

Lower Segment Cesarean Section in Second Stage of Labor: Comparison of Patwardhan Method with Conventional Pushing Method (A 3-year Study)

Nihar R Bhoi¹, Lalmohan Nayak², Mitanjali Sethy³, Kumudini Pradhan⁴, Prakash Mishra⁵, Tusar Mahapatra⁶, Prosun Bera⁷

ABSTRACT

Objective: To compare the fetomaternal outcome in Patwardhan technique vs “Push” method when lower segment cesarean section (LSCS) done in second stage of labor.

Materials and methods: A prospective analysis of all cesarean sections performed in advanced labor with deeply wedged head in VSS Medical College and Hospital, Burla, Odisha, India, during the years from April 2012 to March 2015. The cases were divided into two groups randomly; group I (deliveries by Patwardhan technique) and group II (Push method).

Results: Out of 420 number of LSCS needed operation in 2nd stage of labor, in 129 cases, babies were delivered by Patwardhan technique and in 291 cases, delivery was conducted by Push method. 11.5% of cases among push/pull group had unwanted extension of uterine incision, whereas none had extension in Patwardhan group ($p < 0.0001$). Thirteen percent cases in group II, whereas 4.5% in group I required blood transfusion ($p < 0.0001$). The mean duration of hospital stay was not significantly different in both the groups ($p = 0.06$). There was requirement of NICU care in 23.2% cases in group I vs 28.8% in group II.

Conclusion: In cases with difficult extraction of the impacted fetal head during cesarean section in second stage, Patwardhan technique is very useful in reducing fetomaternal morbidity and is the preferred method as compared to push and pull method.

Keywords: LSCS, NICU, Patwardhan technique, Second stage of labor.

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INTRODUCTION

In developing countries, we often receive cases in advanced labor. Cause may be attributed to poor infrastructure leading to delays in many ways. Nearly 25% of all primary cesarean deliveries are done in advanced stage of labor in developing countries like India.¹ It's technically difficult to deliver fetal head during sections when head is deeply impacted in pelvis. There is every possibility of extension of hysterotomy incision. Levy et al. in their study found that among 3,105 lower segment cesarean section (LSCS), push method was necessitated in 1.5% of cases.² Alexander et al. inferred that second stage LSCS needed longer operative times. Postpartum hemorrhage (PPH) due to uterine atony, uterine incision extension, were the common complications when LSCS was performed in deeply impacted head.³ Impacted fetal head may be extracted by “push method,” or by “pull” (a reverse breech technique).^{2,4} However, there is an increased risk of uterine extensions, PPH and pyrexia in both these methods.^{3,5} Patwardhan technique is an unique method to deliver babies where fetal head is deeply impacted in pelvis.⁶

AIM OF THIS STUDY

To compare the maternal morbidities in Patwardhan technique vs “Push” and “Pull” method when LSCS done in second stage of labor.

MATERIALS AND METHODS

This was a prospective analysis done in VSS Medical College and Hospital, Burla, Odisha, India. Maternal data included in this study consist of information from pregnancies between April 2012 and March 2015. All cesarean sections performed in advanced labor with deeply impacted head were included. Pregnancies were

^{1,2,4-7}Department of Obstetrics and Gynaecology, Veer Surendra Sai (VSS) Institute of Medical Sciences and Research, Sambalpur, Odisha, India

³Department of Skin and VD, Veer Surendra Sai Institute of Medical Sciences and Research, Sambalpur, Odisha, India

Corresponding Author: Nihar R Bhoi, Department of Obstetrics and Gynaecology, Veer Surendra Sai Institute (VSS) of Medical Sciences and Research, Sambalpur, Odisha, India, Phone: +91 7205783512, e-mail: drniharbhoi@gmail.com

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excluded if there was a major fetal anomaly, if there was non-vertex presentation with labor or if there was preexisting maternal disease, pregnancy complications such as gestational diabetes or gestational hypertension. Approval was obtained from the Institutional Ethical Committee. Outcome variables included need for blood transfusions, wound infection, PPH, intraoperative trauma. Neonatal morbidity included low Apgar score (≤ 3) at 5 minutes, sepsis, asphyxia, and neonatal trauma. The cases were divided into two groups; the cases where Patwardhan technique was used were grouped as group I and in whom baby delivered by push method were grouped into group II. Mann–Whitney *U* test or Student *t* test was used for comparing continuous variables. Categorical variables were compared using Chi-square and Fisher's exact tests. Statistical significance was $p < 0.05$. Statistical analysis was done by using SPSS version 20.

Patwardhan Technique (Shoulder First Method)⁶

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

RESULTS

During this time period there were 17,748 deliveries, out of which 6,223 cases underwent cesarean delivery with a cesarean rate of 35.06%, and a total of 420 pregnancies satisfied inclusion criteria. Maternal characteristics are summarized in Tables 1 and 2. The differences in maternal age and gestational age at delivery were not considered to be statistically significant.

