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Original Article

Obstetrics and Gynaecology Section

Evaluation of Outcome of Pregnancy Complicated with Thrombocytopaenia- A Prospective Observational Study

RAO BAHADUR BADUGU[1], PRABHADEVI KODEY[2], SOWJANYA PAPPALA[3]

ABSTRACT

Introduction: Thrombocytopaenia occurs in 7-12% of pregnancies at the time of delivery. Knowledge, regarding the causes and effects of thrombocytopaenia on mother and newborn, facilitates proper diagnosis and management of thrombocytopaenia in pregnant women for better maternal and foetal outcomes.

Aim: To determine the incidence, causes and outcome of pregnancy with thrombocytopaenia.

Materials and Methods: A prospective observational study was conducted among women attending Outpatient Department for an antenatal checkup at NRI Medical College and General Hospital, Chinnakakani, Guntur, Andhra Pradesh, India, from October 2017 to October 2019. A total of 44 antenatal women with platelet count less than 1,50,000/cumm were included in the study. They were followed-up throughout the antenatal period until delivery to record any complications that developed due to low platelet counts in the mother and neonate. A neonatal platelet count was done on day one of life. Data was subjected to statistical analysis using Statistical Package for Social Sciences (SPSS) version 22.0, all qualitative variables were expressed in terms of proportion.

Results: A total of 500 cases were studied of which 50 cases had thrombocytopaenia with an incidence of 10%. Out of 50 cases, six were lost for follow-up and the remaining 44 cases were included in the study. Out of 44 patients, 23 (52.27%) had mild thrombocytopaenia, 12 (27.27%) had moderate and 9 (20.46%) had severe thrombocytopaenia at the time of diagnosis. Common causes seen were Gestational Thrombocytopaenia (GT) 17 (38.6%), Preeclampsia (PE) 8 (18.18%), Gestational hypertension 4 (9.09%). A total of 5 (11.36%) required intensive care unit care, 3 (6.81%) had multiorgan dysfunction syndrome (MODS), 2 (4.54%) underwent hysterectomy, 2 (4.54%) had postpartum haemorrhage (PPH), 2 (4.54%) had secondary suturing done for wound infection, 1 patient (2.27%) underwent laparotomy (for rectus sheath haematoma), and mortality was seen in two cases. A total of 14 cases (31.8%) required blood and blood product transfusions. Eight neonates were admitted to the neonatal intensive care unit. There was no case of neonatal thrombocytopaenia.

Conclusion: Thrombocytopaenia is a significant problem in pregnancy; hence, the routine antenatal platelet count should be done for a timely diagnosis of thrombocytopenia.

Keywords: Gestational thrombocytopaenia, Haemorrhage, Hypertension

INTRODUCTION

Thrombocytopaenia is defined as a platelet count of less than 1,50,000/cumm. It occurs in 7-12% of pregnancies at the time of delivery [1,2]. There is a physiological fall in the platelet count in normal pregnancy. These changes could be because of the dilutional effect, low platelet production, or may be because of increased platelet turnover in pregnancy [2].

The most common clinical manifestations of thrombocytopaenia are petechiae, ecchymosis, epistaxis, gum bleeding, and abnormal uterine bleeding. Surgical bleeding associated with thrombocytopaenia is uncommon unless platelet counts are less than 50,000/cumm, and spontaneous bleeding is rare unless the platelet count is below 10,000/cumm. However, pregnant women with a platelet count of less than 1,00,000/cumm should undergo further clinical and laboratory assessment [3].

Knowledge regarding the causes and effects of thrombocytopaenia on mother and newborn facilitates proper diagnosis and management of thrombocytopaenia in pregnant women for better maternal and foetal outcomes. Thrombocytopaenia in pregnancy can result in bleeding during pregnancy, preterm delivery, Intrauterine Growth Restriction (IUGR), Postpartum Haemorrhage (PPH), abortions, abruption, Intrauterine Death (IUD), excessive bleeding complication during caesarean delivery, neonatal thrombocytopaenia [4,5].

