

Shortening the second stage of labor?

Travayın ikinci evresinin kısaltılması

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Abstract

Objective: To evaluate the benefits and risks of using uterine fundal pressure in shortening the second stage of labor and on the obstetrical outcome.

Material and Methods: A pilot study comprising 209 primigravidae between 37 and 40 gestational weeks with singleton fetus in cephalic presentation admitted to the delivery suite were considered and were randomly allocated into two groups: I (n=101) and II (n=108), with or without manual fundal pressure, respectively, during the second stage of labor. Main observation measures considered were: duration of the second stage of labor was the primary outcome measure and the secondary outcome measures were severe maternal morbidity/mortality, neonatal trauma, admission to neonatal intensive care unit, and neonatal death.

Results: There were no significant differences in the mean duration of the second stage of labor and secondary outcome measures. Significant adverse findings having no mention in the earlier literature, were noticed which were: one case each of retained placenta and uterine prolapse besides increased evidence of maternal exhaustion and perineal injuries (including one case of complete perineal tear) in the group where fundal pressure was exercised.

Conclusion: Application of uterine fundal pressure in a delivering woman was not only ineffective in shortening the second stage of labor but added to the risks during parturition.

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Key words: Fundal pressure, second stage, perineal injuries

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Özet

Amaç: Doğumun ikinci evresinde uterin fundal baskı uygulamanın fayda ve risklerini ve obstetrik getiri üzerindeki etkisini araştırmak.

Gereç ve Yöntemler: Otuzüç-kırk hafta arasında sancıları başlamış bebeği tekil ve baş ile gelen 209 primigravid gebe doğumhaneye alındı ve fundal baskı uygulanacak olan (n=101) ve uygulanmayacak olan (n=108) olarak iki gruba alloke edildi. Doğumun ikinci evresinin süresi primer getiri, ciddi maternal mortalite ve morbidite, neonatal travma, yenidoğan yoğun bakı ünitesine giriş ve yenidoğan ölümü sekonder getiriler olarak belirlendi.

Bulgular: Doğumun ikinci evresi veya sekonder getiriler açısından iki grup arasında anlamlı fark saptanmadı. Ancak, şu ana kadar literatürde bildirilmeyen önemli bir bulguya rastlandı: fundal baskı uygulanan gruptaki bir hastada plasenta retansiyonu ve uterin prolapsus ve diğer bir hastada da perineal yaralanma (komplet perineal yırtık) görüldü.

Sonuç: Doğumun ikinci evresinde fundal baskı yapmak süreyi kısaltmada etkisiz olmasının yanında aynı zamanda doğumu riskli bir hale getirir. (J Turkish-German Gynecol Assoc 2010; 11: 95-8)

Anahtar kelimeler: Fundal baskı, ikinci evre, perineal yaralanma

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Introduction

Uterine fundal pressure is an age old practice and is applied by some health workers including resident and native doctors and traditional birth attendants to women in labor with the belief that it helps to increase expulsive efforts in labor (1). It comprises of the application of external force to the uppermost part of the uterus in the caudal direction in the second stage of labor in an attempt to shorten its duration and to help expedite the delivery. A large majority of centers, including the U.S, also use fundal pressure, although many fail to document the practice in medical records (2). The use of this practice to assist the second stage of labor has been controversial throughout (3). Studies of how fundal pressure might speed delivery are lacking.

The present study was conducted to determine the effect of uterine fundal pressure on shortening the second stage of labor and on the fetal outcome.

Material and Methods

A review based on 209 vaginal deliveries, during the period between 19th Mar. 2007 to 5th Sept. 2008 in the Maharishi Markendeshwar Institute of Medical Sciences and Research, Mullana, (Ambala, India) was evaluated.

Written informed consent was obtained and the department Ethical Committee approved the study. Being a pilot study, sample size calculation was not required. Those included were healthy primigravidae patients (aged 20-27 years) with a singleton fetus in cephalic presentation, having spontaneous onset of labour at-term, between 37-40 weeks, with the pelvis being average adequate gynaecoid with no clinical evidence of cephalo-pelvic disproportion. Exclusion criteria considered were women with a previously scarred uterus, uterine anomalies, previous instrumental abortion, clinical or sonographic evidence of intra-uterine growth restriction,

induction of labor, inappropriate prostaglandin and oxytocin usage, vacuum extraction/ forceps delivery or intrauterine manipulations and caesarean sections. Two hundred and forty two women were enrolled for the study but 33 of these did not meet the inclusion criteria (non-cephalic presentation n=9, use of oxytocics for augmentation of labour n=13, signs of fetal distress n=11). Allocation of the remaining 209 patients was done into two groups by using a randomized table of numbers. Index cards with the random assignment were prepared and placed in sealed envelopes and a researcher who was blinded to the baseline examination findings opened the envelope, approximately at the onset of the second stage of labour, and the proceedings were done according to the group assignment. As depicted in Figure 1, two groups were assigned: group-I (n=101), where manual pressure was applied to the uterine fundus during the second stage of labour, and group-II (n=108), in whom no fundal pressure was executed. All participants were in active labour at-term and the women remained alert and responsive throughout. During the course of labor, neither oxytocin nor prostaglandin augmentation was administered to any of the patients in both groups.