Mean duration labor and duration of second stage of labor were summarized in Table 3 and it showed no statistically significant difference in both the groups ($p = 0.85$ and 0.65 , respectively).

The software generated histogram showed a normal distribution curve when duration of labor was plotted against frequency for all the participants (Fig. 1).

Indication of LSCS in two groups has been shown in Table 4 which was comparable in both the groups. Obstructed labor was the indication in 67% cases of group I and 58% cases of group II.

The software generated histogram showed a normal distribution curve when duration of surgery was plotted against frequency for all the participants (Fig. 2).

The mean duration of operation was less in group I as compared to group II and the difference was statistically significant. Extension of uterine incision during cesarean section occurred in 11.5% patients in group II and none in group I. This difference was statistically significant ($p < 0.0001$), indicating the superiority of this technique as compared to that of the conventional "Push" and "Pull" method (Table 5). Blood transfusions were required in 4.5%

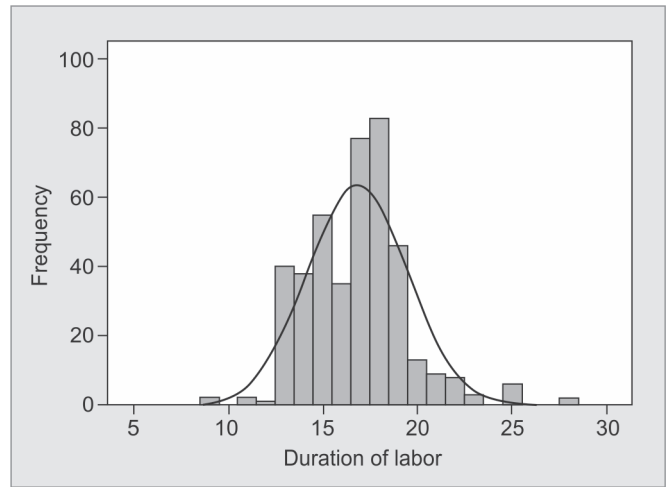


Fig. 1: Histogram showing distribution of duration of labor among study population

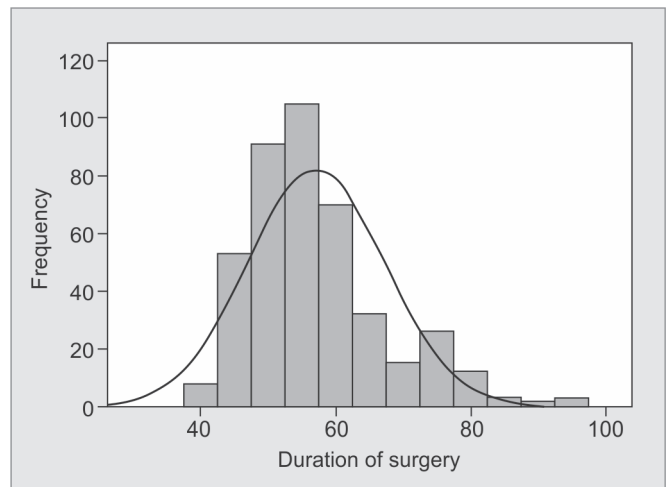


Fig. 2: Histogram showing duration of surgery among study population

Table 1: Age distributions of participants in both the study groups

Age group	Group I (n = 129)	Group II (n = 291)	Total (n = 420)
<25 years	34 (26%)	86 (30%)	120
25–30 years	62 (48%)	122 (42%)	184
>30 years	34 (26%)	82 (28%)	116

Table 2: Distribution of gestational age in weeks in both the study groups

Gestational age (weeks)	Group I (n = 129)	Group II (n = 291)	Total (n = 420)
<37	9 (7%)	26 (9%)	35
37–40	104 (81%)	218 (75%)	322
>40	16 (12%)	47 (16%)	63

Table 3: Illustration of labor characteristics and comparison between the two study groups

Duration labor	Group I (n = 129)	Group II (n = 291)	p
Total duration of labor (hours)	16.86 ± 5.68	16.81 ± 5.08	0.85
Duration of second stage (hours)	2.73 ± 1.32	2.70 ± 1.42	0.65

Table 4: Illustration of various indications of LSCS in two study groups

Indication	Group I (n = 129)	Group II (n = 291)
Obst. lab	86 (67%)	168 (58%)
DTA	35 (27%)	111 (38%)
Failed instrumental delivery	3 (2.3%)	6 (2%)
Impending rupture	5 (4.8%)	6 (2%)

Table 5: Illustration of operative procedure and complications—comparison between two groups