Platelet count is not routinely done during the antenatal period, hence, the effect of thrombocytopaenia during pregnancy is not well studied in India. The present study was done with the aim to know the incidence, aetiology and outcome of pregnancy with thrombocytopaenia.

MATERIALS AND METHODS

A prospective observational study was conducted among women attending Outpatient Department for an antenatal checkup at NRI Medical College and General Hospital, Chinnakakani, Guntur, Andhra Pradesh, India, from October 2017 to October 2019. Ethical approval was taken for the study (NRIAS/IEC/431/2018). Informed consent was obtained from the participants.

A total of 50 out of 500 pregnant women included in the study were diagnosed with thrombocytopaenia with a platelet count <1,50,000/cumm at the first visit to the hospital. Out of 50 cases, six cases were lost for follow-up, and the remaining 44 cases were included in the study.

Inclusion criteria: Antenatal women with platelet count less than 1,50,000/cumm.

Exclusion criteria: Prior diagnosed cases of Idiopathic Thrombocytopenic Purpura (ITP), patients on steroids and Non Steroidal Anti-Inflammatory Drugs (NSAIDs) therapy, patients who underwent splenectomy, Human Immunodeficiency Virus (HIV) positive, and on drugs causing thrombocytopaenia.

Study Procedure

Platelet count estimation was done for all cases at the first visit and repeated in the third trimester. Platelet counts were repeated before and after delivery. Neonatal platelet count was done on day one of life. They were followed-up throughout the antenatal period until delivery to record any complications that developed due to low platelet counts. Platelet count was estimated by automated haematology analyser Symex XN 1000 by flow cytometry and manual method by peripheral smear. Based on platelet value, cases were divided as mild thrombocytopaenia (1,00,000-1,50,000/cumm), moderate thrombocytopaenia (50,000-99,000/cumm) and severe thrombocytopaenia (<50,000/cumm) [6].

STATISTICAL ANALYSIS

The data was analysed in Statistical Package for Social Sciences (SPSS) version 22.0. All the quantitative variables like age, platelet count, were expressed in terms of descriptive values like mean. All the qualitative variables were expressed in terms of proportion.

RESULTS

The incidence of maternal thrombocytopaenia was 10% i.e, (50/500). The mean age noted was 23.56±3.5 years. [Table/Fig-1] shows the socio-demographic data. Out of 44 patients, 52.27% (n=23) had mild thrombocytopaenia, 27.27% (n=12) had moderate and 20.45% (n=9) had severe thrombocytopaenia at the time of diagnosis.

Gestational Thrombocytopaenia (GT) accounts for 38.63% (n=17), gestational hypertension was seen in four patients (9.09%) [Table/Fig-2].

Age (years)	n (%)	Gravida	n (%)	Gestational age (weeks)	n (%)
18-20	10 (22.72%)	Primigravida	20 (45.45%)	<20	7 (15.9%)
21-25	23 (52.27%)	Gravida 2 or 3	23 (52.27%)	21-28	1 (2.27%)
26-30	9 (20.45%)	Gravida 4	1 (2.27%)	29-36.6	19 (43.18%)
31-35	2 (4.54%)	-	-	37-42	17 (38.63%)

[Table/Fig-1]: Socio-demographic data.

