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Original Research Article

A study of labour and maternal outcome in cases of intrauterine fetal demise with previous one cesarean section

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Abstract: Intra uterine fetal death is a most traumatic event for the pregnant woman and her family. When they present to the obstetrician, the family's immediate concern is to get the pregnancy terminated. When we are dealing with IUFD in a scarred uterus, the option of repeat cesarean takes the second place in front of vaginal trial, which carries the risk of rupture uterus with it. Thus this dilemmatic situation was taken up for this study to look at the most suitable management option of delivery of an IUFD in a scarred uterus. It was a retrospective observational study done in cases of women with IUFD with a previous history of one lower segment cesarean section done at Vani Vilas Hospital attached to Bangalore Medical College, Bangalore. The cases underwent termination either by cesarean or vaginal route some requiring labour induction. The success of induction, rate of cesasrean, complications, mortality, rupture uterus and other parameters were studied. Out of the 56 patients recruited, 74% had vaginal delivery (Both spontaneous and induced) only mechanical method of induction was used. Amongst the induced 29 patients, 22 delivered vaginally. One patient had rupture uterus. No maternal mortality was noticed. Other complications like sepsis, DIC did not occur in the study group. PPH and blood transfusions were comparable with other patients. In cases of IUFD with Previous one scar on the uterus, the policy of TOLAC should be kept open and the cases if selected carefully, high success rate may be achieved.
Keywords: Intrauterine fetal death, Induction of labour, Previous LSCS, Foley's balloon induction.

INTRODUCTION

Managing a case of Intra uterine fetal death in a scarred uterus is a challenge and involves a bunch of ethical issues with it. Cesarean section incidence being to the tune of 15-20% on an average, it is very likely that one encounters cases of intra uterine fetal demise in subsequent pregnancies and deciding about the route of delivery in such cases is a challenging task for the obstetrician. TOLAC being recommended by many of the professional organizations makes it necessary to develop induction protocols for pregnancies with a scarred uterus.

The incidence of IUFD is about 0.2-0.3 % due to various causes like fetal (25-40%), maternal (5-10%) or placental (20-35%) and occassionally environmental. In 25-35% cases the cause remains unknown and is labeled as idiopathic [1]. The obstetrician has to face a tough time with the relatives of the mother with IUFD to explain the possible cause for the event, risk of recurrence, need for the investigations and finally the plan of delivery. For the family who has faced this event, the life of the parturient now becomes the primary concern and taking a decision about the route of deliver in cases with a scarred uterus becomes very difficult especially while planning for a vaginal delivery rather than a repeat cesarean section.

The options available for an IUFD woman with a scar on the uterus are, repeating a cesarean section or giving a trial of vaginal delivery. Use of pharmacological agents, mechanical methods for induction and augmentation in the latter situation are the available options.

Women with previous cesarean section have clearly defined parameters by which a decision regarding the possibility of TOLAC may be considered.

But the additional risk factor of IUFD poses a dilemma in taking the decision for vaginal trial. But cutting the uterus again to deliver a dead baby raises ethical concerns.

Success of TOLAC may be as high as 75-80% when the case is selected looking at all the parameters. Success will influence the future obstetric career of the woman greatly. The real threat for the trial is rupture uterus, but in LSCS the risk of rupture during TOLAC is about 0.5%. The professional societies recommend mostly against the use of PGE1 for labour induction in previous LSCS, some recommend the use of PGE2 for the same. Success of a carefully selected case for TOLAC is to the tune of 75-85%, [2] ACOG warns against the use of Misoprostol for Prev. LSCS [3] whereas NICE guidelines recommend the use of PGE2 gel on a scarred uterus for induction. Induction with oxytocin was shown to be safer than prostaglandins in a study done in 2001, but a 2004 study shows a small difference in rupture rates between oxytocin and prostaglandins. In 2001, Lydon-Rochelle et al demonstrated a 3-fold increase in the risk for uterine rupture when comparing patients induced with PGs with those induced with oxytocin [4]. In the 2004 study by Landon *et al*, this effect of PG induction versus other means was smaller—less than 2-fold [5]. There is insufficient information available from RCTs on which to base clinical decisions regarding the optimal method of induction of labour in women with a prior caesarean birth [6]. PROBAAT trial concludes that induction of labour with a Foley catheter is as effective as induction with intravaginal PGE2 gel, with fewer side effects to both mother and the fetus [7].