	Group I (n = 129)	Group II (n = 291)	p
Duration of operation (minutes)	52.56 ± 12.44	59.14 ± 21.92	<0.0001
Extension of uterine incision	0 (0%)	34 (11.5%)	<0.0001
Need of blood transfusion	6 (4.5%)	39 (13.4%)	<0.0001
Duration of hospital stay (days)	7.25 ± 4.44	7.73 ± 5.44	0.06

Table 6: Illustration of neonatal outcome—comparison between two groups

	Group I (n = 129)	Group II (n = 291)	p
Birth weight (g)	3056.98 ± 635.6	3056.76 ± 609.50	0.9
Apgar score <3 at 5 minutes	10 (7.7%)	38 (13%)	<0.0001
NICU admission	30 (23.2%)	84 (28.8%)	<0.0001

cases in group I as compared to 13.4% cases in group II and this difference was statistically significant ($p < 0.0001$) (Table 5). The difference in total duration of hospital stay was not statistically significant ($p = 0.06$).

The mean birth weight was comparable in both the groups. The Apgar score at 5 minutes and requirement of neonatal intensive care unit (NICU) admission showed statistically significant difference in both the groups (Table 6).

DISCUSSION

In our study the age of mother and gestational age at delivery were comparable in both the groups. And in the present study mean duration of labor was 16.86 hours (95% CI 16.38–17.39) in group I and in group II it was 16.81 hours (95% CI 16.52–17.10) ($p = 0.85$), that showed no significant difference among both the groups. Almost all cases in our study were referred cases from peripheral hospitals after trial of labor.

Our study showed the mean duration of surgery was 52.56 minutes (95% CI 51.47–53.55) in group I and 59.14 minutes (57.86–60.31) in other group ($p < 0.0001$), the difference in both groups are attributable to the difficulties encountered during the baby out procedure and the time taken for managing the complication like extension of uterine incision. Second stage cesarean section took significantly longer operative time (median 45 vs 30 minutes; $p < 0.001$).⁷ Mean duration of the second stage of labor was 3.6 hours as concluded by Allen et al.⁸ The study by Sung et al. found duration of surgery >90 minutes in 9% cases vs 1% when done in 2nd stage.⁵ Increased bleeding and infections were reported by Alexander et al. when LSCS done in impacted fetal head.³ In prolonged 2nd stage of labor the lower uterine segment is usually thinned out, that is vulnerable to tear and extension.⁴ There is obvious increase need of blood transfusions when there is hemorrhage. Various studies showed the variable range of incidence of uterine extension in “Push” and “Pull” method that varies from 15 to 50%.^{2–4,7} Extension of the incision was rarely observed in Patwardhan group.⁹ Women undergoing LSCS in second stage are at more risk of intraoperative trauma.¹⁰ In our study, extension rate was 11.5% in “Push” and “Pull” method, however, no extension was noted while Patwardhan technique was used ($p < 0.0001$). Less extensions led to less chances of traumatic hemorrhage, decreased need for blood transfusions. Khosla et al. also reported no extensions in Patwardhan technique.⁷ Cebekulu et al. concluded that when LSCS is being performed in advanced labor, there is every risk of extension of hysterotomy scar. So Patwardhan’s technique should be employed more widely.¹⁰

As per Saha et al. blood transfusions were needed in three patients where Patwardhan technique was used as compared to 12 patients where push/pull method applied.⁶ In our study in Patwardhan group six persons (4.5%) needed blood transfusion where as 13.4% cases required BT in push method ($p < 0.0001$).

The mean duration of hospital stay in our study was 7.25 days (95% CI 6.87–7.64) in Patwardhan group and 7.73 days (95% CI 7.42–8.04) in push/pull group which was statistically significant. The increased duration of hospital stay adds to the financial burden

to patients. Wound infection is the most determining factor for increased duration of hospital stay.

In our study neonatal birth weights in both the groups, were comparable. Similar mean birth weight 3056.98 g (95% CI 2999.63–3113.26) in group I vs 3056.76 g (95% CI 3020.44–3090.64) in group II ($p = 0.99$) was observed. Increased incidences of birth asphyxia was observed in babies born by LSCS in second stage cesarean sections.⁸ In a similar study, Khosla et al. showed NICU admission 17% in Push method vs 3% in Patwardhan technique ($p < 0.001$).⁷ However, in our study there was no increased risk of neonatal injuries or asphyxia with this technique, as compared to push and pull method.

CONCLUSION

Extension of the uterine incision is common when LSCS is done in second stage of labor. Since the lower uterine segment is thinned out, when the hand is forcibly introduced to deliver the deeply impacted head there is every risk of extension of uterine incision. Use of Patwardhan’s technique is very useful to prevent this maternal injury and it does not increase neonatal morbidity. Hence Patwardhan technique is the ideal maneuver for delivery of baby while doing LSCS in second stage of labor.

ETHICAL APPROVAL

Approval was taken from Institutional Ethical Committee.

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