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Original Research Article

Study of Maternal and Perinatal Outcomes associated with a Trial of Labor after Previous Cesarean Delivery

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Abstract

Background: In an attempt to reduce the rising trend of caesarean deliver worldwide, obstetrician now offer trial of labour more readily to women who have had a caesarean section. Although trial of labour is usually successful and safe, it may occasionally be associated with severe morbidity and even mortality. The objective of present research was to study the safety and efficacy of trial of vaginal delivery in women with previous lower segment caesarian section (LSCS) and to correlate it with maternal and perinatal outcome. **Method:** A total of 100 women with one previous LSCS admitted for a trial of labour after cesarean between years 1993 to 1995 at a Public Teaching Hospital and Medical College of Mumbai. Trial of scar and subjecting the patient to a vaginal delivery was done at 36 weeks and again at 38 weeks. The data of the mother was entered in register and analyzed statistically. **Results:** The incidence of vaginal deliveries following previous caesarean sections was 58 of 100 cases. Incidence of vaginal deliveries and repeat sections following one previous L.S.C.S. were 65.50 % and 43.50 % respectively. Following previous two L.S.C.S, the incidence of repeat sections and vaginal deliveries were 92.30 % and 7.7 % respectively. Nearly 62.86% of the patients of previous section for C.P.D. delivered vaginally during current labour and 37.14% delivered by repeat caesarean section. There was no major anaesthetic complication and no maternal mortality and minimal morbidity requiring not more than 15 days stay in hospital altogether. There was one case of perinatal death because of multiple congenital anomalies. **Conclusion:** Engagement of the presenting part of prior to the onset of labour is the single most significant prognostic factor for successful vaginal delivery.

Keywords: Trial of labour, lower segment caesarian section (LSCS), Incidence Morbidity, Mortality

Introduction

The mode of delivery of previous caesarean section can be possible either by vaginal birth after caesarean section (VABC) and elective repeat caesarean section (ERCS). Women having single lower segment caesarean section (LSCS) can be given trial for VBAC with success rate varies from 53% to 95%. But in recent times, rate of LSCS has increased because of preference for small size family, reluctant to take risk to mother and child, Intolerance of labour pain, early detection of foetal distress due to better foetal surveillance, recurrent indications and unpredictable scar rupture [1]. Greenhill and most of the American Obstetricians believe in the dictum "Once a caesarean always a caesarean "but now", the trend has changed to "Once a caesarean, always a hospital delivery" [2]. Dewhurst in 1957 [3] and Giles in 1966 [4] have reported a low incidence of lower segment scar rupture and have concluded that most repeat section were done for inadequate reasons. In spite of there being non-recurrent indication in previous caesarean section, some patients still undergo repeat section. The reason for

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it is found in Jackson's statement, previous caesarean section casts a shadow over any future pregnancy [5].

Those who advocate vaginal delivery argue that under adequate supervision, the risk to the mother of lower segment scar rupture is very low. The mortality and morbidity of repeat section, however, small, is considerable compared to a vaginal delivery. Irwing found that vaginal delivery is 15 times safer than caesarean section for the mother. However, many centres that permit a trial of vaginal delivery do so in the belief that this ensures the women to have further vaginal deliveries without limiting family size. It is in the area of evaluating the indication for the previous section that most difficulties are likely to be encountered and these could seriously influence the woman's reproductive career. In most developing countries where the majority of admissions are un-booked, it is often very difficult to obtain data pertaining to previous operations either from hospital records or directly from patients [5,6].

There are mothers in urban areas also who do not keep their discharge cards carefully or are unaware of the indication of the previous LSCS. It cannot be denied that many repeat sections are performed under such circumstances. Although the study on vaginal deliveries following previous LSCS was done 2 decades back, with better monitoring better foetal surveillance facility, better availability of blood, better suture material, and better antibiotics now we can try for more vaginal deliveries after previous caesarean section.

