Evaluation of Patwardhan Technique in Second Stage Caesarean Section

Manju Lal¹, Priyanka Goyal², Saba Shamim³

ABSTRACT

Background: Caesarean sections done at full cervical dilatation with impacted fetal head are technically very difficult and are associated with increased incidence of maternal and fetal morbidities. The objective of this study was to compare the maternal and neonatal morbidities between the Patwardhan technique and the Push method for extraction of the fetus in second stage caesarean section. Methods: This is retrospective analysis of all caesarean sections done in the second stage at tertiary care centre at Dehradun, UK, India from 2014 to Dec 2016. Women with single fetus, with anterior vertex, at term with a deeply impacted fetal head into pelvis, in whom decision of caesarean section was already taken, were included in the study. Results: The patients were divided into two groups, Group 1 (study group) consists of all cases in which extraction of fetus was done by Patwardhan technique and group 2 (control) in whom extraction of fetus was done by push method and extracted as vertex. Complications like extension of the incision, injury to surrounding organs, PPH, need for blood transfusion and neonatal outcome in terms of weight, APGAR and NICU stay were compared in both groups. Out of these 120 cases, 56 belonged to group A (Patwardhan) and 64 belonged to group B (push method). Traumatic PPH and blood transfusions were significantly less in Patwardhan as compared to Push method (3%, 16%, p=0.0049). There were significantly less uterine incision extension seen in Patwardhan group as compared to Push method (5%, 22%, p=0.0031). Baby outcome was almost similar in both the groups. While complications are inherent in both the techniques Patwardhan method has been shown to cover considerable advantage in prevention of maternal morbidities. Conclusions: Patwardhan is a useful manoeuvre in intra operative disengagement of fetal head in second stage CS and it should be learnt and practiced as the primary technique.

Key words: Caesarean sections, Patwardhan technique, NICU

INTRODUCTION

Obstructed labour affects more than 6 million women worldwide. It accounts for 8% of the approximately 500,000 annual maternal deaths which occur mostly in low –resource countries.¹ The exact incidence of deeply impacted head encountered during cesarean delivery is not known but is estimated to be a quarter of all emergency cesarean sections.² Impaction of the fetal head is a manifestation of an unduly prolonged second stage when the obstetrician has to decide upon mode of delivery whether instrumental delivery or a cesarean section.³Caesarean section at full dilatation are associated with higher rate of maternal and neonatal complications.⁴ Delivery of the impacted fetal head in the second stage is technically challenging and is a major factor contributing to associated increased complications.⁵ Material complications include extension of the uterine wound, uterine artery laceration, broad ligament hematoma and a higher risk of post partum hemorrhage requiring blood transfusion, directed trauma to the bladder or due to prolonged pressure by the fetal head. Trauma to bladder during vaginal or instrumental delivery may lead to stress incontinence. The most distressing long term complication of the forceful vaginal delivery is obstetric fistulae. In developing countries, fistulae are commonly the result of prolonged labor which result in pressure necrosis caused by

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impaction of the presenting part against pubic symphysis.\textsuperscript{6,7} Fetal complication include injuries, poor APGAR scores and admission to the neonatal ICU unit, asphyxia leading to stillbirth, brain damage.\textsuperscript{8} The number of second stage caesarean sections encountered in developing countries is much higher especially in rural population due to neglected obstetric care, poor utilization of available health services, traditional beliefs and practices like preference of home delivery by traditional birth attendants, poor transport facilities, late referrals from primary health centres, where overenthusiastic attempts have already been made by partially trained obstetrician for instrumental delivery.

Obstructed labour with the fetal head impacted deep in the pelvis is an obstetric complication that requires cesarean section with skillful handing is an organized manner to avoid serious maternal and neonatal sequel.\textsuperscript{9} Extraction and delivery of the fetal head in this situation can be achieved utilizing either abdomino-vaginal approach with head pushing up from the vagina\textsuperscript{10} or Patwardhan technique, where the infant’s shoulders are delivered first, then the trunk, breech, limbs and finally the head.

