Obstetric Outcome of Subsequent Pregnancy Following Intrauterine Death

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Summary:
Background: Intrauterine foetal death is defined by World Health Organization (WHO) as 'death prior to complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breath or show any other evidence of life.

Objective: The aim of the study is to assess obstetric outcome in the subsequent pregnancy in comparison with that following live birth in first pregnancy.

Patients and methods: A cross sectional, observational study carried out in department of Obstetrics and Gynaecology of Baghdad Teaching Hospital during the period from March 2008 to April 2009.

The studied group include 53 women in their second pregnancy whom first pregnancy were ended by vaginal delivery of a dead foetus and 489 women delivered a live birth in first pregnancy (labelled as control group).

Results: Women in the studied group (n=53) were at increased risk of miscarriage (p=0.005), preeclampsia (p=0.004), low birth weight (p=0.0001), induction of labour (p=0.0004), emergency CS (P=0.003), Elective CS (p=0.027), stillbirths (p=0.0006) as compared with the control group.

Conclusion: While the majority of women with previous stillbirth have alive birth in the subsequent pregnancy, they are a high-risk group with an increased incidence of adverse maternal and neonatal outcomes.

Keywords: Intrauterine death, obstetric outcome, stillbirth, subsequent pregnancy.

Introduction:
Intrauterine foetal death is defined by World Health Organization (WHO) as 'death prior to complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breath or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles (1). If the gestational age is not known, foetal weight may be used to distinguish a stillbirth from miscarriage and weight used varies from ≥ 350 to ≥ 500g (2). In Iraq the foetal weight for considering the demolition of foetal deaths has been decided by the Ministry of health in January 2011 as foetal weight ≥750g (Order D.A.F.5/2/2 in 18/1/2011). Pregnancy carries with it a degree of anxiety in the majority of women, even those who have had a positive pregnancy experience in the past (3). Each year, over three million stillbirths occur worldwide and in general the stillbirth incidence is between 0.15% and 10% (.4 ) pregnancy following an experience of intrauterine death does not only induce fear of an adverse outcome in the minds of women and their carers, but also might in fact confer greater risk to the pregnancy although the evidence on this is conflicting (5). The majorities of pregnancies have no complications and result in the birth of a healthy child. Some pregnancies end prematurely and some even develop normally to term and end tragically during the birthing process. A pregnancy loss can be devastating at any stage for the expectant parents (6). Many previous studies concluded that stillbirths are difficult to prevent because the risk factors have not been adequately identified. Despite efforts to identify the aetiological factors contributing to foetal death, a substantial part of foetal deaths are still classified as unexplained foetal demise (6). In this study we aimed to compare pregnancy outcome in two groups in their second pregnancy (who were therefore matched for parity); those who had a stillbirth in their first pregnancy, with those who had a live birth in their first pregnancy, and to test the hypothesis that stillbirth in an initial pregnancy predisposes women to adverse obstetric outcome in next pregnancy.

Patients and Methods:
This study is a cross sectional, descriptive study, conducted at the department of obstetrics and gynaecology of Baghdad Teaching Hospital from March 2008 to April 2009.

Inclusion Criteria: The study includes pregnant ladies in their second pregnancy (G2 P1), who delivered, their first singleton babies of 28
completed weeks of gestation and more, vaginally, then conceived spontaneously within 6-12 months afterward. All causes leading to stillbirth including maternal medical diseases were included in the main analysis. Exclusion Criteria: The study excludes multiparous pregnant women. Those whom first pregnancy was a multiple pregnancy, and those whom first pregnancy ended by a miscarriage or ended by abdominal delivery. The cases that were missed during the period of antenatal follow up were also excluded from the study. The study enrols (53) women who had had a stillbirth in their first pregnancy (between 28-40 weeks of gestation) these formed the study group, and (489) women who had experienced an initial live birth formed the comparison group (control group), all returned with a second pregnancy and managed as outpatients in their 1st, 2nd, or 3rd trimester of pregnancy with regular antenatal care till delivery, or managed as inpatients because of labour pain or complication of pregnancy. Detailed history was taken from all pregnant women and for the studied group with previous stillbirth (at 28-40 weeks of gestation). Full information was obtained (including the previous investigations and images that were done in the first pregnancy) to clarify the cause of foetal death and if the patient have had inadequate or unproved information's the cause of foetal death labelled as unclassified. Social and demographic factors were recorded with age, educational level, occupation, and smoking status being considered in this study. Obstetrical outcome variables studied were: Miscarriage, Ante partum haemorrhage, mode of delivery including induction of labour and caesarean deliveries (both emergency and elective C/S). The perinatal outcomes were preterm delivery for those between 28-37 completed weeks of gestation, low birth weight; to those were less than 2500g at time of delivery, Stillbirth and early neonatal death.