Aetiology	Number of patients	Percentage (%)
Gestational thrombocytopaenia	17	38.63%
Preeclampsia	8	18.18%
Gestational hypertension	4	9.09%
Preeclampsia and antepartum haemorrhage	2	4.54%
Eclampsia+HELLP#	2	4.54%
Acute fatty liver of pregnancy	1	2.27%
Liver diseases	2	4.54%
Dengue	3	6.81%
Sepsis and multiple organ dysfunction syndrome	1	2.27%
Renal diseases	1	2.27%
Myelodysplastic syndrome	1	2.27%
ITP	1	2.27%
Ateriovenous malformation	1	2.27%

[Table/Fig-2]: Etiology of thrombocytopaenia in pregnancy.
HELLP: Haemolysis elevated liver enzymes low platelets; ITP: Idiopathic thrombocytopenic purpura

A total of 13.63% (n=6) delivered between 28-32 weeks of gestation, 6.81% (n=3) delivered between 32-36+6 week period of gestation, and 65.90% (29 patients) delivered after 37 completed weeks of gestation, and 13.63% (n=6) had abortion.

A total of 47.72% (21 patients) had vaginal delivery, 38.63% (17 patients) delivered by Lower Segment Caesarean Section (LSCS). LSCS was done for preeclampsia and antepartum haemorrhage (n=2), eclampsia+HELLP (n=2), severe preeclampsia (n=3), CPD (n=1), previous LSCS (n=4), foetal distress (n=2), failed induction (n=3). In 31.81% (14 patients) blood and blood product transfusions was required, of which 4.54% (n=2) required only platelets, 11.36% (n=5) required only packed red cells, 6.81% (n=3) required packed red cells and platelets, 6.81% (n=3) required packed red cells along with platelets and Fresh Frozen Plasma (FFP), 2.27% (n=1) required packed cells along with FFP's and albumin. There was no need for transfusion in 68.18% (30 patients).

Two maternal deaths were seen (one patient died due to sepsis and MODS, and one due to acute fulminant hepatic failure). Out of 37 live births, 29 neonates were healthy, and eight neonates were admitted in NICU because of IUGR. There was no incidence of neonatal thrombocytopaenia [Table/Fig-3]. The birth weight of two neonates was less than 1 kg, one neonate had birth weight of 1.2 kg, 12 neonates weighted between 1.6-2.5 kg, 22 neonates weighted between 2.6-4.0 kg. Twenty nine neonates had APGAR score at 5 minutes more than 7, and eight neonates had APGAR score at 5 minutes less than 7.

Parameters	n (%)
Maternal outcomes	
Intensive care unit support	5 (11.36%)
Multiple organ dysfunction syndrome	3 (6.81%)
Hysterectomy for primary haemorrhage and secondary haemorrhage	2 (4.54%)
Postpartum haemorrhage	2 (4.54%)
Wound resuturing-wound infection	2 (4.54%)
Laparotomy-rectus sheath haematoma	1 (2.27%)
Maternal death	2 (4.54%)
Neonatal outcomes	
Live births	37 (84.09%)
Intrauterine death	1 (2.27%)
Abortion	6 (13.63%)

[Table/Fig-3]: Maternal and foetal outcome data.

DISCUSSION

In the present study, the incidence of maternal thrombocytopaenia was 10%, which is comparable to the studies by Chauhan V et al., [7] (8.40%), and Singh N et al., [8] (8.80%). A higher incidence was observed by Ajibola SO et al., [9] (13.50%) and Onisai M et al., [10](11.11%). In the present study, mean age was 23.56±3.5 years. Suri V et al., [11] Jaleel A et al., [12], Borna S et al., [13], Turgut A et al., [14] showed the mean age was 27, 28.43, 28, and 27.6±5.7 years, respectively. The present study, showed mean gravidity was 2.15±0.99. Chauhan V et al., [7], Dwivedi P et al., [15] showed mean gravidity of 1.75, and 2.15±0.99, respectively. In the present study, 45.45% (20 cases) were primigravida, 52.27% (23 cases) were second and third gravida, and 2.27% (one case) was fourth gravida patient. Brohi ZP et al., [16] study showed 40.8% were primigravida. In Katke RD and Gohil DP study 35% cases were primigravida, 32% cases were gravida 2 and 33% cases were gravida 3 to 5 [17]. The present study showed mean gestational age at diagnosis was 32+1±8.7 weeks. In Parnas M et al., 74.4% were between 37-40 weeks of gestation [18]. In Dwivedi P et al., the mean gestational age was 38 weeks [15].