Thus this situation of IUFD with previously scarred uterus due to cesarean section was taken up for the study to look at the factors influencing the decisions, outcomes, success of vaginal trial, maternal morbidity specially in terms of rupture uterus, and mortality risk for looking at the safety of decisions in this situation.

MATERIALS AND METHODS

Study design- Retrospective observational study

Study period- January 2016 to June 2017 (18 months)

Study place- Vani Vilas Hospital attached to Bangalore medical College and research Institute, Bangalore

Inclusion criteria

- All multigravidae beyond 22 weeks of gestation who present with a diagnosis of IUFD
- Both women in labour and not in labour were included
- Women with previous one lower segment cesarean section

Exclusion criteria

- With h/o previous myomectomy/ hysterotomy in addition to LSCS
- Haemodynamically unstable
- Established DIC
- Those with no records of earlier cesarean delivery.

All women attending the obstetric OPD with a diagnosis of IUFD on an ultrasound scan or the ones who come with loss of fetal movements and subsequently are diagnosed to have an IUFD were recruited for the study. History of having had a lower segment cesarean section was verified by previous records. Informed consent was taken for termination of pregnancy and also for participation in the study. Basic investigations like complete blood count, Random blood sugar, VDRL, HIV, HBsAg, Blood grouping and Rh typing, TSH and urine routine examination were done. Serum fibrinogen, FDP, PT and APTT were also done to rule out DIC. They were admitted to the hospital and women with malpresentations, abruptio placenta, placenta praevia, estimated weight of the baby >3.5 Kgs, previous cesarean done within the past 18 months, with severe pre-eclampsia, patients showing signs of threatened scar rupture were directly taken up for cesarean delivery (either elective or emergency depending on the situation). The others had an assessment to look for the feasibility of vaginal delivery and the ones who were not in labour were induced mechanically with Foley's balloon inflated with 30-50 ml saline (30 ml in term pregnancy and 50 ml in pre term cases). Pharmacological methods were not used as the first choice. When there was no response in 18 hours of Foley's insertion, one dose of intracervical PGE2 was used as a second line drug and 6 hours after PGE2 instillation if there was no response the case was taken as failed induction. They were taken for cesarean section. With successful induction when they went into labor, augmentation was done with oxytocin whenever required and ARM done in selected cases. Throughout induction and during labour they were carefully

monitored for the signs and symptoms of scar dehiscence/rupture and in such a situation, the trial was abandoned and emergency cesarean section was done. Patients in labour selected for a vaginal trial underwent augmentation if necessary and were taken up for cesarean in cases of threatened scar rupture.

The outcome measures like success of vaginal trial, incidence of rupture, post partum haemorrhage, need for blood transfusion, incidence of emergency cesarean section, failed induction, puerperal sepsis, hysterectomy and ICU admissions were calculated using simple statistical parameters like rates, ratios, percentages and conclusions were drawn.

RESULTS

Fifty six patients were recruited for the study during the study period. Twenty eight of them were in the age group of 25-29 years and 14 were aged 30 and above. The youngest was 18 years and the eldest one was 37 years. (Table 1)

Table-1:Age group of patients

<20years	4
20-24 years	10
25-29 years	28
30 years and above	14

Minimum 18 years Maximum- 37 years

Out of the 56 patients, 39 were 2nd time pregnant, 12 were pregnant for the 3rd time and 5 were pregnant for 4th time. But all of them had cesarean section only once in their past pregnancy. (Fig 1)

