MATERNAL AND FOETAL OUTCOME OF VAGINAL BIRTH AFTER CAESAREAN SECTION

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ABSTRACT

OBJECTIVES OF THE STUDY

1. To identify maternal and foetal factors responsible for the success or the failure of VBAC.
2. To study maternal and perinatal outcome while giving a trial of scar.

METHOD OF COLLECTION OF DATA

Study was conducted at P K Das Institute of Medical Sciences hospital. 50 cases obtained during the period of January 2013 to December 2013 were studied.

Inclusion Criteria

1. Multigravida with previous one lower segment caesarean section at term in early labour.
2. Singleton pregnancy.
3. Cephalic presentation.
4. Who are willing for VBAC.
5. Well-informed subjects.

Exclusion Criteria

1. Known classical scar and 2 or >caesarean sections.
2. Unknown uterine scar.
3. Multiple gestation.
4. Malpresentations.
5. Cephalopelvic disproportion.
6. Subjects with medical complication/obstetric risk factors.

Cases are monitored with a partogram and continuous foetal monitor.

METHODOLOGY

Informed consent is taken after explaining the risks, benefits and potential complications in patients' own language while giving a trial of scar. After the exclusion criteria, patients selected for VBAC is given a trial of scar.

1. Maternal monitoring of blood pressure and pulse rate every 15 minutes is done.
2. Continuous foetal monitoring in the active phase of labour.
3. Contraction stress test will be done in the active phase of labour. Uterine contractions are monitored every 30 minutes. Partogram is used to ensure adequate progress with respect to descent of the head, cervical dilatation, moulding and caput.
4. Pelvic examination every one hour to assess the progress of labour.
5. If labour has to be induced, done with great care particularly with prostaglandins – PGE 2 gel. Progress of labour should be assessed by a senior obstetrician, particularly in an unfavourable cervix.
6. Cross-matched blood is kept ready and a good intravenous line is established.
7. Oxytocin may be used with caution, as in any labour, for induction or augmentation.
8. Epidural analgesia can be used.
9. Ventouse or outlet forceps is kept ready to cut short second stage of labour.
10. Operation theatre is kept ready to deal any emergency caesarean section.
11. Anaesthetist and paediatrician to be available while giving a trial of scar.
12. Post-partum digital exploration of caesarean scar done only if persistent bleeding, hypotension and tachycardia are present. Senior obstetrician to be available all the time while giving trial of scar.

RESULTS

A total of 50 cases for the study was selected. Among that 46(92%) patients were in the age group 20-30 years There were no patients below 145 cm. 39(78%) patients were gravida 2. All of them were para-1, 34 patients (68%) had emergency LSCS in previous pregnancy. whereas 16 patients (32%) had elective LSCS. Post-operative period was uneventful among 94% patients. 3 patients (6%) had post-operative morbidity after LSCS 34 patients (68%) cervical dilatation less than 3 cm. Oxytocin augmentation were 3 cases. 46 patients (92%) had spontaneous onset of labour, whereas 4 patients (8%) were induced with Cerviprime. Among the induced cases, 3 had repeat LSCS. Among the spontaneous onset of labour cases, 7 had repeat LSCS among 46 patients (92%). Post-operative periods were uneventful. 3 patients (6%) had fever. 40 patients (80%) had successful VBAC.

CONCLUSION

Success of VBAC depends on the proper selection of the cases, provided senior obstetrician, anaesthetist, emergency OT, and fresh cross-matched blood as well as paediatrician also available.

KEYWORDS

Pregnancy, Caesarean Section, Trial of Scar, Maternal and Foetal morbidity.

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INTRODUCTION: VBAC has always remained a domain of controversies and dilemma.[1] The rate of caesarean delivery is too high. Almost one-third of all caesarean deliveries performed are repeat caesareans. So if one is attempting to reduce the total caesarean delivery rate, it would be difficult to do so without reducing the repeat caesareans.

There has been a large number of studies carried out, showing that VBAC is a viable and appropriate option that can reduce the rate of surgical deliveries.

The dictum of once a caesarean, always a caesarean dominated American obstetric practice for nearly 70 years. With time, the transition away from routine repeat caesarean to vaginal birth after caesarean has been made gradually, with improvements in medical care including effective blood banking, advent of antibiotics and enhanced maternal and foetal surveillance. The preferred surgical approach to caesarean also has changed to widespread use of low transverse incisions.