The present study showed mild thrombocytopaenia in 52.27% (23 patients). Mild thrombocytopaenia was noted in 54% cases by Borna S et al., which is comparable to the present study [13]. In Chauhan V et al., 63.2% women had mild thrombocytopaenia, which was higher as compared to the present study [7]. In the present study, moderate thrombocytopaenia was seen in 27.27% cases and severe thrombocytopaenia in 20.46% cases. In Katke RD and Gohil DP 70.9% of patients had moderate thrombocytopaenia and 29.1% of patients had severe thrombocytopaenia [17]. In Chauhan

V et al., [7], Borna S et al., [13] showed 35.4%, 30%, respectively with moderate thrombocytopaenia and 1.5%, 16%, respectively with severe thrombocytopaenia. Singh N et al., [8] showed 7.4% of patients had severe thrombocytopaenia [8]. In present study, mean gestational age at delivery was 34.44±8.5 weeks. Bouzari Z et al., [19], Chauhan V et al., [7], Lin YH et al., [20] showed mean gestational age at delivery of 35.83±3.61 weeks, 38.6±1.34 weeks, 39 weeks, respectively.

Present study showed Gestational Thrombocytopaenia (GT) (38.63%) as most common cause of thrombocytopaenia followed by PE (18.18%) [Table/Fig-4] shows a comparison of various causes in present study with different studies done by different authors [4,5,7,17,18,21-23].

Aetiology	Study	Percentage	Present study
Gestational thrombocytopaenia	Vyas R et al., [21]	(44.6%)	38.63%
	Usha S et al., [22]	(21.25%)	
	Katke RD and Gohil DP [17]	(30.1%)	
	Mundkur A et al., [4]	(11.6%)	
Preeclampsia (PE)	Vyas R et al., [21]	(22%)	18.18%
	Anita H et al., [5]	(20%)	
	Usha S et al., [22]	(18.75%)	
	Mundkur A et al., [4]	(51.16%)	
Gestational hypertension	Vyas R et al., [21]	(22%)	9.09%
	Onisai M et al., [10]	(21.15%)	
	Katke RD and Gohil DP [17]	(12.6%)	
	Begum A et al., [23]	(10.4%)	
Preeclampsia and antepartum haemorrhage	Usha S et al., [22]	(13.1%)	4.54%
Eclampsia+HELLP	Begum A et al., [23]	(7.3%)	4.54%
	Katke RD and Gohil DP [17]	(5.8%)	
	Chauhan V et al., [7]	(1.5%)	
	Mundkur A et al., [4]	(9%)	
Liver diseases	Usha S et al., [22]	(1.25%)	4.54%
Dengue	Katke RD and Gohil DP et al., [17]	(12.6%)	6.81%
	Usha S et al., [22]	(1.25%)	
Sepsis and multiple organ dysfunction syndrome	Usha S et al., [22]	(5.6%)	2.27%
Myelodysplastic syndrome	Parnas M et al., [18]	(0.5%)	2.27%
	Usha S et al., [22]	(2.5%)	
Idiopathic thrombocytopenic purpura	Begum A et al., [23]	(10.41%)	2.27%
	Vyas R et al., [21]	(4.4%)	
	Chauhan V et al., [7]	(3%)	

[Table/Fig-4]: Comparison of various causes of thrombocytopaenia with different studies [4,5,7,17,18,21-23].
HELLP: Hhaemolysis, elevated liver enzymes, low platelet count syndrome

