delivery, it'd be feasible to use this technique for individuals with persistent OP positions.

## Acknowledgments

The authors would like to extend their thanks to the president of the Ahl Al Bayt University and the administration of the college of medicine, for their support.

## Conflict of Interest

The authors declare no conflict of interest.

## References

1. Elmore C, McBroom K, Ellis J. Digital and Manual Rotation of the Persistent Occiput Posterior Fetus. *J Midwifery Womens Health*. 2020;65(3):387-94. [DOI:10.1111/jmwh.13118] [PMID]
2. Bellussi F. To rotate or not to rotate: that is the question. *Am J Obstet Gynecol*. 2021;3(2). [DOI:10.1016/j.ajogmf.2021.100316] [PMID]
3. Phipps H. Is manual rotation worth considering for the persistent posterior or transverse baby? A review of current efficacy and practice. *Women Birth*. 2018;31:S35. [DOI:10.1016/j.wombi.2018.08.107]
4. Rajkumar R, Ravikumar C, Prabakaran V, Raja S, Palanisamy M. Management of dystocia due to fetal anasarca with ascites in a Kanni adu goat. *Cochrane Database Syst Rev*. 2021;10(11):80-2.

5. Weldeyohanes G, Fesseha H. Dystocia in domestic animals and its management. *Int j pharm biomed res.* 2020;7(3):1-11. [[DOI:10.18782/2394-3726.1089](https://doi.org/10.18782/2394-3726.1089)] [[PMID](#)]
6. Durand Y, Vachette M, Desseauve D. Delivery Mode After Manual Rotation of Occiput Posterior Fetal Positions: A Randomized Controlled Trial. *Obstet Gynecol.* 2021;138(4):681. [[DOI:10.1097/AOG.0000000000004555](https://doi.org/10.1097/AOG.0000000000004555)] [[PMID](#)]
7. Dall'Asta A, Ghi T. Manual rotation of persistent occiput posterior position: more research is warranted. *Am J Obstet Gynecol.* 2021;3(6). [[DOI:10.1016/j.ajogmf.2021.100387](https://doi.org/10.1016/j.ajogmf.2021.100387)] [[PMID](#)]
8. Yang L, Yi T, Zhou M, Wang C, Xu X, Li Y, et al. Clinical effectiveness of position management and manual rotation of the fetal position with a U-shaped birth stool for vaginal delivery of a fetus in a persistent occiput posterior position. *J Int Med Res.* 2020;48(6). [[PMID](#)] [[PMCID](#)] [[DOI:10.1177/0300060520924275](https://doi.org/10.1177/0300060520924275)]
9. Havelková L, Krofta L, Kochová P, Liška V, Kališ V, Feyereisl J. Persistent occiput posterior position and stress distribution in levator ani muscle during vaginal delivery computed by a finite element model. *Int Urogynecol J.* 2020;31(7):1315-24. [[PMID](#)] [[PMCID](#)] [[DOI:10.1007/s00192-019-03997-8](https://doi.org/10.1007/s00192-019-03997-8)]
10. Dole C, Metz JP, Formet J, Riethmuller D, Ramanah R, Mottet N. Intra pelvic spontaneous rotation of persistent occiput posterior position in case of operative vaginal delivery with spatulas. *J Gynecol Obstet Hum Reprod.* 2021;50(2):101943. [[DOI:10.1016/j.jogoh.2020.101943](https://doi.org/10.1016/j.jogoh.2020.101943)] [[PMID](#)]
11. Broberg JC, Caughey AB. A randomized controlled trial of prophylactic early manual rotation of the occiput posterior fetus at the beginning of the second stage vs expectant management. *Am J Obstet Gynecol.* 2021;3(2):100327. [[DOI:10.1016/j.ajogmf.2021.100327](https://doi.org/10.1016/j.ajogmf.2021.100327)] [[PMID](#)]
12. Edozien LC. Towards safe practice in instrumental vaginal delivery. *Best Pract Res Clin Obstet Gynaecol.* 2007;21(4):639-55. [[DOI:10.1016/j.bpobgyn.2007.03.006](https://doi.org/10.1016/j.bpobgyn.2007.03.006)] [[PMID](#)]
13. Dupuis O, Silveira R, Zentner A, Dittmar A, Gaucherand P, Cucherat M, et al. Birth simulator: Reliability of transvaginal assessment of fetal head station as defined by the American College of Obstetricians and Gynecologists classification. *Am J Obstet Gynecol.* 2005;192(3):868-74. [[DOI:10.1016/j.ajog.2004.09.028](https://doi.org/10.1016/j.ajog.2004.09.028)] [[PMID](#)]
14. Ghi T, Youssef A, Martelli F, Bellussi F, Aiello E, Pilu G, et al. Narrow subpubic arch angle is associated with higher risk of persistent occiput posterior position at delivery. *Ultrasound Obstet Gynecol.* 2016;48(4):511-5. [[DOI:10.1002/uog.15808](https://doi.org/10.1002/uog.15808)] [[PMID](#)]
15. Akmal S, Kametas N, Tsoi E, Hargreaves C, Nicolaides KH. Comparison of transvaginal digital examination with intrapartum sonography to determine fetal head position before instrumental delivery. *Ultrasound Obstet Gynecol.* 2003;21(5):437-40. [[DOI:10.1002/uog.103](https://doi.org/10.1002/uog.103)] [[PMID](#)]
16. de Vries B, Phipps H, Kuah S, Pardey J, Matthews G, Ludlow J, et al. Transverse position. Using rotation to aid normal birth-OUTcomes following manual rotation (the TURN-OUT trial): a randomized controlled trial. *Am J Obstet Gynecol.* 2022;4(1):100488. [[DOI:10.1016/j.ajogmf.2021.100488](https://doi.org/10.1016/j.ajogmf.2021.100488)] [[PMID](#)]
17. Estrada Trejo F, Kuba K, Gurewitsch Allen E. Traditional Obstetric Pelvimetry in Delivery and Labor. In: Malvasi A, editor. *Intrapartum Ultrasonography for Labor Management: Labor, Delivery and Puerperium.* Cham: Springer International Publishing; 2021. p. 85-106. [[DOI:10.1007/978-3-030-57595-3\\_9](https://doi.org/10.1007/978-3-030-57595-3_9)]
18. Svelato A, Carabaneanu A, Sergiampietri C, Mannella P, D'Avino S, De Luca C, et al. "To get the baby out off the hook": a prospective, longitudinal, multicenter, observational study about decision making in vacuum-assisted operative vaginal delivery. *BMC Pregnancy Childbirth.* 2022;22(1):1-6. [[PMCID](#)] [[DOI:10.1186/s12884-022-04440-5](https://doi.org/10.1186/s12884-022-04440-5)] [[PMID](#)]
19. Lee N, Munro V, Oliver K, Flynn J. Maternal positioning with flexed thighs to correct foetal occipito-posterior position in labour: A systematic review and meta-analysis. *Midwifery.* 2021;99:103008. [[DOI:10.1016/j.midw.2021.103008](https://doi.org/10.1016/j.midw.2021.103008)] [[PMID](#)]
20. Blanc J, Castel P, Mauviel F, Baumstarck K, Bretelle F, D'Ercole C, et al. Prophylactic manual rotation of occiput posterior and transverse positions to decrease operative delivery: the PROPOP randomized clinical trial. *Am J Obstet Gynecol.* 2021;225(4):444.e1-e8. [[DOI:10.1016/j.ajog.2021.05.020](https://doi.org/10.1016/j.ajog.2021.05.020)] [[PMID](#)]
21. Sicilia A, Arregui I, Gallego M, Cabezas B, Cuesta S. A systematic review of powered vs. manual toothbrushes in periodontal cause-related therapy. *J Clin Periodontol.* 2002;29(s3):39-54. [[DOI:10.1034/j.1600-051X.29.s-3.1.x](https://doi.org/10.1034/j.1600-051X.29.s-3.1.x)] [[PMID](#)]
22. Phipps H, de Vries B, Hyett J, Osborn DA. Prophylactic manual rotation for fetal malposition to reduce operative delivery. *Cochrane Database Syst Rev.* 2014(12). [[PMID](#)] [[DOI:10.1002/14651858.CD009298.pub2](https://doi.org/10.1002/14651858.CD009298.pub2)]



