

# Patwardhan Technique: Reduce Second Stage Cesarean Morbidity

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## ABSTRACT

**Background:** Patwardhan technique' is a unique technique to deliver babies in second stage of labor when head is deeply wedged in pelvis. The study aimed to compare the conventional 'push' or 'pull' method with the Patwardhan technique in terms of maternal and neonatal morbidities.

**Method:** It was an observational study over a period of one year, where 74 primary second stage cesarean sections performed during this period were included in study. In 41 cases baby was delivered by Patwardhan technique and rest 33 were delivered by conventional methods as vertex or breech. Maternal and labor characteristics with neonatal outcome and intraoperative morbidity in both the groups were compared.

**Result:** The study revealed significantly less number of uterine extensions, PPH and need for blood transfusions with Patwardhan technique, thus significantly reducing the maternal morbidity. No significant differences were noted in neonatal outcomes in both the groups.

**Conclusion:** The ability to deliver baby safely without increasing the maternal and fetal morbidity makes this technique superior to conventional methods and hence, it should be practiced as the primary method while dealing with second stage caesarean section.

**Keywords:** Second stage cesarean section, Patwardhan technique, Shoulder first technique.

## INTRODUCTION

A second stage cesarean with deeply wedged fetal head is not only technically challenging and distressful task for obstetrician requiring skillful handling of the tissue, but is also associated with high rates of maternal and fetal complications.<sup>1-3</sup> In developing countries like ours, the tertiary care centers have to tackle with more number of second stage caesarean sections especially the cases referred from primary and secondary health centers due to late referrals from such centers, where over enthusiastic attempts have already been made for vaginal delivery, practices of home delivery by traditional birth attendants and poor utilization of available health services. In our country, second stage cesarean sections account for one-fourth of all primary caesarean sections.<sup>4</sup> Events like extension of uterine incision, injury to surrounding structures like bladder, broad

ligament hematoma, hemorrhage, infection, tissue necrosis due to deeply impacted head, risk of fistula formation and need for hysterectomy, contribute to increased maternal morbidity. Fetal complication include soft tissue injuries and fractures, poor APGAR scores, birth asphyxia and admission to the neonatal ICU unit.<sup>5</sup> Conventionally the impacted fetal head may be extracted by 'push method', i.e., abdomino-vaginal approach of pushing head through the vagina or by 'pull method', i.e., reverse breech extraction technique. Both these methods are associated with increased maternal morbidity.<sup>6,7</sup> Shoulder first or 'Patwardhan technique' is a unique technique to deliver babies in second stage of labor when head is deeply wedged in pelvis.<sup>8,9</sup> The aim of this study was to compare the conventional 'push' or 'pull' method with the Patwardhan technique in terms of maternal and neonatal morbidities.

## METHODS

It was an observational study over a period of one year from January 2016 to January 2017, at a tertiary care teaching hospital in Haryana state. All the primary second stage cesarean sections performed during study period were included in study. The study cases were divided into two groups; Group A was assigned to all cases in which delivery of baby was done by 'Patwardhan technique' and Group B was assigned to patients in whom delivery of baby was either done by 'push method' or as breech extraction by 'pull method'.

### Patwardhan Technique<sup>8</sup>

In case of occipito-transverse or occipito-anterior positions with the head deeply impacted in the pelvis, incision is made in the lower uterine segment, at the level of the anterior shoulder, which is delivered out. With gentle traction on this shoulder, the posterior shoulder is also delivered out. The surgeon then hooks the fingers through both the axillae and with gentle traction, aided by fundal pressure applied by assistant, the body of the fetus is brought out of the uterus. Lastly, the baby's head is gently lifted out of the pelvis.

### The Conventional Push Method<sup>10</sup>

It is the oldest practiced method and known to be associated with many difficulties and complications. After opening the uterus, the wedged fetal head is pushed up by an assistant's hand introduced through vagina while the surgeon tries to get beneath the fetal head as the assistant pushes the fetal head up from vagina below. The surgeon then delivers the baby as in routine caesarean sections. The wedged

head, leaves no space, making extraction of head difficult along with contamination of the operative field from below. Extension of the fetal head is inevitable as the surgeon lifts it out of the pelvis along with extension of uterine incision.

### Pull technique

Generally used in direct occipito-posterior position when the ventral aspect of the fetus is facing the incision. The leg is reached by introducing surgeon's hand in upper segment of uterus and delivery is conducted as breech.

All cases received pre-operative intravenous fluids and antibiotics. Spinal anesthesia was given in all cases. Intra-operative morbidities in terms of extension of uterine incision, injury to surrounding structures like bladder, post partum hemorrhage, need for hysterectomy and need for blood transfusions was noted in both groups. Neonatal outcome in terms of birth weight, Apgar score at 1 minute, asphyxia, NICU admission and stillbirth were also compared in two groups.