Materials and Methods

The present study was carried out in a Public Teaching Hospital and Medical College of Mumbai in the years 1993 to 1995. A total of 100 women with one previous caesarean section (LSCS) admitted in labour ward for deliveries in subsequent pregnancy were considered for this study. The inclusion criteria were women who underwent one LSCS in previous pregnancies and belonging to all age group. An exclusion criterion was women with more than one LSCS and women with any serious medical illnesses. The factors considered before subjecting the women for trial of labour were- 1) Indication for previous caesarean section, 2) Recurrent or non-recurrent factors, 3) Type of previous caesarean section and place where it was carried out, 4) Number of previous caesarean sections, 5) Vaginal deliveries prior to or subsequent to previous caesarean section, 6) Evidence of any medical condition precluding vaginal delivery , 7) Any post-operative complications during convalescence in the previous section, 8) Scar integrity, 9) Any other surgery performed previously, 10) Weight of the foetus on ultrasound examination.

General and systemic examinations were carried out routinely to detect and treat any underlying medical and obstetric conditions. Laboratory investigations like Haemoglobin, VDRL, Blood Group and routine microscopic examination of urine were performed. Careful obstetric examinations were carried out during each visit to the antenatal clinic.

Management of a case with previous caesarean section were divided as- Management during pregnancy, management during labour and management in the immediate post-partum period i.e. which is called fourth stage of labour.

During pregnancy, apart from routine examination and investigations, clinical pelvimetry was done to rule out any recurrent factors like cephalopelvic disproportion. Trial of scar and subjecting the patient to a vaginal delivery was done at 36 weeks and again at 38 weeks. Trial of scar was not done in cases of confirmed pelvic contraction. In the un-registered cases the trial of labor best done at the onset of labour by vaginal and bimanual examination. The points assessed were sacral curve, whether sacral promontary is reached or not, sacrosciatic notch, lateral pelvic walls, ischial spines, and interspinous distance subpubic angle, diagonal conjugate and transverse diameter of pelvic outlet. Inlet, mid cavity and outlet contraction were assessed clinically to decide whether to give trial of scar or not.During labour, apart from routine management, signs of scar dehiscence or rupture of uterusand foetal heart was closely observed and monitored. The data of the mother was entered in register and the statistical analysis was done manually using tally method.

Statistical analysis

Results are presented as tables. Categorical data is presented as frequencies and continuous data as mean ± standard deviation (SD). Statistical significance was tested using Chi square test. $P<0.05$ was regarded as statistically significant.

Results and Discussion

The present study was carried out with an objective to study the safety and efficacy of trial of vaginal

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delivery in women with previous LSCS and to correlate it with maternal factors like route of delivery, previous obstetric history, type anaesthesia, age and parity of the mother, Integrity of scar and outcome factors like foetal wellbeing and maternal complications, morbidity and mortality. Table 1 shows the age distribution among cases and mode of delivery. Highest incidence of successful vaginal delivery is in 20-30 years age group.

Table 1: Age Distribution and Mode of delivery

Age (years)	Repeat caesarean	%	Vaginal Delivery	%	Total
<20	1	2.4	3	5.2	4
20-30	24	57.1	40	69.0	64
>30	17	40.5	15	25.9	32
Total	42	100.0	58	100	100

Table 2 shows the indications for which the previous caesarian sections were done. Commonest indication was CPD. Hence, nearly 62.86 % of the patients of previous section for C.P.D. delivered vaginally during current labour.

Table 2: indications of the cases

No	Indication	Cases
1	CPD	35
2	Fetal distress	16
3	Breech	8
4	placenta previa	6
5	prolonged labour	13
6	transverse lie	5
7	failed induction	9
8	brow presentation	3
9	twins	1
10	cord prolapse	3
11	compound presentation	2
	total	100

Table 3: Percentage of the various types of deliveries in the present series

Total cases	Caesarean Section				Vaginal Delivery	
Number	Elective caesarean-Section		After trial			
	NO	%	NO		No	%
100 Cases		11	31	31	58	58

Table 3 shows that of the 100 cases, 11 cases had undergone elective caesarean sections. 89 went through trail of scar. Among them 58 delivered vaginally. Total repeat caesarean was 42. Indications of repeat caesarean in subsequent pregnancies are shown in table 4.