When compared with repeat caesarean births, successful VBAC births are associated with less morbidity including fewer postpartum infections, fewer blood transfusions and shorter hospital stays without an increase in perinatal morbidity.[2]

Most reports in the literature indicate that approximately 60-80% of trials after a previous caesarean delivery result in a successful vaginal birth.

METHOD: The study was conducted in the Department of OBG, PK Das Institute of Medical Sciences, from January 2013 to December 2013. A total of 50 cases were studied.

Inclusion Criteria:

1. Multigravida with previous one lower segment caesarean section at term in early labour.
2. Singleton pregnancy.
3. Cephalic presentation.
4. Who are willing for VBAC.
5. Well-informed subjects.

Exclusion Criteria:

1. Known classical scar and 2 or >caesarean sections.
2. Unknown uterine scar.
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Cases are monitored with a partogram and continuous foetal monitor.

METHODOLOGY: Informed consent is taken after explaining the risks, benefits and potential complications in patients' own language while giving a trial of scar. After the exclusion criteria, patients selected for VBAC is given a trial of scar.

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8. Epidural analgesia can be used.
9. Ventouse or outlet forceps is kept ready to cut short second stage of labour.
10. Operation theatre is kept ready to deal any emergency caesarean section.
11. Anaesthetist and paediatrician to be available while giving a trail of scar.
12. Post-partum digital exploration of caesarean scar done only if persistent bleeding, hypotension and tachycardia present. Senior obstetrician to be available all the time while giving trail of scar.

RESULTS:

Age group (yrs.)	Number	Percentage
<20	0	0
20-30	46	92
>30	4	8
Total	**50**	**100**

Table 1: Age Distribution

In the present study, 46(920%) patients were in the age group 20-30 yrs.

- 4 (8%) patients were in the age group >30 yrs.
- Mean age is 25.14 years.
- Standard deviation is 3.26.
- Youngest was 20 yrs.
- Oldest was 33 yrs.

Education	Number	Percentage
Below SSLC	9	18
Above SSLC	41	82
Total	**50**	**100**

Table 2: Level of Education

- 9(18%) patients were below SSLC.
- 41(82%) patients were above SSLC.

Height in cm	Number	Percentage
<145	0	0
146-155	26	52
>156	24	48
Total	**50**	**100**

Table 3: Height Distribution

There were no patients below 145 cm. 26(52%) patients were between 145-155 cm, 24(48%) patients were >155 cm.

Shortest was 148 cm.

Tallest was 160 cm.

Gravidity	Number	Percentage
Two	39	78
Three or more	11	22
Total	**50**	**100**

Table 4: Gravidity

39(78%) patients were gravida 2.

11(22%) were gravida 3 or more.

All of them were para 1.

Indication	Number	Percentage
Foetal distress	26	52
S. PIH	7	14
Breech	7	14
Failed induction	3	6
CPD	2	4
Cervical dystocia	1	2
Transverse lie	1	2
Oligoamnios	1	2
Placenta praevia	1	2
BOH	1	2
Total	**52**	**100**

Table 5: Indication for Previous LSCS

Foetal distress was the indication in 26 patients (52%).

- S. PIH in 7(14).
- Breech in 7(14).
- Failed induction in 3(6%).
- CPD in 2(4%).
- Cervical dystocia in 1(2%).
- Transverse lie in 1(2).
- Oligoamnios in 1(2%).
- Placenta praevia in (2%).
- BOH in (2%) patients.

Timing	Number	Percentage
Emergency	34	68
Elective	16	32
Total	**50**	**100**

Table 6: Timing of Previous LSCS as per History and Discharge Summary

34 patients (68%) had emergency caesarean section in previous pregnancy whereas 16 patients (32%) had elective LSCS.

Indication for elective LSCS were severe PIH, Breech, Transverse lie, Oligoamnios, Placenta praevia grade 3 and bad Obstetric history.

Indication for emergency LSCS were foetal distress, failed induction, cervical dystocia and CPD.