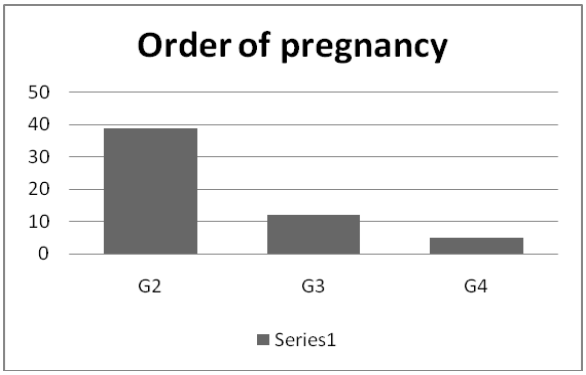

Fig-1: Order of pregnancy

At presentation, 41 were preterm pregnancies with Intra uterine fetal demise of which 31 patients were in the gestational age group of 28-32 weeks. Fifteen of them were term pregnancies with IUFD (Table-2)

Majority of them had had their previous cesarean delivery before 18 months which formed an important determinant to consider for vaginal delivery trial. Only 9% of them had had their cesarean delivery within the past 18 months (Fig 2)

Table-2: Duration of gestation

28-32 weeks	31
33-37 weeks	10
38 weeks and above	15

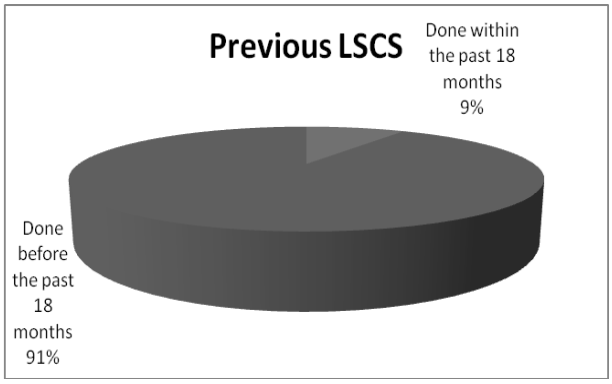

Fig-2: Timing of Previous LSCS

Though many of the patients had no associated co-morbidities, as shown in Table 3, 57% of the patients had co-morbidities. Some of them were not directly responsible for IUFD, but were found in our patients.

Table-3: Other Co-Morbidities

Pre Eclampsia	11
Diabetes	13
Abruption	3
Hypothyroid (Well controlled)	4
Epilepsy (On treatment)	1

Out of the 56 patients who presented to us with an ultrasound diagnosis of Intra uterine fetal demise (Some of them confirmed by USG in our hospital) 14 were in spontaneous labour. Of the rest 13 required elective cesarean section as vaginal delivery would be risky for the mother for various reasons. The remaining 29 patients were induced with foley's bulb. Insertion expulsion interval and expulsion delivery intervals were noted (Shown in Table 5) the average time of expulsion

was around 12 hours and expulsion to delivery interval was 4 hours.

Out of the 29 patients induced, 6 of them required emergency cesarean section for threatened rupture or failed induction. One patient had rupture uterus during the course of oxytocin augmentation and had laparotomy and repair of the scar.

When the uterine contraction initiation was not achieved in 18 hours PGE2 gel was used as an additional method in 4 cases. Used Oxytocin in 17 cases for augmentation and ARM in 6

The various delivery events, cesarean section need and indications are shown in Table-4

Table-4: Delivery events

Presentation regarding delivery route	
Elective LSCS	13
Induction of labour	29
Spontaneous labour	14
Outcome of spontaneous delivery	
vaginal delivery	10
LSCS	4
Out come of Induction	
vaginal delivery	23
LSCS	6
Delivery route- Summary	
Elective LSCS	13
Emergency LSCS	10
Spontaneous vaginal delivery	10
Induced vaginal delivery	22
Indications for Surgery	
Elective (Without trial)	Breech-2 Macrosomia-1 Abruptio placentae-2 Severe PE-3 LSCS <18 Months-5
Emergency-Spontaneous labour	Threatened rupture-2 Patient's demand-2
Emergency-Induced labour labour	Failed Induction-4 Threatened rupture-2
Laparotomy	Scar rupture-1

Table-5: Events with Foley's catheter insertion

Event	<4 hours	4-10 hours	10-18 hours
Induction-Expulsion interval	3	19	3
Expulsion-Delivery Interval	7	15	-

The other interventions other than routine treatment were required in a few patients. Some of the patients with severe pre-eclampsia, abruption rupture and PPH required ICU admissions, but the overall outcome was favourable. None had developed DIC as a result of IUFD, but 3 of the patients (APH and PPH) required blood product transfusion as the coagulation profile showed a decreasing fibrinogen level, but with blood and blood product transfusions the recovery was uneventful.

