

Research Article

Triplet gestation: current scenario in a teaching hospital of Eastern India

Amitava Mukhopadhyay¹, **Ratan Das**^{*1}, Bibek Mohan Rakshit², Narayan Jana², Suchandra Mukherjee³
and Arun Kumarendu Singh³

¹Department of Obstetrics and Gynaecology, Malda Medical College and Hospital, Malda, West Bengal, India

²Department of Obstetrics and Gynaecology, Burdwan Medical College and Hospital, West Bengal, India

³Department of Neonatology, Institute of Postgraduate Medical Education and Research, Kolkata, India

***Correspondence Info:**

Dr. Ratan Das,
Department of Obstetrics and Gynaecology,
Malda Medical College and Hospital, Malda, West Bengal, India.
E-mail: ranta1982@gmail.com

Abstract

Objective: The purpose of this study was to assess obstetrical and perinatal outcomes of triplet gestations, and to explore its clinical, social, psychological, and economic impact on the parents, and their families in the context of developing countries.

Methods: The records of 7 triplet pregnancies delivered in S.S.K.M. Hospital, Kolkata between 1999 and 2006, were analyzed regarding method of diagnosis, antenatal complications, mode of delivery and perinatal outcomes. A qualitative observational study was also performed in 2 cases to explore possible social, financial and psychological impact of triplet pregnancies in a low-resource setting, and to assess the parents' ability to cope with these challenges.

Results: The incidence of triplet gestation was 1 in 1778 deliveries in this hospital. Anemia, gestational hypertension and preterm labour were common complications. Majority (70%) of these women were delivered by caesarean section. High perinatal mortality (222 per 1000 total births) was mainly due to combination of prematurity, low birth-weight and perinatal asphyxia. The qualitative study has revealed, profound psychological impact on the mothers, especially when all 3 children from a triplet gestation were girls.

Conclusions: Early diagnosis with determination of chorionicity, antenatal counseling, psychological and financial support, and availability of advanced neonatal care are the cornerstones of favorable outcome in triplet gestation. Psycho-social preparation of the parents and their families is also vital to cope with the simultaneous needs of 3 low birth-weight neonates.

Keywords: :Triplets; multiple births; pregnancy outcome; preterm labour.

1. Introduction

Multifetal pregnancy presents many serious obstetric problems because of difficulties in early diagnosis, increased incidence of antenatal and delivery complications, and high perinatal morbidity and mortality.¹⁻³ Higher-order multiple births (3 or more) are now increasingly common as a result of ovulation induction and artificial reproductive technologies (ART).¹⁻⁴ Almost 50–60% of all triplets, 75% of all quadruplets and virtually all quintuplets now follow these treatments.² Currently, the technology is widely available in many developing countries. Therefore, the consequences of higher-order multifetal pregnancy and its management dilemma in low-resource settings are important issues.⁵⁻⁸ Triplet pregnancies are at higher risk of maternal and perinatal morbidity and mortality.^{1-3,5-8,9-11} These result in wider implications such as i.e. medical, psychological, social and financial on the parents and their families, and the society at large.^{5,7,8,10} In particular, the psycho-

social risks include significant difficulties in meeting basic material needs for the family, decreased quality of life, and increased risks of social stigma and maternal depression.⁴ Unfortunately, these aspects have not been explored in detail in the context of developing countries.⁵⁻⁸ In the developing countries, with increasing availability and accessibility of advanced neonatal care, albeit limited, these extremely low birth-weight (LBW) neonates do survive.¹² These also lead to diverse medical, social and economic consequences. Therefore, we planned to explore these issues in a series of triplet gestations, who were managed in our institute.

2. Materials and Methods

We reviewed all multifetal pregnancies delivered in the Institute of Postgraduate Medical Education and Research/S.S.K.M. Hospital, Kolkata, India, between January 1999 and December 2006. During this period, there were 147 twin deliveries and 7 triplet deliveries, which constituted 1.2% and 0.05% of total deliveries in the hospital, respectively. We reviewed records of all 7 cases of triplet pregnancies regarding their methods of diagnosis, antenatal complications, mode of delivery and perinatal outcome. Prematurity was defined as gestational age less than 37 completed weeks; perinatal deaths included all still-births (birth-weight 500 g or more) and neonatal deaths within 7 days of birth. In order to explore possible social, psychological and financial implications of these pregnancies in a low-resource setting of the developing countries, we have also performed a qualitative observational study by “participant-observer” method in two women.¹³ Relevant information was obtained during routine in-patient maternity care over a period of 4-8 weeks. Data are presented as mean with standard deviation (SD), or as proportion, and 95% confidence intervals (CI) are calculated, as appropriate.

