

Put A Stop To Fundal Pressure During Second Stage Of Labor: A Systemic Review

Ms Tanzin Yangchen^{1*}, Dr Nardev Singh², Mrs Divya Chawla³

¹M Sc. Nursing (Obstetrics and Gynaecology), Tutor, Graphic Era College of Nursing, Graphic Era Deemed to be University, Dehradun

²MSc. Nursing (Community health nursing), Tutor, Graphic Era College of Nursing, Graphic Era Deemed to be University, Dehradun

³Director School of Pharmacy Graphic Era Hill University, Dehradun, Uttarakhand Mob 8628844734, Email tanzint592@gmail.com

*Corresponding Author: - Ms Tanzin Yangchen

*MSc. Nursing (Obstetrics and Gynaecology), Tutor, Graphic Era College of Nursing, Graphic Era Deemed to be University, Dehradun

DOI: 10.47750/pnr.2022.13.S08.564

Abstract

Fundal pressure has been used to bring down the timing of the second stage of labour without any evidence of benefit. Instead, it has shown complications in maternal and fetal outcomes. The aim of the article is to find out the deleterious effects of fundal pressure during the second stage of labour in mothers and new borns.

Method: The needed information was collected by searching in internet (via PubMed, Science Direct, and Cochrane pregnancy and childbirth trail), and the majority of the information was taken from PubMed journals.

Findings: After reviewing the literature we concluded that there was no prompt proof for use of uterine fundal pressure and the method showed deleterious effects on the mother and new-borns such as perineal lacerations, uterine rupture, uterine inversion, retained placenta, postpartum haemorrhage, clavicle fracture of a new born, nerve palsies, and perinatal mortality.

Conclusion: This method should be stopped or discouraged in the labour room and clinics. The use of a partograph would be an effective tool for knowing the progress of labour in second stage of labour in high as well as low-resource settings. For midwives, recording and maintaining partograph should be used as a habit in their work routine.

Keywords: Normal labour, assisted Fundal Pressure, the second stage of labour, neonatal intensive care unit

INTRODUCTION

In India, about 1.30 million maternal deaths occurred between 1997-2020, mainly pronounced in Assam, Uttarakhand and Madhya Pradesh. Although the maternal mortality rate declined for a few years still maternal mortality rate was high mainly caused by obstetric haemorrhage (47%), and pregnancy-related infection (12%). (1) The maternal mortality rate was not only prevalent in emerging nations but also in advanced countries. In the US annually hundreds of women die during their perinatal and postnatal period, and the leading causes were haemorrhage (70%), pregnancy-related cardiovascular and coronary conditions (68.2%) infection (10.7%), mental health conditions (7%)(2). And in obstructed labour, prolonged labour, and failure to progress is responsible for maternal mortality mostly owing to unassisted vaginal delivery. (3) The second stage of labour starts with complete dilatation of the cervix and finishes with the delivery of the baby into the outer world. (4) Problems can be encountered in every phase of labour. Failure to progress or improper cardinal movements in the 2nd phase of labour can be due to large fetal size and malposition, maternal factors including power, and passage and fetal factors such as a passenger which can lead to scalp hematoma, anoxic brain injuries, bony fractures, nerve palsies, uterine rupture, vaginal laceration, amniotic fluid embolism and death of a mother. (5) Maternal mortality (9.7 per 1000 total birth), febrile (42.8%) and afebrile morbidity (17.2%), and perinatal death (74.3%) were connected to the time span of labour. (6) In order to prevent prolonged labour and an unnecessary caesarean section one method is widely used which was called fundal pressure. Fundal pressure was also known as the Kristeller manoeuvre, providing a force to the fundus of the uterus directed towards the birth canal to decrease the delivery time period in 2nd phase of labour. (7) In United State, a survey found that 84% of subjects implemented this method in their centres. (8) According to a systemic review, uterine fundal pressure was generally used in economically emerging nations without any proof of confirmation of good practice but it has the probability to harm perinatal outcomes. (9) The use of this method in the labour room during the delivery period is still questionable. Risk always exists while applying fundal pressure such as maternal birth canal injuries and fetal injuries but much of the information regarding the same was not reported because of medicolegal reasons. (10) Fundal pressure has been showing no or fewer benefits in the second stage of labour instead it had more complications for the mother (such as maternal exhaustion, complete perineal tear) and newborn (likely to admit in NICU) (11), and levator ani muscle avulsion. Some literature revealed that there was no remarkable difference in the mean delivery time span in the second stage and perinatal mortality but they observed retained placenta, uterine prolapse, maternal exhaustion and complete perineal injuries. So instead of using fundal pressure, healthcare providers should use alternative practices to deal with normal delivery. (12–14) WHO recommended the utilization of a partograph at the time of the expulsion phase of the baby which would be helpful for midwives, and staff (midwives, birth attendants and obstetricians) should be updated by providing appropriate training and support for maximally utilized. (15)