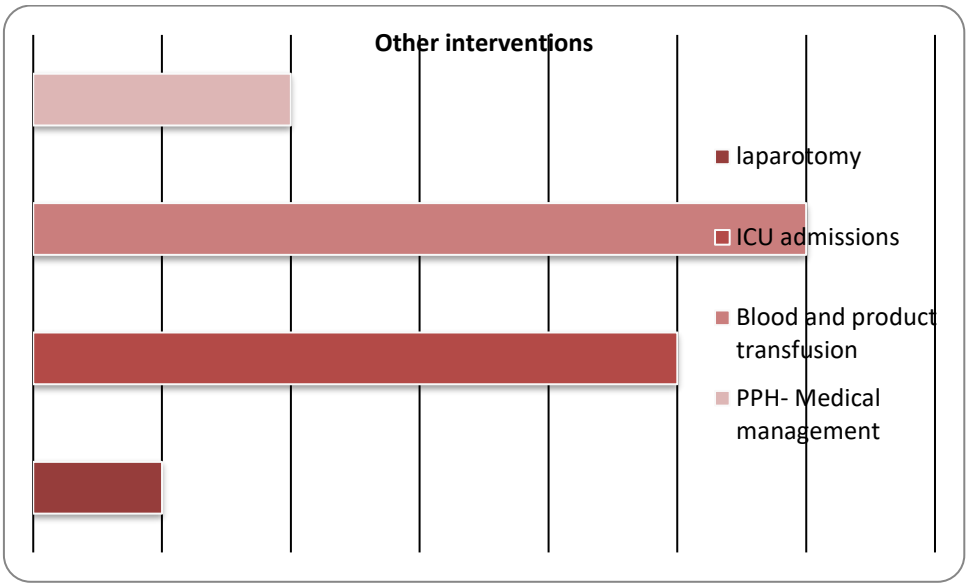

Fig-3: Other interventions

There was no maternal mortality in the series, no event of hysterectomy and sepsis. Table 6 shows the success of vaginal trial, failed induction. Cesarean section rate, other outcomes like, blood transfusions, PPH, ICU admissions and rupture uterus in percentages.

Table-6: Summary of outcome

Event	Number	Percentage
Vaginal trial success-	32/43	74%
Cesarean rate Emergency/Elective	13/56 & 10/56	23% & 18%
Failed induction	4/29	13.8%
PPH	2/56	3.6%
Rupture	1/56	1.9%
Blood tranfusion	6/56	10.7%
ICU admissions	5/56	8.9%
Death/Sepsis	Nil	0%

DISCUSSION

This study has attempted to evaluate mainly the mode of delivery and the associated factors with them in cases of intrauterine fetal demise with previous one cesarean delivery. Out of the 56 patients 43 patients underwent a trial of vaginal delivery and the attempt was successful in 74% cases. The overall cesarean delivery rate was 23% (decided electively) and 18% in cases taken up during the trial of vaginal delivery for various reasons.

The greatest concern of rupture uterus was found to be about 1.9% in our study out of 56 patients (1 Rupture). Induction has been found to be reasonably safe with 74% successful vaginal delivery rate most of them responding to mechanical method (Foley's bulb) and only a few requiring addition of prostaglandins.