3. Results

In this study, all 7 women were young (mean 25.1 years, SD 1.8), and all but one were nullipara (Table 1). None of them had family history of multifetal pregnancy. However, 4(57%) women conceived while taking clomiphene citrate for ovulation induction.

Table 1. Clinical details and pregnancy outcome of triplet gestations.

Serial No.	Age (Years)	Parity	Gestation at delivery (weeks)	Preconceptional medication	Mode of delivery	Birth weight (kg)	Perinatal outcome and NICU stay
1.	26	P ₀₊₂	36.6	clomiphene	LSCS	2.1 2.2 2.4	All discharged on 3rd day
2.	27	P _{1+2P} P ₁₊₂	31.6	—	VD	1.36 1.33 1.19	All died within 4th day
3.	27	P ₀₊₀	34	—	LSCS	1.67 1.3 1.9	All discharged within 4th day
4.	24	P ₀₊₀	35.4	clomiphene	LSCS	1.57 1.68 1.69	1. Discharged 32nd day 2. Died 14th day 3. Discharged 32nd day
5.	25	P ₀₊₁	22	—	VD	All <500g	—
6.	22	P ₀₊₀	35	clomiphene	LSCS	1.98 2.35 1.6	All discharged within 4th day
7.	25	P ₀₊₀	35	clomiphene & cabergoline (for hyperprolactinemia)	LSCS	1.9 1.98 1.5	1. Discharged 2nd day 2. Discharged 2nd day 3. Discharged 6th day

NICU= neonatal intensive care unit, LSCS = lower segment caesarean section, VD = vaginal delivery

Table 2. Meta-analysis of obstetrical and perinatal outcome for 28 triplet pregnancies in 4 Indian studies

Study	No. of Cases	Preterm labour – No. (%)	Mean gestation (wk) at delivery (SD)	Caesarean rate – No. (%)	PNM per 1000 total births
Kore <i>et al</i> ⁵	11	8(73)	33.3(3.7)	5(45.4)	335
Pathania <i>et al</i> ⁶	5	3(60)	34.8(NA)	3(60)	200
Reddy-Rani <i>et al</i> ⁷	6	4(67)	32.3(5.4)	2(33.3)	389
Present study	6	5(67)	34.6(1.7)	5(83.3)	222
Total	28	20(71.4) [95% CI 54.7–88.1]	33.7*	15(53.6) [95% CI 35.1–72.1]	298

SD = Standard deviation, PNM = Perinatal mortality, NA = Not available

· SD and 95% CI (confidence interval) cannot be calculated

All cases were diagnosed as triplet gestation within second trimester of pregnancy except one, who was diagnosed as twin gestation at 22 weeks, but a repeat ultrasound in our institute at 32 weeks' gestation revealed triplet pregnancy. Chorionicity was established antenatally in only 3 of 7 pregnancies. Antenatal complications included anemia (14%) and gestational hypertension (28.5%), and all the women had preterm labour.

The majority of women (5 of 7) had caesarean delivery while the remaining two had vaginal delivery — one at 31 weeks' gestation, and the other at 22 weeks (Table 1). Since in the latter woman, all 3 babies weighed <500 g, they were excluded from all perinatal statistics. Of 18 neonates weighing >500 g, 5 weighed 1500 g or less, 9 babies weighed 1501 to 1999 g, and 4 babies weighed >2000 g (Table 1). In the present study, all 18 neonates were low birth-weight (LBW, <2500 g), and all 4 babies with birth-weight >2000 g survived. There were 4(22.2%) neonatal deaths — mainly due to complications of prematurity, very LBW and perinatal asphyxia. There was no major postpartum complication, or maternal death.

4. Discussion

The incidence of triplet gestation varies widely — the highest in Nigeria (1 in 425) to the lowest in Japan (1 in 25,000) with intermediate incidence in Europe (1 in 2,000).^{2,3,14} Incidence in the current study (1 in 1778 deliveries), although remains in the intermediate range, it does not represent a population statistics as this hospital is a tertiary referral center. Reported incidence from hospital based Indian studies varies between 1 in 642 to 1 in 2660 deliveries.⁵⁻⁷ Although almost one-third of triplet pregnancies had a history of ovulation induction,³ such a history was elicited in 4 of 7 women in present series. As large proportion of triplets occur after ovulation induction or assisted reproduction, strict compliance to existing national and international guidelines for ovulation induction and assisted reproduction,^{15,16} proper counseling of the couple, and early prenatal diagnosis are important facets related to prevention and management of these high-risk pregnancies.¹⁻³