METHODOLOGY

All articles published in English were included and literature Studies were identified by reviewing national and international journals (via PubMed, Science Direct, and Cochrane database), the majority of the information was taken from PubMed journals. Evelyn et al. (2009) conducted a randomised and quasi-randomised controlled trial study on fundal pressure during the second stage of labour divided into two groups, an experimental (fundal pressure) and control group (No fundal pressure). The objectives of the study were to find out the positive and negative effects of fundal pressure during the expulsion phase of labour. On comparison, the study found no difference in terms of change in the incidence of caesarean section (RR 0.94, 95% CI), APGAR scores below 7 (RR 4.62, CI 95%), low arterial cord (RR 0.47, CI 95%) and neonatal admission in intensive care (RR 1.48, CI 95%) but in belt group, there was an increased risk of perineal (RR 1.73, CI 95%) and sphincter tear (RR 15.69%, CI 95%) between the groups. The study concluded that there was a need for good-quality research on fundal pressure and its consequences on maternal and fetal outcomes. (8)

Hsieh C (2016) conducted a study on, whether to push or not push, reflecting on the method used during the delivery period of a baby in China. They said fundal pressure should be gentle and firm during the expulsion phase and must be given by well-trained midwives to prevent various side effects such as uterine rupture, complete perineal injury, postpartum dyspareunia, rib and clavicle bone fracture, pain and neonatal breathing difficulty. (16)

Kanninen et al. (2022) conducted a study on direct pressure on the fundus to reduce the second stage of labour systemic review and meta-analysis. The objective of the study was the systemic review of the evidence on fundal pressure to expedite delivery. The review found that fundal pressure reduced the timing of the second stage of labour with low neonatal umbilical artery pH. (17)

Justus Hofmeyr et al. (2017) conducted a Cochrane database of a systemic review study on fundal pressure and the second stage of labour. The aim of the review was to assess the effectiveness of fundal pressure in normal vaginal delivery, and time span of labour, the possibility of caesarean section and explore perinatal outcomes. Out of 9 trails, fundal pressure was compared with no fundal pressure (5 trails) and an inflatable belt (4 trails). Their randomised controlled trial and quasi-randomised controlled trial method manual showed, in both manual fundal pressure and inflatable belt there was low-quality evidence in terms of normal delivery within a specific time (RR 0.96, 95% CI), duration in the second stage, low umbilical arterial cord pH and neonatal death. Women were prone to experience third-degree perineal tears by the inflatable belt (RR 15.69, 95% CI). The authors didn't find much-confirmed information related to the effect of uterine pressure and its use in clinics in the second stage of labour. Further research has to be done to explain the fundal pressure, the safety of unborn babies, long term maternal-fetal outcomes and maternal satisfaction. (7)

Zaher and Awoniyi conducted a study on the management of the second stage of labour by fundal pressure. The study found that being a controversial method there was a scarcity of research related to fundal pressure. The study concluded that future research should be done on the fundal pressure during the second stage of labour and its benefits and consequences to maternal and newborns, which would give us proper confirmation of its use or not so that midwives would get a proper protocol. (12)