Morbidity	Number	Percentage
With morbidity Wound infection	3	6
Fever	-	-
UTI	-	-
Blood Transfusion	-	-
Uneventful	47	94
Total	**50**	**100**

Table 7: Post-operative Morbidity in Previous Caesarean

3 Patients (6%) had post-operative morbidity after caesarean section. Post-operative period was uneventful among 94% patients.

Among the post-operative morbidity 3 patients (6%) had wound inspection which was elicited from the history of taking. There is no history of prolonged hospital stay. All 3 patients were discharged on day 8.

Cervical dilatation	Number	Percentage
<3	34	68
>4	16	32
Total	**50**	**100**

Table 8: Cervical Dilatation in Present Pregnancy

34 patients (68%) were with cervical dilatation <3 cm. 16 patients (32%) were with cervical dilatation 3-4 cm.

Type	Number	Percentage
Spontaneous	46	92
Induced (Cerviprime)	4	8
Total	**50**	**100**

Table 9: Type of Labour

Oxytocin augmentation were there cases. 46 patients (92%) had spontaneous onset of labour whereas 4 patients (8%) were induced with Cerviprime. Indications for induction were postdatism. In three cases and one admitted with decreased foetal movements. Among the induced cases- there had repeat caesarean section. Indications for repeat caesarean section – one had foetal distress, one had deep transverse arrest, one for failed induction. Among spontaneous onset of labour cases 7 had repeat caesarean section failed induction were foetal distress in 3 cases, scar tenderness in 2 cases, failed induction in one and rupture uterus in one. The case taken up for repeat CS for foetal distress had CST positive and foetal heart beat dropped to 100 beats/min. Maternal pulse and BP was maintained.

Cervix was 4-5 cm dilated, Vx -1 station clear liquid. Intra operative findings – lower uterine segment was thinned out. Previous scar was intact. Grade 1 abruptio placenta was present one loop of cord round neck + the patient who had DTA was given trial for half an hour after full Cx dilation. Intra-operative findings – previous scar intact. No extension of angles/PPH was present. Apgar good for the baby.

The patient who had failed induction was in labour for 10 hours. P/V – was cervix, 2 cm dilated, uneffaced and head at brim.

There were 3 cases of oxytocin augmentation. All three had spontaneous of labour.

Morbidity	Number	Percentage
Uneventful	46	92
With morbidity a. Fever b. UTI c. Cough d. Wound infection e. Blood transfusion (10 days)	3 1	6 2
Total	**50**	**100**
Table 10: Post-partum Morbidity in Present Delivery (one week)		

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Among 46 patients (92%), post-operative period was uneventful. 3 patients (6%) had fever. Cause was not known. There was no wound infection, no UTI or respiratory infection one patient (2%) received blood transfusion post operatively. This case had repeat caesarean for rupture uterus. Blood transfusion was done with no reactions.

Outcome	Number	Percentage
VBAC	40	80
Repeat LSCS	10	20
Total	**50**	**100**
Table 11: Outcome of Trail of Scar		

40 patients (80%) had successful VBAC. Repeat LSCS was done in 10 patients (20%). Foetal distress was the indication in 5 cases failed induction in 1 case, scar tenderness in two cases, deep transverse arrest in one case and rupture uterus in one case.

Stages	Mean	S.D
1	7.37	2.34
II	19 min.	8.56
III	4.57	5.93
Table 12: Duration of Stages of Labour as per Partogram		

Mean duration of first stage labour was 7.37 hours.
Mean duration of second stage labour was 19 min.
Mean duration of third stage labour was 4.57 min.

Minimum duration of first stage labour was 4 hours and maximum duration of first stage labour was 12 hours. Minimum duration of second stage is 5 minutes and maximum duration of second labour was 30 minutes.

Minimum duration of third stage labour was 2 minutes and maximum duration of third stage labour was 30 minutes.

Outcome	Number	Percentage
Vacuum	20	40
Forceps	11	22
Unassisted delivery	9	18
LSCS	10	20
Total	**50**	**100**
Table 13: Outcome of Trial		

20 patients (40%) had vacuum delivery whereas 11 patients (22%) had forceps delivery. 9 patients (38%) had no vacuum or forceps delivery. LSCS was done in 10 patients. We followed a routine policy to cut short second stage labour using instrumental delivery. Among 9 cases before vacuum or forceps could be applied they delivered.