Although early diagnosis is an important issue to reduce complications of triplet gestation, most cases in the current study were diagnosed beyond 20 weeks. In multifetal pregnancies, zygosity and/or chorionicity are important prognosticators for perinatal complications, and these information are vital for proper planning of prenatal care and counseling.^{1,2} Monochorionic pregnancies are at higher risk for perinatal complications and even long-term neuro-developmental disabilities, because of twin-to-twin transfusion syndrome, fetal growth discordancy, and perinatal asphyxia.¹⁻³ Although chorionicity can be determined by using several sonographic criteria (placental number, twin peak sign, dividing membrane thickness, and fetal sex),¹ unfortunately, very little information regarding chorionicity can be obtained from the antenatal ultrasound in most Indian studies including the current one.⁵⁻⁸ Wrong reporting of triplet as twin is also a major concern.^{3,7} All these may be attributed to late diagnosis and/or lack of expertise in perinatal/fetal sonography in small private centers. Therefore, there is a scope for providing more information, education and training among all clinicians involved in care of such cases, especially in the settings where ovulation induction or ART has been frequently practiced.

Antenatal complications – anemia, gestational hypertension, and preterm labour are the major causes of adverse maternal-fetal outcomes in triplet pregnancies.^{1,2,5-7} In the present study, all women had preterm births, which remains the single most common cause of perinatal morbidity and mortality in multifetal pregnancies worldwide.^{1,2,5-7,9-11} Most of Indian studies on triplet pregnancies are too small to provide meaningful statistics.⁵⁻⁷ Therefore, meta-analysis of pooled data of 4 Indian studies including the current one was performed, and it suggests that of all triplet gestations, approximately two-thirds develop spontaneous preterm labour, one-half requires caesarean delivery, and one-fourth ends in perinatal death (Table 2). The principal determinant of successful outcome amongst triplet and other higher-order births is gestational age at delivery.¹⁻³ Mean gestational age at delivery in the current series 34.6(SD 1.7) weeks is concordant with earlier Indian^{5,6} and western studies.⁹⁻¹¹ As prevention of prematurity has remained an unmet challenge,¹⁷ and it is almost an impossible mission to achieve it in triplet gestation, the strategy to reduce perinatal mortality (PNM) should be safe delivery and advanced neonatal care. As currently the route of delivery (routine caesarean section versus vaginal delivery) remains a contentious issue,⁷ with balance more tilting towards caesarean section,^{2,3,9-11} the mainstay of improving PNM would be availability of neonatal intensive care unit (NICU). It is therefore, pertinent to transfer all cases of triplet pregnancy to regional perinatal center for both antenatal fetal surveillance and safe delivery, and to provide NICU care.

Most of the neonates of the present series required admission to NICU, and their stay varied from 2 days to 32 days, which was almost inversely proportional to their gestational age at delivery and birth-weights. Although, counseled antenatally, the women were not mentally well prepared to look after 3 small newborns simultaneously, and were often unable to cope with the stress. Breastfeeding is also an extremely challenging task. Most of them were also fatigued because of walking back and forth between the maternity ward and NICU. In the present study, there were 4(22.2%) perinatal deaths, which is comparable to other Indian reports.⁵⁻⁷ Consistently high perinatal deaths related to prematurity remains a major concern in triplet gestations worldwide,⁹⁻¹¹ and it is more so in developing countries⁵⁻⁷ because paucity of specialized neonatal care.¹²

The support for parents is perhaps the most challenging aspect of management of multiple births.² Triplet births have a tremendous psychological, social and financial impact on the parents and their families.⁴ Unfortunately, very little information is available from previous Indian studies.⁵⁻⁸ Only a qualitative research can explore this emerging scenario in the Indian context. We assessed two mothers and their immediate family members in the current series by “participant-observer” method,¹³ in which individual mothers’ attitude, ability to cope with stress and emotional reaction were observed during routine in-patient care. One woman, who was initially referred as twin gestation by a private practitioner, burst into tears when she was informed that she was actually carrying a triplet pregnancy. Her immediate reaction was disbelief and denial. Subsequently when she came to term with the fact, she was anxious and concerned about bringing up 3 children simultaneously. Finally, after delivery, she was very much perturbed when she came to know that all 3 babies were girls, and she was concerned not only about immediate medical attention of these babies in NICU, but also the prospect of their marriage several decades later. This case exposes the grim social scenario regarding some parents’ attitude towards having a girl child in India.¹⁸ Daughters are often regarded as a liability.¹⁸ Preference for a son is so common that there are many million “missing girls” at birth, probably as a consequence of selective abortion of female fetuses, which still remains a major social issue in India.¹⁹⁻²⁰

The current case that of having 3 girl children at a time, has perhaps not been explored earlier. Several sessions of counseling involving both parents and other family members were found to be beneficial to tide over the social and emotional crisis. The long-term impact, if any, could not be followed through. In contrast, in the other woman, who delivered two boys and a girl, the positive attitude of the parents was beneficial. In this latter case, the family, although concerned about economic impact of rearing 3 children simultaneously, the positive attitude of the elders had a salutary effect on the woman. In both the cases, the elders of the family played a crucial role in providing emotional, social, and financial support to the couple, which made a remarkable difference in overall perinatal care.