Shen-Chuan and Chin-Ping carried out a case report on the uterine rupture of a 29-year-old woman at thirty-four weeks of pregnancy with fetal hydrops due to assisted fundal pressure. Assisted uterine fundal pressure was applied to deliver a fetal hydrops baby with shoulder dystocia. Postpartum haemorrhage and broad ligament hematoma were pronounced which was sutured initially. The manoeuvre had a risk of uterine rupture. (18)

Koji et al. (2009) conducted a study on the role of uterine pressure in normal vaginal birth and the risk to genital injury. The objective of the study was to find out the risk of manoeuvre in obstetrical outcomes. The conclusion of 15 monthly studies was an increased risk of perineal laceration ($p=0.045$), episiotomy ($p<0.001$) and vacuum extraction ($p<0.001$) with uterine fundal pressure. (19)

DISCUSSION

Fundal pressure should not be in routine practice as its effectiveness was not defined clearly. A randomised controlled study conducted by Olus et al. showed that there were no remarkable differences in mean umbilical artery pH and time span in the second stage of labour but they found a significant difference in low mean pO₂ and high mean pCO₂ values at $p<0.001$. The study concluded that the manoeuvre was not beneficial during the delivery of the baby. (20) Results of the above study agreed with a study conducted by Evelyn et al. as they didn't find proof for the fundal pressure's beneficial or harmful effects on the delivery period. Also, there was a lack of research on the safety of mothers and babies. This can be due to the lack of proper allocation of the study group, so good-quality research is required for its use in the labour room. One should put a stop to uterine fundal pressure during the expulsion phase in delivery because it showed less benefit and more risk to maternal and fetal outcomes. On the other hand, in extreme cases, where lack of facility and risk and benefit are in equal ratio it can be given by a well-experienced health professional who has knowledge of risks such as uterine rupture, and injury to the mother as well as newborn. similar results showed by Chuan Wei and his colleague in Taiwan, that assisted fundal pressure can be life-threatening situations for both mother and baby such as postpartum haemorrhage, uterine rupture and emergency laparotomy and neonatal intensive care unit (12.5%), levator ani muscle injury, increase duration of hospital stay and maternal death. (14,18,21) A similarity of results was shown by M Koji and colleagues that uterine fundal pressure leads to severe perineal laceration. The similarity of results may be due to health professionals using episiotomy and vacuum extraction while giving fundal pressure.

CONCLUSION

Although many obstetricians recommended fundal pressure during the second stage of labour, recent studies to evaluate the effectiveness of fundal pressure during the second stage of labour has been shown more risks than benefits for maternal and newborn, fundal pressure can be harmful to the mother and baby and can cause extensive perineal laceration, uterine rupture, uterine inversion, genital injury and fracture of the clavicle bone in the baby and death. Health professionals should condemn fundal pressure practices in the labour room and clinics and the use of a partograph would be an effective tool for knowing the progress of labour in the expulsion phase of labour in high as well as low resource settings. For midwives, recording and maintaining partograph should be used as a habit in their work routine.