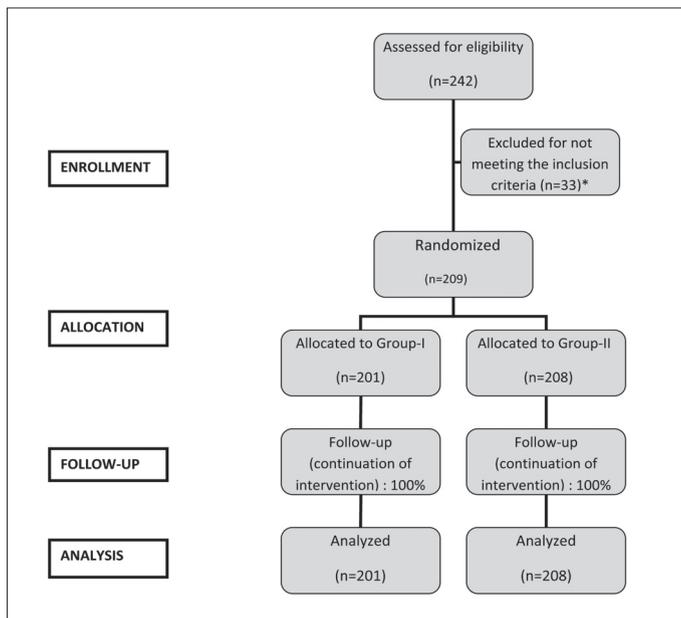


Figure 1. The CONSORT Flow Diagram showing the progress of participants at each stage of the study. *(non-cephalic presentation n=9, use of oxytocics for augmentation of labour n=13, signs of fetal distress n=11)

Fundal pressure was applied manually at a 30-to 40-degree angle to the spine in the direction of the pelvis by the same doctor and three applications at the most in group-I patients after the clinical confirmation of full cervical dilatation with the vertex below the level of the ischial spines (plus-station) and occipito- anterior position. To observe uniformity, right medio-lateral episiotomy was employed at the instance of crowning of the vertex in all the cases and the placenta was delivered by modified Brandt- Andrew's technique (controlled cord traction) at the clinical confirmation of its separation following delivery of the baby.

All the observations were given consideration along with peri-operative complications in both the groups. The data were tabulated and analyzed. Summary statistics such as mean, standard deviation were estimated. Chi-square and Fisher's exact tests were used for categorical data. For continuous data like age, weight and duration of the second stage, student's t-test was utilised. The significance was seen after applying log transformation and statistical significance was set at $P < 0.05$.

Observations

The main objective was to note the difference in the duration of the second stage of labour and secondary areas of concern were mother's condition and findings from postpartum examination, complications like perineal injuries, Apgar score of the babies, any neonatal complications, or any other unforeseen eventualities in either of the groups.

The profile of the patients constituting both the groups is depicted in Table 1 and apparently the difference in the two groups was not statistically significant. Birth weight of the babies in the two groups was also not significantly different.

No appreciable difference was noted in our primary outcome concern of this study, as the average duration of the second stage in group-I was 34-55 minutes (mean being 49 minutes), and in group-II 33-53 minutes (mean 48 minutes), Table 2. The table also illustrates the perineal injuries sustained such as: extension of episiotomy in 5 cases of group-I, while only one woman had this eventuality in group-II. One case in group-I had complete perineal tear and this was repaired following the delivery of the placenta. Significant adverse findings happened only in group-I, where one case of retained placenta was encountered and had to undergo manual removal under general anaesthesia. In this patient, fundal pressure or uterine manipulation after the delivery of the baby and active management of the third stage, along with the possibility of adherent placenta (by sonography and color dop-

Table 1. Patient Profile and Birth weight

	GROUP - I (n=101) Mean (Range)	GROUP - II (n=108) Mean (Range)	P - VALUE
PATIENT PROFILE			
AGE (years)	21.6 (20.2-26.7)	22.3 (20.0-26.9)	>0.05
WEIGHT (kg)	58.41 (43.4-76.4)	57.92 (42.5-77.0)	>0.05
BIRTH WEIGHT (kg)	2.86 (2.52-3.32)	2.91 (2.50-3.48)	>0.05

pler) which might have precipitated the placenta to be retained, were ruled out and thus this could be attributed to the application of fundal pressure during the second stage.

One patient in this group developed uterine prolapse in the postpartum period and this persisted even six months after delivery. The past history of this patient did not reveal any precipitating factor for such an eventuality.

