

A Case Study on Fetal Reduction

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Abstract: *This article focuses on a case report of fetal reduction, a trending concept in modern obstetrics. Around the world today, assisted reproductive techniques bring hope for infertile couple with a price of multiple gestation. Multiple gestation brings joy, on the other hand the risk it carries calls for alternative options. One such option which needs to be discussed with the couple is fetal reduction. It is the responsibility of obstetrician and gynaecologist to stay abreast of the latest developments in the field and provide a non-judgemental counseling associated to the risk of carrying multiple fetuses. The decision making however relies upon the couple's discretion. The purpose of this article is to bring to the limelight, the emerging concept of fetal reduction, the ethical dilemma associated with it, which can help the health care professionals to introspect and support the couple in such situations.*

Keywords: fetal reduction, multifetal pregnancy, infertility, ethical dilemma.

1. Introduction

Conception is nature's mystery and multiple gestation is a miracle by itself. Multiple pregnancy can be defined as a pregnancy in which more than one fetus develops.^[1] Apart from natural conception, the assisted reproductive techniques such as IVF, ovulation induction and other techniques have emerged as a growing trend which attributes to implantation of multiple embryos. According to CDC report during the year 2017 – 2018, the ART-conceived infants in the United States accounts to 74926 out of 3,813,136 total. Multiple-birth infants among ART infants were 16,001 (21.4%). Twin infants among ART infants were 15,532 (20.7%). Triplets and higher-order infants among ART infants accounts to 469 (0.6%).^[2]

Multiple pregnancy increases the risk of stillbirth, neonatal death and disability. Maternal morbidity and mortality are also increased due to late miscarriage, high blood pressure, pre-eclampsia and haemorrhage.^{[3],[4]} Human Fertilization and Embryology Authority advocates single Embryo transfer.^[5]

However when a multiple pregnancy is diagnosed, risks associated with such pregnancy, possible management and the option of multifetal pregnancy reduction should be introduced.

2. Definition

- The phrase “selective termination” refers specifically to deliberate termination of an anomalous fetus in a multiple gestation, typically in the second trimester.
- Multi fetal reduction refers to a nonspecific reduction in the number of foetuses.^[6]

3. Case Report

A 31 years old primigravida woman got pregnant by invitro fertilization due to primary infertility. Her pregnancy was confirmed by ultrasound in 6 weeks and two embryos were implanted successfully.

Scan done at 8 weeks revealed the presence of triplets. Fetus (A) had separate placenta and respective membranes but

fetus (B and C) were supplied by one placenta with monochorionic diamniotic sac. Hence it was a dichorionic triamniotic twin. Considering the division of embryos and possible complications on fetal growth, fetal reduction was suggested by the obstetricians. The antenatal women underwent selective fetal reduction at 18 weeks. A prophylactic antibiotic was administered before the procedure. It was done on a day care basis. Under the guidance of ultrasound 2% of Inj. Lignocaine 2 ml was infused directly into the thoracic cavity of two fetuses (B & C) individually. The cardiac activity of fetus B and C stopped and it was reconfirmed in an hour. The cardiac activity of fetus A was confirmed. The patient was monitored for a day and got discharged. She was told to report if she had fever or bleeding. Patient did not have any such complaints. Currently she is carrying a singleton live fetus.

Goal of Fetal Reduction:

- To reduce the number of fetuses in a higher-order multiple gestation
- To decrease the chance of premature delivery
- To improve the outcome for the remaining fetuses.

Method of Termination

The method of selective termination depends on the chorionicity.^[6]

Monochorionic twins:

Contemporary practices:

- Ultra sound guided cord occlusion
- Fetoscopic cord occlusion
- Laser ablation of the umbilical cord

Outdated techniques:

- Hysterotomy
- Injection of cord sclerosants

Dichorionic twins:

- Ultrasound-guided intra-cardiac injection of potassium chloride

Prerequisites:

- Counsel patients about the following:
 - Safety and efficacy of these monochorionic techniques.
 - 1) Risk associated with such reduction
 - 2) Better outcome for the surviving infant

- Verify whether the targeted foetus possesses the alleged abnormality.
- Correct foetal identification is simple, if the problematic foetus has a structural anomaly.
- Rapid chromosomal analysis methods are needed for chromosomal abnormalities without structural markers.
- Use sonography to determine the pregnancy's chorionicity.
- If sonography is questionable, DNA zygosity tests on amniocytes may be necessary to rule out monozygosity.
- In comparison to the transabdominal method, transvaginal multifetal pregnancy reduction (MFPR) is less frequently carried out.