So, aim of this study was to compare the Patwardhan technique with the conventioned ‘Push’ method in term of selected maternal and neonatal morbidities.

**METHODS**

**Patient recruitment**

This is retrospective analysis of all caesarean sections done in the second stage at Himalayan Institute of Medical Sciences, which is a tertiary care centre at Dehradun, Uttarakhand, India, from 2014 to Dec 2016. The Ethics Institutional Review Board of Swami Rama Himalayan University approved the study.

The exclusion criteria were

1. Intrauterine fetal death
2. Congenital fetal anomaly
3. Multiple pregnancy
4. Preterm caesarean section
5. Previous caesarean section

The patients were divided into two groups, Group 1 (study group) consists of all cases in which extraction of fetus was done by Patwardhan technique and group 2 (control) in whom extraction of fetus was done by push method and extracted as vertex. Complications like extension of the incision, injury to surrounding organs, PPH, need for blood transfusion and neonatal outcome in terms of weight, APGAR and NICU stay were compared in both groups.

**Patwardhan Technique**: Was introduced in 1957 by Dr. Patwardhan. In cases of occipito-anterior and transverse positions, with the head deeply impacted in the pelvis, incision is made in the lower uterine segment, shoulders are present usually at incision level

- The anterior shoulder is delivered out by hooking the arm first
- With gentle traction on this shoulder, the posterior shoulder is also delivered out
- Next the surgeon holds the trunk of the baby gently with both thumbs parallel to spine and with fundal pressure given by the assistant the buttocks are delivered followed by legs.

- Now the baby’s head which is the only part of the foetus which is still inside the uterus, is gently lifted out of the uterus.

**Modified Patwardhan Technique**;

In case of occipito–posterior position with the head deeply into the pelvis, the anterior shoulder is delivered of first followed by delivering the same side leg

- In other side leg is then delivered gently followed by same side arm
- By gently pulling baby legs buttocks and the trunk of baby and are delivered
- Lastly the baby head is delivered

**The Conventional Push Method**

It is the oldest method\textsuperscript{12,13} known and is practiced since ages. This method is 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. The surgeon then introduces his hand into the uterus, between the baby’s head & uterine wall, to get beneath the fetal head as the assistant pushes the fetal head up from down below. The surgeon then delivers the fetal head and rest of the body as in routine caesarean sections.

The deeply impacted head, leaves no space between bony pelvis, muscles and head-making it very difficult for the surgeon to insert a hand beneath it. Contamination of the operative field from below is a rule. Undue force exerted by assistant leads to uterine incision extension. Extension of the fetal head is inevitable as the surgeon lifts it out of the pelvis with the corresponding complications.

**Statistical Analysis**

The data were processed using the statistical package for social sciences version 13.0 (SPSS). Mean and Standard Deviation where used for explaining data. Calculation of $p$ value were done using student t test and fisher’s test and value of $<0.05$ was considered statistically significant.

**RESULTS**

We had a total of 7560 deliveries in the total of three years of study period. Among them 4981 (65.89\%) were vaginal and 2579 (34.01\%) were LSCS. Out of these LSCS, 138 (5.41\%) were done in second stage. 120 (4.65\%) patient fulfilled both inclusion and exclusion criteria. Out of these 120 cases, 56 belonged to group A (Patwardhan) and 64 belonged to group B (push method).

Mean gestational age, mean fetal weight and incidence of meconium stained liquor where comparable in the groups. Neonatal morbidities of both the groups were studied. APGAR at 1 min was comparable in both groups. Though there were 2 incidences of fetal injuries (humerus fracture) in the Patwardhan’s group and 2 still births in Push method group, the difference was not statistically significant. The conclusion being that whatever method of fetal extraction was employed fetal morbidities were comparable, means fetal morbidities do not depend on the method used for fetal extraction.