Other significant findings noted were that, in group I, maternal exhaustion during and immediately after parturition was apparently more, and a subjective feeling of pain as evidenced by the requirement of injectable analgesic (Diclofenac, besides routine oral anti-spasmodic drugs) within 36 hours post-delivery, was also in higher proportions, Table 3.

One patient in this group had post-natal retention of urine for which bladder decompression was done twice with a disposable catheter and on recurrence had to be put on indwelling Foley's catheter for 72 hours. This was removed after toning up the bladder with clamping and intermittent release when the patient felt the desire to micturate.

In none of the two groups was a severely asphyxiated baby born and the Apgar score was also no different, being between 7 and 9 at 1 and 5 minutes respectively. No case of neonatal trauma and/or neonatal death was reported, the probable reason being that cases with intra-uterine growth restriction, vacuum extraction or forceps delivery, and intrauterine manipulations were excluded from the study.

Discussion

Fundal pressure is the application of steady pressure on the fundus of the uterus and is considered among the most controversial maneuvers used in the second stage of labor since no confirmed benefit of the procedure has been documented,

albeit a few adverse events have been reported in association with its execution (3). A scientific justification for its use is yet to be made. In their study, Api et al. concluded that application of fundal pressure on a delivering woman was ineffective in shortening the second stage of labor (4) while, Cosner in 1996 (5) reported that its use to assist the second stage has been found to cause a longer second stage of labor instead. Moreover, it has been associated with a number of complications (6) ranging from higher incidence of third and fourth degree perineal lacerations (4, 7) to several reports of uterine rupture (8, 9) in those women where application of fundal pressure is practiced in labor. Pan et al. (10) reported a case of uterine rupture due to traumatic fundal pressure in a primigravid woman with an unscarred uterus. However, Wei et al encountered this complication in a case where fundal pressure was applied because of coexistent shoulder dystocia (11). Kurduglu et al. (12) have cautioned against the use of uterine fundal pressure, particularly in conditions like shoulder dystocia: if applied in this circumstance, besides the risk of uterine rupture, the shoulder will be further impacted and increase the chances of injury to the baby (3).

Uterine rupture is a rare but serious complication in obstetrical practice resulting in maternal and fetal jeopardy. In an unscarred uterus it is seen much more rarely, with an estimated occurrence of one in 8000-15000 deliveries, but the incidence increases when fundal pressure is applied on the uterus during active labor (10), more so in cases with previous cesarean section, inappropriate prostaglandin and oxytocin usage, previous instrumental abortion, vacuum extraction delivery and intrauterine manipulations. All these, besides obstructed labor and grandmultiparity, are considered as risk factors for uterine rupture if fundal pressure is applied (13). These cases were excluded from our study. This practice of applying uterine

Table 2. Duration of Second Stage, Perineal Injuries and other Significant Findings

FINDINGS	GROUP - I	GROUP - II	P - VALUE
DURATION OF SECOND STAGE			
Mean(range)	49 (34-55) minutes	48 (33-53) minutes	>0.05
PERINEAL INJURIES			
Extension of episiotomy	5 (4.95%)	1 (0.92%)	<0.05
Complete Perineal tear	1 (0.99%)	- (0.0%)	
SIGNIFICANT FINDINGS			
Retained placenta	1 (0.99%)	- (0.0%)	
Uterine prolapse	1 (0.99%)	- (0.0%)	

Table 3. Injectable analgesic requirement within 36 hours post-natal

Injection Diclofenac (in 36 hours post-delivery)	GROUP - I (n=101) No. of patients (%)	GROUP - II (n=108) No. of patients (%)	P - VALUE
Single dose	21 (20.79)	5 (4.63)	<0.05
Two doses	9 (8.91)	3 (2.77)	<0.05
Three doses	4 (3.96)	- (0.0)	

fundal pressure is also associated with acute puerperal uterine inversion (14, 15).

These conditions are life threatening to the mother and in the case of ruptured uterus, to the baby too. Fundal pressure in labor also reportedly precipitated uterovaginal prolapse (1) as also happened in one of our cases. According to Buhimschi et al. (2), such fundal thrust can substantially augment intrauterine pressure in some parturients and this hypothesis may be a reason behind its adversities. In the present study, although no major life threatening complications were encountered, uterine fundal pressure application was found to be fraught with increased evidence of maternal exhaustion with enhanced rate of extension of episiotomy and even a case of complete perineal tear. A case of retained placenta was also seen in this group attributable to the fundal pressure manoeuvre. Our study also noticed a case of uterovaginal prolapse, possibly due to the practice of applying fundal pressure during labour: this being the second such case encountered as per review of the literature (1).

Conclusion

The purpose for which uterine fundal pressure is primarily employed i.e. shortening the second stage of labour, is disproved by this study. However, when there is delay in the second stage of labor, efforts should be made to determine the reasons and appropriate corrective measures be put in place. Since fundal pressure is associated with several complications, both orthodox and traditional health practitioners should avoid applying it.

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Conflicts of interest

it is declared that there are no conflicts of interest

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