## RESULTS

Out of 1528 cesarean deliveries done in study period, 74 underwent second stage cesarean section. A total of 41 patients belonged to group A and 33 belonged to group B. Labor characteristics of both the groups, including duration of labor and duration of rupture of membranes, were found to be statistically comparable as has been outlined [Table1] below. Parity, period of gestation, pre-operative hemoglobin levels were also comparable in both the groups.

Table 1 : Maternal and labor characteristics

Parameter		A (n=41)	B (n=33)	Total	P - value
Parity	Primigravida	19	18	37	0.48
	Multigravida	22	15	37	
Period of gestation (in weeks)	<37	7	6	13	0.99
	37-40	25	20	45	
	>40	9	7	16	
Duration of labor (in hours)	<12	10	8	18	0.43
	12-24	23	22	45	
	>24	8	3	11	
Pre-Op Hb (gm/dl)	>10	18	15	33	0.49
	8-10	20	12	32	
	6-8	2	4	6	
	<6	1	2	3	

Neonatal profiles of both the groups were also assessed [Table 2]. Birth weights were comparable in both groups.

The Apgar scores of the babies, need for neonatal ICU(NICU) in both the groups, were also comparable and were not statistically significant. This implies that any intra-operative complications were not related to birth weight. Even the neonatal outcome was not related to technique of delivery.

**Table 2 :Neonatal outcome**

Parameter		A (n=41)	B (n=33)	Total	P - value
Fetal weight (in Kgs)	2.5-3.0	11	5	16	0.51
	3.0-3.5	24	22	46	
	>3.5	6	5	11	
APGAR (at 1 minute)	≤7	32	25	57	0.82
	>7	9	8	17	
NICU care	Required	7	9	16	0.29
	Not required	34	24	58	
	%	17.1%	27.3%	21.6%	
Fetal bradycardia	Yes	22	15	37	0.48
	No	19	18	37	
Color of liquor	Clear	25	14	39	0.11
	MSL	16	19	35	

Extension of uterine incision during caesarean section occurred in 28 patients in Group B and only 2 in Group A [table 3]. This difference was statistically significant, indicating the superiority of this technique as compared to that of the conventional “Push” and “Pull” method. Broad ligament hematoma formation was noted in 3 cases of group B, while none in group A. None of the patients in our study required hysterectomy, although significant cases of PPH were noted in group B.

**Table 3: Intraoperative morbidity**

	A (n=41)	B (n=33)	Total	P - value
Extension of uterine incision	2	28	30	Significant at more than 99.7%
Bladder injury	0	3	3	Significant at more than 95%
PPH	3	18	21	Significant at more than 99.7%
Broad ligament extension	0	3	3	Significant at more than 95%
Need for blood transfusion	4	13	17	(0.0026) Significant at more than 99.7%

## DISCUSSION

The incidence of second stage caesarean section throughout world is 4%-5% which is comparable to our study (4.8%). Delivering a baby even during caesarean section is an art and it does contribute to maternal and fetal morbidity. A prolonged second stage of labor with a deeply wedged head increases the vulnerability of thinned out lower uterine segment to lacerations and extensions lower down into cervix and adjoining broad ligament and bladder, hence increasing maternal morbidity.<sup>11</sup> Due to prolonged second stage of labor, the incidence of birth asphyxia is more in babies born by second stage caesarean section.<sup>12,13</sup> The neonatal outcomes were comparable in both the

groups and the study found no increased incidence of birth asphyxia with patwardhan technique. Similar results were shown by study conducted by Desai P<sup>14</sup>, Mukhopadhyay et al<sup>15</sup> and Saha et al.<sup>16</sup> The incidence of uterine incision extension in our study was as high as 84.8% with ‘push’ and ‘pull’ technique of fetus extraction, while it was only 4.8% with patwardhan technique. This clearly depicts the safety and superiority of this technique. The result is comparable to other studies<sup>9,14-16</sup> which also clearly demonstrated that less extensions lead to lesser maternal morbidity and blood transfusions. The shoulder first technique hence avoids uterine extensions, inadvertent injury to surrounding tissues and bladder which is sure to occur when a hand

is forcibly put to dislodge a jammed head from already vulnerable, edematous and friable lower segment.

## CONCLUSION

The beauty of Patwardhan's technique or shoulder first method lies in its ability to deliver baby safely without increasing the maternal and fetal morbidity. The technique should hence, be learnt and practiced as the primary method while dealing with second stage cesarean section especially by residents in medical colleges.

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