Intrauterine fetal death: An unforeseen mishap

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Introduction
Intrauterine fetal death often constitutes a major challenge for obstetricians in terms of fetal care and also for the need of information and counseling of the affected couple. In the recent years intrapartum and neonatal mortality has declined significantly in developed countries because of the advances in Obstetrics and neonatology but fetal mortality rate has fallen only slightly. This has increased relative importance of Intrauterine fetal death as a clinical and public health problem. However, little attention has been paid in the developing world.

Definition
Intrauterine fetal death is death of the fetus after age of viability and retained for at least 24 hours resulting in delivery of a macerated fetus. A related term is Stillbirth that indicate delivery of fetus after age of viability which shows no sign of life after birth. However, the definition is adopted in different studies with some modification.

Epidemiology
It is estimated that worldwide there are annually more than 7.6 million perinatal deaths of which 57 percent are fetal deaths. Ninety eight percent of the perinatal deaths take place in the developing world. One study from Latin America showed fetal death was 17.6 per 1000 births and 37% of fetal deaths occur at term and 64% were antepartum. A study from developed world reported prevalence 3 per 1000 birth. Consanguinity of parents influence fetal outcome and it has been found that the risk of recurrence of stillbirth and infant death is higher for offsprings of first cousin parents compared with offspring of unrelated parents. Once a stillbirth or infant death appear in a family the risk of recurrence in subsequent sibling is higher.

Aetiology
It is difficult to ascertain a definite cause for IUD. Third trimester bleeding e.g placenta previa or abruptio placenta has six fold increased risk of fetal death, small for gestational age fetus has 3.3 fold higher risk. Pregnancy induced hypertension causes

• Lack of mid trimester trophoblast invasion of the mouth of spiral arteries, so they remain narrow.
• Reduction in maternal blood supply because of spasm & sometimes thrombosis of the maternal vessels and
• Separation of placenta or extensive clotting of maternal blood around chorionic villi. Interval between pregnancy shorter than 6 months has twice the risk. Fetal mortality was 49% greater when premature rupture of membrane occur.

Some maternal socio-demographic factors are responsible e.g. advanced maternal age, obesity, previous abortion and adverse perinatal outcomes are also associated with fetal death. However, some studies reported that previous stillbirth or spontaneous abortion not significantly associated.

Regarding Parity some studies found an increased incidence among multiparous women while others have found no increase. Lack of antenatal care had four fold higher risk for fetal death than those with five or more visits. Non cephalic fetal presentation has ten
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fold higher risk of fetal death during intrapartum period. Fetal malformation are also an important cause. Infective disease either bacterial or viral are important cause of IUD. e.g 7.5% of IUDs in third trimester may have been caused by Parvo virus B-19 infection⁶. Anti cardiolipin antibodies in maternal blood found in some cases of IUD. Some of the cases may result from post maturity.

Cord accidents- True knots or constriction of the cord round a limb may be found in some cases. Umbilical cord stricture is an uncommon but distinctive condition associated with intra uterine fetal death. The stricture usually seen at the fetal end or in multiple sites. Major pathological features include aberrance, obliteration of cord vessels at the narrow segment and intravascular cord thrombosis¹³. Diabetes Mellitus, Haemolytic disease e.g. Rh incompatibility and Hyperpyrexia, maternal anaemia are associated with significant risk of fetal death⁴.

Unexplained : One fifth of all stillbirths remain unexplained despite autopsy examination.

Diagnosis
It Is often made from history and clinical examination. Patient will state that there is lack of fetal movements which was previously experienced. On examination there is regression of uterine size, absence of fetal heart sound, uterine tone is diminished and feel flaccid and egg shell crackling feel of fetal head.

USG: Reveal absent fetal heart echo, skull collapse, poorly visualized midline falx, retraction of brain tissue, empty urinary bladder and a non-idled aorta

X-ray shows:
• Spalding sign (overlapping of the cranial bones due to shrinkage of the brain)-appear usually after a week or more
• Robert’s sign -Gas bubbles appear in the heart, aorta, vena cava, liver, cord and abdominal cavity -may appear as early as 12 hours

Other signs include Crowding of the ribs and hyperflexion of the spine. Intra uterine death can also be diagnosed by noting a macerated baby. Maceration is a destructive aseptic process that appears between 12 to 24 hours after fetal death. The first sign is blistering and peeling of skin that involves whole body. The body appears soft and toneless, ligaments are softened, vertebral body is liable to sag/collapse, cranial bones are loosened & easily movable on one another, fetus becomes swollen and looks dusky red. Amniotic fluid & fluid in all serous cavities may contain blood pigments¹⁴.

Investigation
It is performed to elucidate cause, some done before delivery and others after delivery. Commonly suggested tests are

• Kleihauer- Betke test to detect occurrence of feto-maternal transfusion.
• Serological analysis for Toxoplasma
• Cervical culture for chlamydia, Group B streptococci and Gonorrhoea. Amniocentesis and amniotic fluid examination for detection of metabolic diseases
• Prothrombin time
• Activated partial thromboplastin time (APTT)
• Von willybrand factor antigen (vWFAg)
• Fibrinogen and fibrin degradation product
• Thrombin time
• Platelet count
• Anticardiolipin antibodies (ACLA)
• Blood Group and Rh antibodies
• Glycosylated Hb & Post prandial sugar
• Maternal & paternal karyotypes
• After Delivery
• Mother evaluated for coagulation profile
• Analysis of fetal karyotype, histology, bacteriology and virology of placenta
• Bacterial culture
• Fetal Autopsy
However; it is necessary to select the relevant investigation to make cost effective.

Complication
• Psychological upset
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- Infection especially after membrane rupture
- Disseminated Intravascular Coagulation: is due to release of tissue thromboplastin from feto placental unit activating the extrinsic pathway of coagulation. There is fall in level of fibrinogen factor VIII & platelets & elevation of FDP.

During labour
- Uterine inertia,
- Retained placenta
- Post Partum Haemorrhage

Management
Prevention
- regular ANC to detect contributing factors and treatment
- early treatment of infection
- prophylaxis of Rh -ve mothers
- prompt treatment of fever

Specific treatment
Usually 80% cases deliver within 2 weeks. Vaginal delivery should be the aim otherwise abdominal delivery

Specific indication for abdominal delivery
- Known major degree of placenta previa
- Severe CPD
- Previous classical CS
- more than two previous section
- incipient uterine rupture or rupture suspected

Relative indication: Transverse lie

Induction of labour done by
- Oxytocin infusion
- Prostaglandin gel or pessary per vaginally
- Folyes catheter (intracervical)

A combination of oral mifepradone (200 mg single dose) and intravaginal misoprostal (200 microgram) has found an effective and safe regime for induction of labour following late fetal death and induction to delivery interval appear shorter than using them singly’s. It is important that proper puerperal care such as suppression of lactation with bromocriptine and careful bereavement support is offered to the mother after delivery.

Conclusion
It is difficult to have a precise estimate of IUD as the cases are more likely to go unreported. The decline in fetal death rate mainly that occur at term in the developed world is attributed to improvements in obstetric surveillance and proper management in labour. Attention to the preventable factors such as regular antenatal care, early treatment o maternal medical problems and a comprehensive approach of management to the unmet need of pregnant women would have a great impact in reducing fetal mortality in the developing countries as well.

References
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