Results:

The cause distribution of stillbirth in the first pregnancy is presented in figure (1):-

![Figure 1](image-url)

**Figure (1):** (APS=Antiphospholipid syndrome, PET=Preeclampsia, APH=Ante partum haemorrhage)

Medical disorders include two cases insulin dependent diabetes (3.77%), one case gestational diabetes (1.89%), one case chronic hypertension (1.89%), one case renal disease (1.89%), one case thyrotoxicosis (1.89%), and three cases sepsis and infection (5.66%). Mechanical causes include four cases of intrapartum asphyxia of a cephalic presented foetuses (3 of them were home deliveries and 1 was delivered in the hospital 7.55%), two of the cases were breech deliveries (home deliveries 3.77%), and two were presented with cord prolapsed (3.77%).
Table (1): The comparison of the socio-demographic characteristics in the (studied) group and control group with their risk on stillbirth

<table>
<thead>
<tr>
<th>Age &lt; 18 years</th>
<th>18-35 years</th>
<th>&gt;35 years</th>
<th>Mean±SD (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Educational level: Illiterate</td>
<td>39</td>
<td>73.5</td>
<td>297</td>
</tr>
<tr>
<td>Primary</td>
<td>11</td>
<td>20.8</td>
<td>79</td>
</tr>
<tr>
<td>Intermediate &amp;Secondary</td>
<td>2</td>
<td>3.8</td>
<td>64</td>
</tr>
<tr>
<td>College &amp; Higher</td>
<td>1</td>
<td>1.9</td>
<td>49</td>
</tr>
<tr>
<td>Occupation: Employee</td>
<td>12</td>
<td>22.6</td>
<td>71</td>
</tr>
<tr>
<td>Housewives</td>
<td>41</td>
<td>77.4</td>
<td>418</td>
</tr>
<tr>
<td>Smoking Smoker</td>
<td>10</td>
<td>18.87</td>
<td>41</td>
</tr>
<tr>
<td>Not</td>
<td>43</td>
<td>81.13</td>
<td>448</td>
</tr>
</tbody>
</table>

* =Significant p value

Table (2): Obstetrical Complications in Second (current) Pregnancy in the two groups.

<table>
<thead>
<tr>
<th>Complications</th>
<th>Still birth(n=53)</th>
<th>Live births (n=489)</th>
<th>OR (95% C.L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Miscarriage</td>
<td>6</td>
<td>11.32</td>
<td>16</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>7</td>
<td>13.20</td>
<td>20</td>
</tr>
<tr>
<td>Antepartum haemorrhage</td>
<td>2</td>
<td>3.77</td>
<td>10</td>
</tr>
<tr>
<td>Induction of labour</td>
<td>5</td>
<td>9.43</td>
<td>8</td>
</tr>
<tr>
<td>Elective Caesarean section</td>
<td>5</td>
<td>9.43</td>
<td>16</td>
</tr>
<tr>
<td>Emergency CS (placental abruption, foetal distress, failure to progress)</td>
<td>7</td>
<td>13.20</td>
<td>9</td>
</tr>
</tbody>
</table>

*Significant P value

Table (3): The foetal outcome in (current) pregnancy in the two groups.

<table>
<thead>
<tr>
<th>Foetal outcome</th>
<th>Still birth(n=53)</th>
<th>Live birth(n=489)</th>
<th>OR(95%CL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>%</td>
<td>No</td>
<td>%</td>
</tr>
<tr>
<td>Stillbirth</td>
<td>6</td>
<td>11.32</td>
<td>12</td>
</tr>
<tr>
<td>Prematurity</td>
<td>4</td>
<td>7.55</td>
<td>22</td>
</tr>
<tr>
<td>Low birth weight</td>
<td>8</td>
<td>15.09</td>
<td>12</td>
</tr>
<tr>
<td>Early neonatal death</td>
<td>1</td>
<td>1.89</td>
<td>6</td>
</tr>
<tr>
<td>No complications</td>
<td>34</td>
<td>64.15</td>
<td>437</td>
</tr>
</tbody>
</table>