Decker *et al* 2010 concluded that the risk of rupture with induction of labour with one previous LSCS was 0.54% for oxytocin alone, 0.68% for prostaglandin alone, 0.63% without either and 0.88% when they were combined.[8]A US study (Ouzouian *et al.* 2011)found no difference in rupture rates between spontaneous and induced labours – but found a significantly greater vaginal birth rate following spontaneous labour [9]. This fact has been proved in our study too with a high vaginal delivery rate.

Contrary to this, a study by Fitzpatrick et al 2012-showed an increased risk of rupture with induction [10]. In 2000 a Norwegian study on 18,794 patients with previous LSCS, resulted in 94 uterine ruptures amounting to 0.5%. They recommend that "If needed, mechanical induction should be used instead of medical induction by prostaglandins" [11]. The present study too has come out with a similar conclusion but further studies are required before conclusions are drawn regarding the safety of prostaglandins.

A study done in 2014 observed that, a pregnant woman with IUFD had a 15.6% risk of cesarean section during the first 48 hours of clinical management to anticipate childbirth [12]. Cesarean section was an essential conduct in their cohort and followed previous cesarean delivery and placental abruption. The effect of the mechanical method on the abdominal route suggests that the Foley catheter method was used in the most difficult cases and that the surgery was performed to ensure maternal health. In spite of choosing only previous cesarean cases our study showed a success rate of 74%

A study by Chakhtoura *et al.* concluded that in the third trimester, induction of labor with prostaglandins, mechanical dilators, and augmentation with oxytocin is appropriate [13]. Care should be taken with women with prior cesarean delivery; prostaglandins ideally should be avoided. Delivery by cesarean section should be performed selectively, i.e., when there is a maternal indication. The present study has done cesarean delivery in carefully selected cases and the incidence of cesarean in spite of a previously scarred uterus is 26% on the whole.

Another study has used misoprostol for labour induction in stillbirths and concluded that 98% of patients, including those with prior cesarean had a successful vaginal delivery and adverse outcomes included intrapartum fever and postpartum hemorrhage [14]. Postinduction majority of women experience safe delivery within 24hours. Misoprostol-only inductions might confer the shortest induction intervals; however, further prospective trials are needed to identify the optimal misoprostol regimen for women with third-trimester stillbirth. They have taken only a few cases with previous cesarean delivery. But the present study stuck to the mechanical method alone as most of the professional organizations [3] recommend against the use of misoprostol on a scarred uterus. But Clouqueur E *et al.* have in their study concluded that 100 mcg of misoprostol may be a safe dose to induce in a scarred uterus [15].

Cayrac M *et al* who have conducted a study similar to the present study observed that delivery was vaginal in 95.5% cases (present study the rate was 74%), a median 4 h 20 min after administration of misoprostol (median number of tablets 2). The rate of uterine rupture was 4.8%. Bleeding during delivery requiring a transfusion occurred in 2 cases (3.0%) [16]. The rupture rate was significantly less in the present study. The number of cases was also similar in both the studies, but misoprostol was not used by us for reasons already mentioned and hence probably the induction delivery interval is not as short as seen in this study.

CONCLUSION

IUFD with previous cesarean section forms a special group in which the concern for a vaginal trial is only maternal, rupture uterus. Induction with Foley's bulb may be a safe option and success rate of vaginal trial could be high if the cases are carefully evaluated and selected. At the same time, a liberal attitude is required about cesarean delivery too.

Abbreviations used

ACOG -American college of Obstetrics and Gynaecology, APH- Ante partum haemorrhage, APTT-Activated partial thromboplastin time, ARM- Artificial rupture of membrane, DIC- Disseminated intravascular coagulation, FDP- Fibrin degradation products, HIV-Human immunodeficiency virus, HBsAg-Hepatitis B surface antigen, ICU- Intensive care unit IUFD-Intrauterine fetal death LSCS- Lower segment cesarean section,NICE- national institute for clinical excellence, OPD-Out patient department , PGE1 and PGE2-Prostaglandin E1 and E2,PPH- Post partum haemorrhage PT-Prothrombin time, RCT- Randomised controlled trials, TOLAC- Trial of labour after cesarean, TSH- Thyroid stimulating hormone, VDRL-Venereal diseases research laboratory.