Steps: ^{[6],[7]}

- Trans abdominal approach is most frequently carried out between 10 and 13 weeks of pregnancy,
- Before the procedure, the patient receives a single oral antibiotic dose.
- A foetus is chosen for reduction if abnormalities in its gestational position, crown-rump length, or nuchal translucency thickness are discovered.
- Other than the foetus covering the internal os, which is rarely chosen, the foetus or foetuses that are technically the simplest to access are chosen.
- In a higher order multiple gestation, the monozygotic pair of fetuses is typically chosen for reduction.
- Using sterile technique and continuous ultrasound guidance, a 22 gauge needle is inserted into the target fetus's thorax and 2 to 3 mEq of potassium chloride is injected.
- Asystole is then monitored for at least three minutes.
- Using a different needle, the process is then repeated as necessary for more fetuses.

Post Care:

- Repeat the scan to determine the viability of the remaining fetuses and the fetal demise at one hour and one week following the surgery.
- Counsel the parents and provide bereavement counseling.

Prognosis:

- For patients with quadruplet and higher gestations, MFPR is linked to better outcomes.

Benefits:

- Foetal reduction greatly lowers the chance of preterm birth and low birth-weight babies without raising the risk of miscarriage.

Ethical Consideration: ^{[8],[9]}

- Maintain the patient's autonomy. Recognize a woman's right to have opinions, make decisions, and take actions relevant to managing her pregnancy.
- The principles of beneficence and non-maleficence are particularly complex when applied to the context of multifetal pregnancy.
- Multifetal pregnancy reduction could improve both the mother's health and the health of her living neonates.

- Contrarily, multifetal pregnancy reduction does result in death of one or more fetuses and in extremely rare circumstances, may also cause the death of an entire pregnancy.
- The number of fetuses, the patient's medical history, the woman's personal moral, religious, and cultural values, as well as her unique economic and social status, may all affect these decisions in a way that is appropriate.

4. Recommendations

The American College of Obstetricians and Gynecologists (ACOG) 2020 makes the following recommendations:^[10] Due to an increase in maternal and neonatal morbidity and death, multifetal pregnancies must be limited as apart of fertility treatments.

Nursing Diagnosis:**Anxiety related to the outcome of procedure****Expected Outcomes:**

Anxiety will be reduced as evidenced by positive response to relaxation and coping strategies.

Interventions:

- Maintained a calm, non-threatening environment while working with the patient.

- Used simple words and brief messages and spoke calmly and clearly.

- Encouraged the patient to talk about the traumatic experience.

- Helped the client work through feelings of guilt related to the traumatic event.

- Encouraged her to adapt positive coping abilities.

Evaluation:

Anxiety was reduced as evidenced by verbalization of relaxed feeling and implementation of coping strategies.

Anticipatory grieving related to loss of two fetuses**Expected Outcomes:**

The antenatal woman will find meaning and purpose after a significant loss.

Interventions:

- Assessed the phase of grieving being experienced by the patient and significant others.

- Communicated therapeutically with patients and family members and allow them to verbalize feelings.

- Supported the patients and significant others to share mutual fears, concerns, plans, and hopes for each other.

- Initiated a visit by chaplain.

Evaluation:

The antenatal woman was able to find meaning and purpose of better life for the existing fetus after a significant loss.

Moral distress related to selective fetal reduction**Expected Outcomes:**

The antenatal woman will portray sense of resilience in the face of adverse situations.

Interventions:

- Promoted a secure and respectful therapeutic relationship.
- The patient's dignity was upheld.

- Ensured patients autonomy in decision making.
- Provided a non-judgmental environment while patient shared her perspectives.
- Recognized and respected her opinions, values, and beliefs.

Evaluation:

The antenatal woman portrayed sense of resilience and was able to accept fetal reduction for the better outcome of existing fetus.

4. Fear related to procedural impact on live fetus and its prognosis

Expected Outcomes:

The antenatal women will showcase confidence to face her fears and overcome the situation.

Interventions:

- Under a calm environment patient's feeling of fear was enquired.
- Provided psychological support.
- False reassurances were avoided.
- Supported the patient in recognizing strategies used in the past to deal with fearful situations.

Evaluation:

The antenatal women showcased confidence and overcame the situation by focusing on the healthy singleton fetus.

5. Risk for infection related to invasive procedure

Expected Outcomes:

The patient will remain free of infection, as evidenced by normal vital signs and the absence of signs and symptoms of infection.

Interventions

- Monitored and assessed for signs of infection.
- Monitored the patient's vital signs, especially the temperature.
- Instructed the patient to report symptoms indicating complications (e.g., temperature 100.4° F (38.0°C) or greater, chills, malaise, abdominal pain or tenderness, severe bleeding, heavy flow with clots, foul-smelling, and/or greenish vaginal discharge).
- Performed hand hygiene before and after each care activity.
- Maintained sterile technique when performing procedures or providing care.
- Administered prophylactic antibiotics as prescribed.

Evaluation:

The patient remained free of infection, as evidenced by normal vital signs and the absence of signs and symptoms of infection.

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