*significant P value

Discussion: Extremes of maternal age are an important risk factor for stillbirth (7, 8, 9) this is in contrast to the result of our study that does not demonstrate a significant difference between the two groups, this may be a result of early ages of marriage and childbearing in our society. There are studies found that uneducated pregnant women were at higher risk of intrauterine foetal death than those with higher education (10, 11) this is comparable to our study. The findings regarding risk associated with smoking agree with most published researches (12, 13) that demonstrated smoking association with several adverse pregnancy outcomes, including stillbirth. Studies of natural conception in smokers have found an increased risk of spontaneous miscarriage, ectopic pregnancy, preterm premature rupture of membrane, prematurity, placental abruption, intratruterine growth restriction, stillbirth and neonatal death. Though the mechanisms have not been completely elucidated, vasoconstrictive and antimetabolic properties of cigarette smoke (such as nicotine, carbon monoxide, and cyanide) may lead to placental insufficiency and embryonic and foetal growth restriction and demise. Frias AE Jr, et al (13) has found that there is a higher risk for subsequent pregnancy loss and recurrent foetal death in a women with prior foetal death in their previous pregnancy and this was comparable to the results of the current study that demonstrates that miscarriage is an obstetric complication that may significantly complicate a pregnancy following a history of stillbirth and this reflects the shared causes of intrauterine foetal demise (whether early or late in pregnancy). This study shows that the risk of low birth weight, preeclampsia and intervention at delivery (induction of labour, elective CS, and emergency CS) are more common following a history of stillbirth and this was comparable to other studies (14,15,16). These findings might reflect an
underlying impaired placental function and
development that might have existed in the first
pregnancy, albeit subclinically, contributing to the
stillbirth and accordingly increases the risk of
intervention at delivery(14,15,16). Other obstetrical
complication, namely placental abruption was
significantly increased following previous history of
intrauterine foetal death in the studies of M Black, et
al. and Robson S, et al. (15, 16) which is in contrast
to the current study that does not demonstrate a
significant risk of these complication and this may
be due to our studied group being not large enough
to demonstrate a statistically significant difference.
Stillbirth, which is an important adverse pregnancy
outcome and was evident with a recurrence rate of
11.32% in the study group. Most of those cases
(66.7%) have had medical disorders, and (16.7%) of
cases have congenital anomalies, resulting in
increased risk of stillbirth in the subsequent
pregnancies as it is shown in our study and is
comparable to Reddy UM , M. Black, et al and
Sharma, et al studies (17,15,16 ).The cases with
casual causes for stillbirth, as those resulting from
mechanical causes, does not show increased risk of
recurrence of stillbirth in subsequent pregnancies
that’s in our study and is comparable to other studies
(18, 17). Unexplained stillbirth (“unclassified” as
the cause of stillbirth is not fully evaluated) was
accounted for 16.7% of recurrent stillbirth in this
study and when recurred was associated with
maternal medical disorder (PET), which again may
reflect a subclinical or undiagnosed placental
insufficiency in their previous pregnancy resulting
into stillbirth. Bhattacharya S. et al. and
Robson S, et al (14, 16) study had found that
prematurity and early neonatal death were a
significant perinatal risks following a history of prior
stillbirth which was in contrast to the finding of this
study that demonstrates no significant risk between
the two groups and again it could be due to our
studied group being not large enough to demonstrate
a statistically significant difference.

Conclusion:
A stillbirth in the first pregnancy increases the
obstetric complication i.e. miscarriage,
preeclampsia, low birth weight and intervention at
delivery (induction of labour, elective CS, and
emergency CS) in the subsequent pregnancy but did
not seem to increase the risk of antepartum
haemorrhage, prematurity or early neonatal death in
subsequent pregnancy. Recurrence of stillbirth in
the subsequent pregnancy mainly depends upon original
cause of first stillbirth. In absence of a known risk
factor; recurrence of stillbirth does not increase, but
it’s an evident event in the presences of risk factors
like maternal diseases and congenital anomalies.
There is a profound effect of smoking on increasing
stillbirth risk among women.

Reference:
1. World Health Organization. Definitions and
indicators in Family Planning Maternal and Child
press, 2001?
textbook of obstetric and gynaecology. Blackwell
3.Shaks E,Chaimers J,Leigh-Brown A. The Scottish
Gestational complication: Foetal demise in utero.
The Johns Hopkins Manual of Gynaecology and
Obstetric. 3rd ed, 2007 p.120.
age and risk of stillbirth: a systematic review”.
CMAJ. 2008 Jan 15; 178.
8. Smith GC, Pell JP. Teenage pregnancy and risk of
adverse perinatal outcomes associated with first and
second births; population based retrospective cohort
study. BMJ 2001 Sep 1; 323(7311):476.
maternal age and the risk of foetal death. N Engl J
10. Pasupathy D, Smith GC. The analysis of factors
11. Chen J, et al. Maternal education and foetal and
infant mortality in Quebec. Foetal and Infant
Mortality Study Group of the Canadian Perinatal
12. Orten Dahl M, Nasman P. “Quitting smoking is
perceived to have an effect on somatic health among
pregnant and non-pregnant women”. J Mattern
13 .West R. Helping patients in hospital to quit
smoking. Dedicated counselling services are eff
Frias AE, Luikenaar RA, et al. Poor obstetric
outcome in subsequent pregnancies in women with
prior foetal death. Obstet Gynaecol 2004; 104:521-
6.
subsequent pregnancy complications. BJOG 2008;
115:269-74.
subsequent to intrauterine death in first pregnancy.
BJOG 2007; 115(2):269-274.
outcomes after unexplained stillbirth. Preliminary
17.Frets RC. Aetiology and prevention of stillbirth.
in a population of relatively low risk
mothers. Paediatr Perinat Epidemiol 2007;