REFERENCES

1. Dutta DC. Text Book of Obstetrics: Including Perinatology and Contraception. New central book agency; 2004.

2. Karsdorp VH, Van Vugt JM, Van Geijn HP, Kostense PJ, Arduim D, Montenegro N, Todros T. Clinical significance of absent or reversed end diastolic velocity waveforms in umbilical artery. The Lancet. 1994 Dec 17;344 (8938):1664-8.
3. ACOG practice bulletin 2013
4. Lydon-Rochelle M, Holt VL, Easterling TR, Martin DP. Risk of uterine rupture during labor among women with a prior cesarean delivery. New England Journal of Medicine. 2001 Jul 5;345(1):3-8.
5. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, Moawad AH, Caritis SN, Harper M, Wapner RJ, Sorokin Y. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. New England Journal of Medicine. 2004 Dec 16;351(25):2581-9.
6. Anglemyer A, Horvath T, Rutherford G. Antiretroviral therapy for prevention of HIV transmission in HIV-discordant couples. Jama. 2013 Oct 16;310(15):1619-20.
7. Jozwiak M, Rengerink KO, Benthem M, van Beek E, Dijksterhuis MG, de Graaf IM, van Huizen ME, Oudijk MA, Papatsonis DN, Perquin DA, Porath M. Foley catheter versus vaginal prostaglandin E2 gel for induction of labour at term (PROBAAT trial): an open-label, randomised controlled trial. The Lancet. 2012 Jan 6;378 (9809):2095-103.
8. Dekker GA, Chan A, Luke CG, Priest K, Riley M, Halliday J, King JF, Gee V, O'Neill M, Snell M, Cull V. Risk of uterine rupture in Australian women attempting vaginal birth after one prior caesarean section: a retrospective population-based cohort study. BJOG: An International Journal of Obstetrics & Gynaecology. 2010 Oct 1; 117(11):1358-65.
9. Ouzounian JG, Miller DA, Hiebert CJ, Battista LR, Lee RH. Vaginal birth after cesarean section: risk of uterine rupture with labor induction. American journal of perinatology. 2011 Sep; 28 (08):593-6.
10. Fitzpatrick KE, Kurinczuk JJ, Alfirevic Z, Spark P, Brocklehurst P, Knight M. Uterine rupture by intended mode of delivery in the UK: a national case-control study. PLoS medicine. 2012 Mar 13;9 (3):e1001184.
11. Al-Zirqi I, Stray-Pedersen B, Forsén L, Vangen S. Uterine rupture after previous caesarean section. BJOG: An International Journal of Obstetrics & Gynaecology. 2010 Jun 1; 117 (7):809-20.
12. Nascimento MI, Cunha AD, Oliveira SR. Clinical management of the induction of labor in intrauterine fetal death: evaluation of incidence of cesarean section and related conditions. Revista Brasileira de Epidemiologia. 2014 Mar;17 (1):203-16.
13. Chakhtoura NA, Reddy UM. Management of stillbirth delivery. InSeminars in perinatology 2015 Oct 31 (Vol. 39, No. 6, pp. 501-504). WB Saunders.
14. Gawron LM, Kiley JW. Labor induction outcomes in third-trimester stillbirths. International Journal of Gynecology & Obstetrics. 2013 Dec 1;123 (3):203-6.
15. Clouqueur E, Coulon C, Vaast P, Chauvet A, Deruelle P, Subtil D, Houfflin-Debarge V. Use of misoprostol for induction of labor in case of fetal death or termination of pregnancy during second or third trimester of pregnancy: efficiency, dosage, route of administration, side effects, use in case of uterine scar. Journal de gynecologie, obstetrique et biologie de la reproduction. 2014 Feb; 43(2):146-61.
16. Cayrac M, Faillie JL, Flandrin A, Boulot P. Second-and third-trimester management of medical termination of pregnancy and fetal death in utero after prior caesarean section. European Journal of Obstetrics & Gynecology and Reproductive Biology. 2011 Aug 31; 157 (2):145-9.