The present study showed increased incidence of uterine incision extension, uterine artery laceration and traumatic PPH in groups B which were statistically significant. Two cases needed re- laparotomy followed by hysterectomy in group B as one had developed broad ligament hematoma.
and the other had incision extension in the cervix which was missed primarily. Blood transfusion required were more in group B. However, occurrence of atonic PPH was not significantly different in both groups.

Table 1: Fetal parameters

<table>
<thead>
<tr>
<th></th>
<th>Group A N=56</th>
<th>Group B N=64</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean gestational age</td>
<td>38.85±0.85</td>
<td>39.14±1.0</td>
<td>0.129</td>
</tr>
<tr>
<td>Mean fetal weight at birth (kgs)</td>
<td>3050±230</td>
<td>3080±260</td>
<td>0.54</td>
</tr>
<tr>
<td>Meconium stained liquor</td>
<td>21(39.13)</td>
<td>27(42.30)</td>
<td>0.8377</td>
</tr>
</tbody>
</table>

Table 2: Fetal Morbidities

<table>
<thead>
<tr>
<th></th>
<th>GROUP-A N=56</th>
<th>GROUP-B N=64</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APGAR at 1 min ≤7=32(58.69%)</td>
<td>43(67.30%)</td>
<td>0.4076</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;7=24(11.30%)</td>
<td>21(32.69%)</td>
<td></td>
</tr>
<tr>
<td>Need for NICU care</td>
<td>10(19.61%)</td>
<td>13(21.15%)</td>
<td>1.0000</td>
</tr>
<tr>
<td>Fetal injuries</td>
<td>2(3.77%)</td>
<td>0(0)</td>
<td></td>
</tr>
<tr>
<td>Stills births</td>
<td>0(0)</td>
<td>2(3.84%)</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Table 3: Maternal Morbidity

<table>
<thead>
<tr>
<th></th>
<th>Group A N=56</th>
<th>Group B N=64</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterine Artery injury Extension</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uterine Incision</td>
<td>2(4.34%)</td>
<td>15(23.07%)</td>
<td>0.0092*</td>
</tr>
<tr>
<td>Bladder Injury</td>
<td>0(0)</td>
<td>3</td>
<td>0.4967</td>
</tr>
<tr>
<td>Traumatic PPH</td>
<td>2(3.44)</td>
<td>16(25)</td>
<td>0.0049*</td>
</tr>
<tr>
<td>Atonic PPH</td>
<td>3</td>
<td>7</td>
<td>0.4423</td>
</tr>
<tr>
<td>Blood transfusion Needed</td>
<td>8</td>
<td>21</td>
<td>0.0259*</td>
</tr>
<tr>
<td>Need for Hysterectomy</td>
<td>0</td>
<td>2</td>
<td>0.4967</td>
</tr>
</tbody>
</table>

DISCUSSION

Incidence of second stage caesarean section throughout world is 4%-5% which in comparable to 5.41% of our study group. Fetal parameters like gestational age, birth weight & meconium stained liquor were in both the groups. The incidence of extension of incision in push method extraction was found 34.61% in our study which is also same in other studies. Partho Mukhopadhyay et al[15] found (64% vs 6%) and Pradip Kumar Saha et al had a result of (22 % vs 0%).[16] Uterine incision extension related other complications like uterine artery laceration, broad ligament hematoma, bladder injury, traumatic PPH, need for hysterectomy and blood transfusion were all in Push group than in Patwardhan group.

Birth asphyxia and still birth rates were comparable in both groups. Similar results were seen in study done by Mukhopadhyay et al[15] and Pradip Kumar Saha et al.[16]

CONCLUSION

A clearly shown by the present study and seeing the examples of other studies, it is proved beyond doubts that Patwardhan’s technique is able to prevent many maternal morbidities. Hence, we are of the opinion that Patwardhan technique should be learnt and practiced as the primary method while dealing with second stage caesarean section.

REFERENCES