23. Katge F, Patil D, Poojari M, Pimpale J, Shitoot A, Rusawat B. Comparison of instrumentation time and cleaning efficacy of manual instrumentation, rotary systems and reciprocating systems in primary teeth: An in vitro study. *J Indian Soc Pedod Prev Dent.* 2014;32(4):311. [DOI:10.4103/0970-4388.140957] [PMID]
24. Tempest N, Lane S, Hapangama D. Babies in occiput posterior position are significantly more likely to require an emergency cesarean birth compared with babies in occiput transverse position in the second stage of labor: A prospective observational study. *Acta Obstet Gynecol Scand.* 2020;99(4):537-45. [DOI:10.1111/aogs.13765] [PMID] [PMCID]
25. Ghi T, Angeli L, Frusca T. Fetal Head Rotation in Labor: Intrapartum Assessment at 2D and 3D Ultrasound. In: Malvasi A, editor. *Intrapartum Ultrasonography for Labor Management: Labor, Delivery and Puerperium.* Cham: Springer International Publishing; 2021. p. 275-83. [DOI:10.1007/978-3-030-57595-3\_23]
26. Verspyck E, Bisson V, Gromez A, Resch B, Diguët A, Marpeau L. Prophylactic attempt at manual rotation in brow presentation at full dilatation. *Acta Obstet Gynecol Scand.* 2012; 91(11):1342-5. [PMID] [DOI:10.1111/j.1600-0412.2012.01515.x]
27. Phipps H, Hyett JA, Kuah S, Pardey J, Matthews G, Ludlow J, et al. Persistent occiput posterior position outcomes following manual rotation: a randomized controlled trial. *Am J Obstet Gynecol.* 2021;3(2):100306. [DOI:10.1016/j.ajogmf.2021.100306] [PMID]
28. Guha-Sapir D, Burkle FM, Jr. Health Trends in Iraq with a Focus on Children: No Cause for Optimism. *J Trop Pediatr.* 2014;60(3):177-8. [DOI:10.1093/tropej/fmu027] [PMID]
29. Akrawi VS, Al-Hadithi TS, Al-Tawil NG. Major Determinants of Maternal Near-Miss and Mortality at the Maternity Teaching Hospital, Erbil city, Iraq. *Oman Med J.* 2017;32(5):386-95. [DOI:10.5001/omj.2017.74] [PMID] [PMCID]
30. Le Ray C, Serres P, Schmitz T, Cabrol D, Goffinet F. Manual Rotation in Occiput Posterior or Transverse Positions: Risk Factors and Consequences on the Cesarean Delivery Rate. *Obstet Gynaecol.* 2007;110(4). [PMID] [DOI:10.1097/01.AOG.0000281666.04924.be]

#### How to Cite This Article:

Radhi, H., Abdulhameed Khudair, S., Adnan, M., Kadhem Mejbel, M., S. Abed, A., Awish Jassem, N. The Benefits of Manual Rotation in the Treatment of Occiput Posterior Position: A Case Study of Iraq. *J Obstet Gynecol Cancer Res.* 2023; 8(3):249-54.

Download citation: [RIS](#) | [EndNote](#) | [Mendeley](#) | [BibTeX](#) |