REFERENCES

1. Meh C, Sharma A, Ram U, Fadel S, Correa N, Snelgrove J, et al. Trends in maternal mortality in India over two decades in nationally representative surveys. *BJOG*. 2022 Mar 15;129(4):550–61.
2. Slomski A. Why Do Hundreds of US Women Die Annually in Childbirth? *JAMA*. 2019 Apr 2;321(13):1239.
3. Harrison MS, Ali S, Pasha O, Saleem S, Althabe F, Berrueta M, et al. A prospective population-based study of maternal, fetal, and neonatal outcomes in the setting of prolonged labor, obstructed labor and failure to progress in low- and middle-income countries. *Reprod Health*. 2015 Dec 8;12(S2):S9.
4. DC Dutta. textbook of obstetrics. 9th ed. jaypee brothers medical publishers inc, editor. Dehli: Jaypee brothers; 2018. 254–257 p.
5. Julia Hutchison, Heba Mahdy, Justin Hutchison. Stages of labor. national library of medicine. 2012 Sep 12;
6. Randhawa I, Gupta KB, Kanwal M. A study of prolonged labour. *J Indian Med Assoc*. 1991 Jun;89(6):161–3.
7. Hofmeyr GJ, Vogel JP, Cuthbert A, Singata M. Fundal pressure during the second stage of labour. *Cochrane Database of Systematic Reviews*. 2017 Mar 7;2018(5).
8. Verheijen EC, Raven JH, Hofmeyr GJ. Fundal pressure during the second stage of labour. In: Verheijen EC, editor. *Cochrane Database of Systematic Reviews*. Chichester, UK: John Wiley & Sons, Ltd; 2009.
9. Farrington E, Connolly M, Phung L, Wilson AN, Comrie-Thomson L, Bohren MA, et al. The prevalence of uterine fundal pressure during the second stage of labour for women giving birth in health facilities: a systematic review and meta-analysis. *Reprod Health*. 2021 Dec 18;18(1):98.
10. Simpson KR, Knox GE. Fundal Pressure During the Second Stage of Labor. *MCN, The American Journal of Maternal/Child Nursing*. 2001 Mar;26(2):64–71.
11. Moiety FMS, Azzam AZ. Fundal pressure during the second stage of labor in a tertiary obstetric center: A prospective analysis. *Journal of Obstetrics and Gynaecology Research*. 2014 Apr;40(4):946–53.
12. Merhi ZO, Awonuga AO. The Role of Uterine Fundal Pressure in the Management of the Second Stage of Labor: A Reappraisal. *Obstet Gynecol Surv*. 2005 Sep;60(9):599–603.
13. Mahendru R. Shortening the second stage of labor? *J Turk Ger Gynecol Assoc*. 2010 Jun 1;11(2):95–8.
14. Youssef A, Salsi G, Cataneo I, Pacella G, Azzarone C, Paganotto MC, et al. Fundal pressure in second stage of labor (Kristeller maneuver) is associated with increased risk of levator ani muscle avulsion. *Ultrasound in Obstetrics & Gynecology*. 2019 Jan 5;53(1):95–100.
15. Dalal AR, Purandare AC. The Partograph in Childbirth: An Absolute Essentiality or a Mere Exercise? *The Journal of Obstetrics and Gynecology of India*. 2018 Feb 16;68(1):3–14.
16. Hsieh C. To Push or Not to Push? Reflections on the Uterine Fundal Pressure Application in the Second Stage of Labor. *NATIONAL LIBRARY OF RESEARCH*. 2016 Aug;4(63):123–7.
17. Kanninen T, Bellussi F, Berghella V. Fundal pressure to shorten the second stage of labor: Systematic review and meta-analysis. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2022 Aug;275:70–83.
18. Wei SC, Chen CP. Uterine Rupture due to Traumatic Assisted Fundal Pressure. *Taiwan J Obstet Gynecol*. 2006 Jun;45(2):170–2.
19. Matsuo K, Shiki Y, Yamasaki M, Shimoya K. Use of uterine fundal pressure maneuver at vaginal delivery and risk of severe perineal laceration. *Arch Gynecol Obstet*. 2009 Nov 5;280(5):781–6.
20. Api O, Api M. Is it time to relinquish fundal pressure maneuver? *Arch Gynecol Obstet*. 2010 Apr 16;281(4):779–80.
21. Hayata E, Nakata M, Takano M, Umemura N, Nagasaki S, Oji A, et al. Safety of uterine fundal pressure maneuver during second stage of labor in a tertiary perinatal medical center: A retrospective observational study. *Taiwan J Obstet Gynecol*. 2019 May;58(3):375–9.