The problem today is to select the cases best suited for delivery by caesarean section having regard not only for the immediate needs of the mother and her unborn child, but also to her obstetric future. The indication for the previous caesarean section is very important to decide the type of delivery in a subsequent pregnancy [7]. In cases where the caesarean section was done for recurring causes like cephalopelvic disproportion there is no place for trial of scar In subsequent delivery , unless the baby is small, and hence most of these patients will go for a repeat section . Trial of labour is contraindicate in a patient with previous caesarean section in those patients in whom the primary section was done for a non-recurrent cause, trial of scar and a vaginal delivery [8] is fully justified.

Table 4: Indications of repeat caesarean in subsequent pregnancies

NO	INDICATION	CASES	%
1	CPD	13	30.95
2	PREVIOUS 2 LSCS	10	23.81
3	PREVIOUS 1 LSCS	3	7.14
4	UTERINE RUPTURE	4	9.52
5	BREECH	2	4.76
6	TRANSVERSE LIE	2	4.76
7	TWINS	1	2.38
8	FETAL DISTRESS	6	14.29
9	PLACENTA PREVIA	1	2.38
10	CLASSICAL SECTION	NIL	NIL

Recent studies point to the possibility of serious errors in the evaluation of pelvic capacity Joyce et al, 1975 [9] and what was previously thought to be disproportion was infact inefficient uterine contractions. The active management of labour by O'Driscoll et al, 1973 [10] has eliminated much of the uncertainties associated with poor uterine action and led to a striking decrease in the incidence of cephalopelvic disproportion. Philpot 1972 [11] made no attempt to assess the pelvis but adapted trial of labour as the universal management for disproportion. Because a large number of elective repeat sections are performed due to the factor of disproportion, it was thought that if a trial of an active labor was conducted in cases of previous caesarean section.

Trial of labour was considered if following criteria were present

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1. Well effaced and thinned out cervix, 2. Presenting part well applied to the cervix, 3. No disproportion even of mild degree, 4. No scar tenderness, 5. Favourable presentation, preferably vertex with occipito-anterior position, 6. Good general condition of the patient, 7. No foetal distress, 8. History of previous normal vaginal delivery either before or after the previous caesarean section, 9.facilities for emergency caesarean section should be available, 10. Non recurring indication for previous caesarean section, 11.previous caesarean section should have low transverse incision on uterus (classical/low vertical/T shape/inverted T shape/J shape incision should be ruled out) [12-14]. Table 5 shows the nature of vaginal deliveries.

In the current study, out of 45 cases were of spontaneous deliveries, 7 patients delivered in the receiving room immediately after admission. Only 13 had operative interference of some sort, more so with the larger babies. Outlet forceps delivery in 6 cases was carried out, the main indication to cut short 2nd stage of labour and foetal distress. Vacuum extractor was used in 7 cases. The main advantages of the vacuum extractor is that it can be applied when the head is not fully rotated and cervix is not fully diluted, as even minor degree of rotation with forceps is dangerous in previous caesarean section. Table 6 show the outcome of labor in 100 cases with previous caesarean section. If women had undergone more than one previous LSCS, then the indication for repeat caesarean is more. This difference is statistically significant.