Complications	Number	Percentage
No complications	48	96
Complications scar dehiscence	1	2
Scar rupture	1	2
Total	**50**	**100**
Table 14: Complications During Labour/LSCS		

There was one case of rupture uterus which diagnosed in second stage labour. She had spontaneous onset of labour at 5 PM. Patient progressed in labour with no complications. After 6 hrs., she was 8 cm dilated, fully effaced Vx at 0 station. Foetal heart rate decreased to 70 beats per minute with contractions. ARM was done – clear liquid drained post ARM foetal heart rate picked up immediately to 110 beats per minute. Maternal pulse rate was 90 beats per minute. Blood pressure recorded 120/80 mm of Hg. After 45 minutes of ARM uterine contraction was 2-3 C/20"/10' FHR good, cervix was fully dilated vertex at 0 station. Half an hour later maternal pulse was 110 b/min. BP was 120/80 mm of Hg. On P/A – uterine contour irregular, foetal parts felt superficially. FHR was 100 b/min.

Pelvic examination findings were same. Emergency laparotomy under GA was done. Right paramedical vertical incision, was put and abdomen opened in layers. Bladder was advanced and scar was ruptured and part of placenta was seen in peritoneal cavity. A live female baby was extracted by cephalic within ten minutes of diagnosis of rupture uterus. Apgar was good. Birth weight was 3 kg. There was a downward extension of scar for about 3-4 cm from the midline.

Bladder was intact. Extension of scar was repaired. Posterior surface of uterus was normal. There was no extension of angles or PPH. Uterine closure was done with No.1 Vicryl in two layers. Bilateral tubectomy was done by

parklands method. Clear urine was drained. Blood loss was about 1 to 1.5 litres. Patient received one bottle of cross matched whole blood in the post-operative period.

Continuous bladder drainage was done for one week. Suture removal was done on 10th post-operative day.

There was no maternal mortality or foetal morbidity in this case as there was appropriate intervention at the immediate diagnosis of rupture uterus. Discharge summary was not available. From history, we could elicit oxytocin augmentation for PROM 4 hours. She did not progress in labour and emergency, LSCS done for failed induction. Post-operative period was uneventful. PROM would have weakened the scar.

We concluded that trial of scar could still be given provided senior obstetrician, anaesthetist, emergency OT, one bottle cross matched blood and paediatrician is available.

	Number	Percentage
No Complications	48	96
Complications MRP PPH Rupture uterus	 2 0 0	 4
Total	**50**	**100**
Table 15: Third Stage Complication		

48 patients (96%) had no complications in the third stage. 2 patients had manual removal of placenta. Duration of labour was thirty minutes in both patients. Both cases had partial adherent placenta. Under general anaesthesia manual removal placenta was done. Blood loss was minimal. Placenta was adherent to previous CS scar. Flimsy adhesions. There was no complications associated with manual removal of placenta like scar dehiscence or rupture uterus.

Apgar (5 mins.)	Number	Percentage
<7	0	0
>7	50	100
Total	**50**	**100**
Table 16: Foetal Outcome Distribution According to Apgar Score		

Apgar was good in all cases.

Particulars	Number	Percentage
Admission	0	0
Observation	0	0
Total	**0**	**0**
Table 17: NICU Care		

There were no NICU admissions or observations.

Birth Wt. (kg)	Number	Percentage
2 – 2.5	6	12
2.6 – 3	32	64
>3	12	24
Total	**50**	**100**
Table 18: Birth Weight in Present Pregnancy		

6 babies (12%) had birth weight between 2 – 2.5 kg. 32 (64%) had birth weight between 2.5-3 kg and 12 (24%) had birth weight more than > 3 kg. No babies were > than 4 kg.

Outcome of trial of scar: In our study 40 patients out of 50 (80%) had successful VBAC. Repeat caesarean was done in ten patients (20%). Foetal distress was the indication in five cases, failed induction in one case, scar tenderness in two cases, deep transverse arrest in one case and rupture uterus in one case.