In conclusion, early diagnosis with determination of chorionicity, antenatal counseling with psycho-social support and lactation advice, availability of NICU facility, and perhaps financial help to the indigent family through public social support programs are the key factors to improve obstetric outcomes in triplet gestation. Furthermore, as maternal-fetal complications occur in almost all triplet gestations, such pregnancies should be managed at tertiary hospitals with facilities for multidisciplinary expertise and advanced perinatal care.

References

1. Ayres A, Johnson TRB. Management of multiple pregnancy: Prenatal care – part 1. *Obstet Gynecol Surv* 2005;60:527-537.
2. Nielson JP, Bajoria R. Multiple pregnancy. In: Chamberlain G, Steer PJ, editors. *Turnbull's Obstetrics*. 3rd ed. London: Churchill Livingstone. 2001: 229- 246.
3. Daw E. Triplet pregnancy. In: Studd J, editor. *Progress in Obstetrics and Gynaecology*. Vol. 6. Edinburgh, UK: Churchill Livingstone. 1987:119-131.
4. Ellison MA, Hotamisligil S, Lee H, Rich-Edwards J W, Pang SC, Hall JE. Psychosocial risks associated with multiple births resulting from assisted reproduction. *Fertil Steril* 2005;83:1422-1428.
5. Kore S, Patrawala D, Hedge A, Ambiyee VR, Vaidya PR. Triplet pregnancy. *J Obstet Gynaecol India*. 2000;50: 42-44.
6. Pathania K, Singh A, Gupta KB, Premi HK, Sood R. Outcome of triplet gestations in an apex institution. *J Obstet Gynaecol India*. 2001;51:108-110.
7. Reddy Rani P, Arora R, Sundararaghavan S, Rajaram P. Triplet pregnancy. *J Obstet Gynaecol India*. 1994;44:68-71.
8. Maru L, Bhattacharjee S, Rai S. Multifetal gestation: a holistic challenge. *Asian J Obstet Gynaecol Practice* 2007;11:33-36.
9. Al- Suleiman SA, Al- Jama FE, Rahman J, Rahman MS. Obstetric complications and perinatal outcome in triplet pregnancies. *J Obstet Gynaecol* 2006;26:200-204.
10. Pons JC, Charlemaine C, Dubreuil E, Papiernik E, Frydman R. Management and outcome of triplet pregnancy. *Eur J Obstet Gynecol Reprod Biol* 1998;76:131-139.
11. Crowther CA, Hamilton RA. Triplet pregnancy: a 10-year review of 105 cases at Harare Maternity Hospital, Zimbabwe. *Acta Genet Med Gemellol* (Roma) 1989; 38: 271-278.
12. Sen A, Mahalanabis D, Singh AK, Som TK, Bandopadhyay S. Development and effects of a neonatal care unit in rural India. *Lancet* 2005;366:27-28.
13. Mays N, Pope C. Observational method in health care settings. In: Mays N, Pope C. *Qualitative research in health care*. London: *BMJ Publishing Group*. 1996. 20-27.
14. Blondel B, Macfarlane A, Gissler M, Breart G, Zeitlin J. Preterm birth and multiple pregnancy in European countries participating in the PERISTAT project. *BJOG* 2006;113:528-535.
15. The practice committee of the Society for Assisted Reproductive Technology and the practice committee of the American Society for Reproductive Medicine. Guidelines on number of embryos transferred. *Fertil Steril* 2006; 86: S 51-52.
16. National Collaborating Centre for Women's and Children's Health on behalf of the National Institute for Clinical Excellence. Fertility assessment and treatment for people with fertility problems. Clinical Guideline. Royal College of Obstetricians and Gynaecologists. London: RCOG Press, 2004.
17. Hollier LM. Preventing preterm birth: what works, what doesn't. *Obstet Gynecol Surv* 2005;60:124-131.
18. Seth SS. Missing female births in India. *Lancet* 2006;367:185-186.
19. Jha P, Kumar R, Vasa P, Dhingra N, Thiruchelvam D, Moineddin R. Low male-to-female sex ratio of children born in India: national survey of 1.1 million households. *Lancet* 2006;367:211-218.
20. National Family Health Survey (NFHS-2). International Institute for Population Sciences (IIPS) and ORC Macro. National Family Health Survey (NFHS -2). India 1998-99. Mumbai: IIPS: 2001.