Table 5: Nature of 58 Vaginal Deliveries

MODE OF DELIVERY	NO OF DELIVERIES	%
Spontaneous vaginal delivery	45	77.59
Outlet Forcep Delivery	6	10.35
Vaccum	7	12.06
Total	58	100

Table 6: Outcome of Labor in 100 Cases with Previous Caesarean Section

No.of previous LSCS	Cases	Delivered vaginally	%	Delivered by C.S	%
I	87	57	65.5	30	34.5
II	13	1	7.7	12	92.3
III	NIL	NIL	NIL	NIL	NIL
CLASSICAL	NIL	NIL	NIL	NIL	NIL

(chi square = 15.5, Df =1, p< 0.001)

McGoe states that complications following caesarean section done during labour are more than caesarean section done electively. The only major disadvantage is the clanger of berth of a premature baby. When caesarean section is performed electively, the chances of obtaining a premature baby are high [4, 15]. This can be avoided by confirming foetal maturity by amniocentesis, concentration of creatinine, Nile blue sulphate test, USG. Radiography methods have been used to judge the integrity of the scar by poidevin and Bockner in 1958 [16] and serious defects considered indications for repeat. The adhesions between the peritoneum and rectus sheath were more common. By blunt and sharp dissection these adhesions were separated to mobilise the peritoneum. Omental adhesions with peritoneum, uterine scar and sometimes uterus itself were also observed. They were cut and ligated.

Table 7: Difficulties observe in a repeat section

Difficulties Encountered	No. of cases
Adhesions	11
Dehiscence of Scar	1
Extension of uterine incision	1
Injury to Bladder	1
Difficulties in delivering the baby	4
PPH	2
Obstetrical Hystrectomy	0

To avoid the above difficulties which were seen especially in a repeat section and given in table 7, following precautions should be taken.

1. Peritoneum ought to be opened as high as possible with great care as bladder and intestine may be adherent to the original wound.

2. Utero - vesical pouch is usually shallower and extra care has to be taken to push down the bl

According to Bryant in 1959 [17] maternal morbidity is less in elective operation as compared to emergency operations. According to Gupta [1958] as the labour - caesarean section interval increases the morbidity incidence also increases. From the data presented by Cunningham et al [18], it shows that the incidence and severity of post-operative caesarean section infections increases with the duration of rupture of membranes. This being the reasons for a lower incidence of morbidity in elective procedures than when the trial was given or the

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patients was admitted as an emergeny cases in labour. Table 8 shows the post operative complications observed in present series:

Table 8: Post operative complications

COMPLICATIONS	CASES
wound infection	7
wound gaping	4
urinary tract infection	3
mild PPH	2
post op abdominal distension	1
spinal headache	3
respiratory tract infection	1
post op pyrexia	0

Indications of Elective LSCS in Case of Previous Caesarean Section:

- Maternal request for elective repeat CS after counselling
- Maternal or fetal reasons to avoid vaginal birth in current pregnancy
- Previous uterine incision other than transverse segment including classical (longitudinal).
- Unknown previous uterine incision
- Previous uterine rupture
- Previous hysterotomy or myomectomy where the uterine cavity was breached
- Contracted pelvis.
- More than 1 previous caesarean sections
- Multiple pregnancies

Spinal anaesthesia was the most commonly used i.e. in 31 [73.3%] of the cases In 4 f 9.6 %] cases spinal anaesthesia was supplemented by general anaesthesia while in the remaining 7 [16.6%] cases general anaesthesia was given from the begininq as immediate extraction of baby was indicated . There was no major anaesthetic complication. There was no maternal mortality in this series and minimal morbidity requiring not more than 15 days stay in hospital altogether. There was one case of perinatal death because of multiple congenital anomalies; otherwise there was no incidence of perinatal complications in either babies delivered vaginally or by section

Conclusion

It is important to recognise that well-established indications are best managed by repeat caesarean section but this does not necessarily mean that a previous section for dystocia automatically represents an indication of repeat operation. Where the previous indication is a recurrent one [e.g. cephalopelvic disproportion] repeat caesarean section is justifiable, provided the labour this time is not premature. In non-recurring indication for previous caesarean section, patient should be allowed to undergo trial of scar after ruling out cephalopelvic disproportion. Operative interference should be timely brought about if complications like foetal or maternal distress or threatened rupture etc. come into the picture. Engagement of the presenting part of prior to the onset of labour is the single most significant prognostic factor for successful vaginal delivery.

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Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper. All authors do not have a direct financial relation with the commercial identities mentioned in the paper.

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