Among patients who had foetal distress – three patients had spontaneous onset of labour and one was induced with Cerviprime. Indication for induction was postdatism by one day. Patient progressed well in labour. In active phase of labour there was foetal distress. Foetal heart rate dropped to 100 beats per min. Maternal pulse rate was 86 beats per min. and blood pressure was 100/70 mmHg. She was getting 3 – 4 c/ 45'/ 10'. On pelvic examination she was 4-5 cm dilated. Head – 1 station. ARM done, clear liquid drained. Maternal position was changed. Oxygen by mask was given to the patient and hydration was also well maintained. Basal foetal heart rate was persistently 100-110 beats per minute for 15 minutes. She was taken up for repeat caesarean section. Intraoperative findings were lower uterine segment was thinned out. Previous scar was intact Grade I abruptio placenta was present. One loop of cord round neck which was loose was also present. Apgar score was 1'8/ 10 5' 9/10. Other three cases had spontaneous onset of labour. All 3 had repeat caesarean section in active phase of labour. On doing artificial rupture of membranes, clear liquid was drained in all three cases. One patient had maternal tachycardia 110 beats per minute associated with foetal distress 80 – 100 beats per minute which persisted for half an hour. In the waiting period, oxygen by mask was given to the mother, hydration maintained and indwelling catheter was also put which drained clear urine. Intraoperative findings – Bladder was advanced. Scar dehiscence + No extension of angles or PPH. Apgar score good, Timely intervention saved the patient from rupture uterus in this case. Cause for scar dehiscence? Postoperative period was uneventful.

Other 3 cases which had repeat caesarean section was also done in active phase of labour. Foetal heart rate dropped to 100 – 110 beats per minute. Maternal pulse rate and blood pressure was normal in these cases. Artificial rupture of membranes showed clear liquid; repeat caesarean section was done. Previous scar was intact in both the cases. There was no cord round the neck in these cases. Apgar score was good for both the babies.

Scar Tenderness: Two patients had repeat caesarean section for scar tenderness. Both had spontaneous onset of labour. Patients progressed well in labour. In active phase of labour both patients complained of scar tenderness. There was no associated maternal tachycardia. Maternal blood pressure was also maintained. In view of persisting scar, tenderness, patient was taken up for repeat caesarean section. Intraoperative findings.

Bladder was advanced.
Previous scar was intact.
No extension of angles or PPH.
Apgar score was good in both the cases.

Failed Induction: Patient was induced with Cerviprime gel for decreased foetal movements. Even after 10–12 hrs. of good uterine contractions cervix was only one cm dilated, partially effaced cervix posterior head – 3 station. She was taken for repeat caesarean in view of failed induction.

Intraoperative Findings:

- Previous scar was intact.
- No extension of angles.
- Apgar score was good.

Deep Transverse Arrest: Patients were induced with Cerviprime in view of past dated 3 days. She was accelerated with Syntocinon. After 10 hrs. of induction of labour, she was fully dilated, left occiput transverse, head at spines. After full dilation, she was given a trial for half an hour and repeat caesarean was done.

Intraoperative findings:

- Lower uterine segment thinned out.
- Previous scar was intact.
- There was no extension of angles or PPH.
- Apgar score was good.

DISCUSSION: Many women who have a CS will have another pregnancy.[3,4] As CS rates have increased, it has become common place for obstetricians and their patients to need to make decisions about the mode of delivery after a previous CS. It has been suggested that a change in attitudes of both doctors and their patients towards VBAC is required if we are to effectively reduce the CS rate.[5] This seems to be a reasonable view, given that 60-80% of women can achieve a vaginal delivery after a previous lower segment CS. Similarly, efforts to decrease the primary CS rate will reduce the number of women for whom VBAC becomes an issue.

In the present study, a trial of scar was given for 50 patients and outcome was analysed. The age of patient did not play a significant role in the determination of pregnancy outcome.

The obstetric score had no association with pregnancy outcome.

The educational status of patient plays an important role in patients with previous CS. Counselling will be easy in such patients. In my study, 78% patients were gravid 2 and 22% patients were gravid 3 or more. All of them were para 1. Patients who were past gravid 3 had history of abortions in the past. None of them have vaginal birth after caesarean section. Various studies have proved that with previous vaginal delivery, VBAC is 3:3 times more likely.[6]

In our study of 50 cases, VBAC success rate was 80%. 80% success rate because my study had exclusion criteria. 50 patients were studied. 90% patients had spontaneous onset of labour. 10% patients were induced with Cerviprime. 3 cases were induced for postdatism where as one case was induced in view of decreased foetal movements.

In the present study, 46 patients had spontaneous onset of labour. There was one case of rupture uterus. In the present study three cases augmented with oxytocin. There was no rupture uterus. All three had vaginal delivery.

In our study 4 cases were induced with Cerviprime gel. Indications were postdatism in three cases and one with decreased foetal movements. Among the induced cases 3 had repeat caesarean. In our study, there was one case of scar dehiscence. We concluded that prompt intervention can prevent maternal and foetal morbidity.

Instrumental vaginal delivery occurred in 40 cases. In our study, second stage of labour was cut short by instrumental delivery in 62% cases who had VBAC. We adopted a routine policy of to cut short second stage labour to prevent overstretching of the scar. 48 patients (96%) had no complications in the third stage. 2 patients had manual removed of placenta. Both cases had partial adherent placenta. Infraumbilical oxytocin was also tied. Under GA, MRP done. Duration of third stage was 30 minutes. There was only minimal blood loss. There were no complications with MRP like scar dehiscence or rupture uterus. Patient did not require any blood transfusion.

Epidural analgesia was used in one case.

In the present study, among 50 cases, 40 had VBAC. Repeat caesarean section was done in 10 patients. Indications were foetal distress in five cases, scar tenderness in two cases, failed induction in one case, DTA in one case and ruptured uterus in one case. Induction of labour was done in 4 cases with PGE2 gel. One had successful VBAC. Three had repeat caesarean section. Induction of labour was not successful in our study. Oxytocin augmentation was done in three cases. All 3 had VBAC.

CONCLUSION: Caesarean section is the most common surgery done in the speciality of obstetrics and gynaecology. Almost one third of all caesareans performed are repeat caesareans. Hence the need for trying for vaginal birth after caesarean section.

From the present study, it was concluded that most women with one previous caesarean delivery with a low transverse incision are candidates for VBAC and to be counselled about VBAC and offered a trial of scar. Patient counselling to be started at the first antenatal visit. A detailed history of the previous caesarean section regarding the indication, type of incision, emergency or elective caesarean, stage of labour when it was done, any intraoperative complications, and postoperative period is

essential. If in doubt medical records to be obtained. After thorough counselling, that weighs the individual benefits and risk of VBAC, the ultimate decision to attempt VBAC should be made by the patient. Non recurrent indications of previous caesarean can be given a trial of scar. VBAC to be attempted only in institutions equipped to respond to emergencies with a senior obstetrician, anaesthetist, paediatrician and one bottle of cross matched blood.

Maternal and foetal monitoring to be done very carefully while giving trial of scar.[7,8] Partogram has to be used to ensure adequate progress with respect to descent of head, cervical dilatation, moulding and caput. Artificial rupture of membranes to be done in the active phase of labour. Induction of labour can be done with prostaglandins – PGE2 gel. Oxytocin could be used for induction or augmentation of labour with careful maternal and foetal monitoring.[9]

We have to be alert for clinical signs of uterine rupture. Prolonged deceleration of the foetal heart rate is the most specific sign of uterine rupture.[10] Variable decelerations that are both persistent and severe and do not respond to interventions are always of concern in a VBAC patient. "17 minutes rule" has to be applied in VBAC cases. On diagnosing foetal distress, caesarean to be done within 17 minutes. Second stage of labour to be cut short with instrumental delivery. Third stage labour to be monitored carefully as there may be chances of adherent placenta. Manual removal of placenta may have to be done.

Epidural analgesia may be used for patients while giving trial of scar. Postpartum digital exploration of caesarean scar not to be attempted unless there is persistent bleeding.[11] In our study, success rate of VBAC was 80%. There was no maternal mortality/foetal morbidity and mortality.

It was concluded that various maternal factors affecting VBAC are indication for previous caesarean, and postoperative period.[12,13] Foetal factors affecting success rate are singleton foetus, cephalic presentation and average sized foetus. Patients who has spontaneous onset of labour had more success rate compared to induced patients. It was concluded that successful VBAC depends on proper selection of cases.

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