In the present study, the mean gestation age at delivery was 34.44±8.5 weeks and 23.68% had preterm delivery and 44.73% had LSCS. [Table/Fig-5] shows comparison of gestation age at delivery and mode of delivery between different studies and present study [5,7,17,18,22]. According to a study by Anita H et al., 60% of cases delivered at term, those delivered before term were mostly due to abruption or for obstetric indications like severe preeclampsia, antepartum eclampsia, abruption or medical causes [5]. In the present study, 44.73% (17 cases) delivered by LSCS, done for obstetrical indications like foetal distress (n=2), failed induction (n=3), previous Lower Segment Caesarean Section (LSCS) (n=4), cephalopelvic disproportion (n=1), severe preeclampsia (n=3), eclampsia+HELLP (n=2), preeclampsia and antepartum haemorrhage (n=2), but not due to thrombocytopaenia alone.

Name of authors	Term delivery	Preterm delivery	Caesarean section	Vaginal delivery
Present study	76.32%	23.68%	44.73%	55.27%
Katke RD and Gohil DP [17]	72.81%	23.68%	24.27%	69.89%
Parnas M et al., [18]	74.4%	25.6%	-	-
Anita H et al., [5]	60%	40%	60%	40%
Usha S et al., [22]	45.63%	54.37%	-	-
Chauhan V et al., [7]	-	-	27.7%	72.3%

[Table/Fig-5]: Comparison of gestational age and mode of delivery with different studies and present study [5,7,17,18,22].

In the present study, out of 44 patients, 31.8% (n=14) required blood and blood product transfusions. In a study by Usha S et al., 66.8% required blood or blood product transfusion [22]. Platelet transfusions were required in 43.1% of cases (n=69). In a study by Parnas M et al., 19.6% required transfusions and 3.21% required only platelet transfusion, which is comparable to the present study [18].

In Katke RD and Gohil DP study, one case required LSCS with obstetric hysterectomy, and one case required LSCS followed by internal iliac artery ligation and obstetric hysterectomy [17]. These results are similar to the present study where two cases required hysterectomy. In the present study, PPH was seen in 4.54% (n=2). In Usha S et al., and Singh N et al., study PPH was seen in 12.4% (n=8) and 9.89%, respectively [8,22].

In the present study, maternal mortality was seen in two cases (4.54%) cases. In a study by Katke RD and Gohil DP mortality was seen in 7.76% (n=8) due to causes like acute respiratory distress syndrome, haemothorax with liver failure, intracranial bleed, cardiorespiratory arrest, hypotension, pulmonary embolism, kidney failure, multiorgan failure, stroke [17]. Birth weight <2.4 kg in the present study was seen in 40.5% neonates, which was less than study data reported by Usha S et al., [22] (67.1%) and more than Onisai M et al., study (24.48%) [10]. In the present study, out of 37 live births, 21.62% (n=8) have APGAR score of less than 7 at 5 minutes, and in Chauhan V et al., study 6.15% of neonates had APGAR score of less than 7 at 5 minutes [7].

In the present study, IUGR was seen in 5.26% (n=2), out of which one foetus had IUD, and the other was admitted in NICU. According to Parnas M et al., [18] study, IUGR was seen in 8.5% and was associated with preeclampsia, HELLP syndrome, and DIC, which was similar to the present study. In the present study, IUD was seen in one case due to severe IUGR because of severe maternal preeclampsia. According to the study conducted by Parnas M et al., 6.5% of cases had still births [18]. According to a study by Katke RD and Gohil DP 14.1% (14 patients) had a still birth [17]. Neonatal thrombocytopaenia was not seen in the present study. In Chauhan V et al., neonatal thrombocytopaenia was seen in 3.1% [7]. According to a study done by Anita H et al., one case had neonatal thrombocytopaenia [5]. None of the babies had bleeding complications. According to Singh N et al., one neonate born to mother with ITP had neonatal thrombocytopaenia on day one, platelet count returned to normal on day 8. Bleeding manifestations were not seen in any of the neonates [8].

Mild thrombocytopaenia does not have much effect on the obstetrical management but severe thrombocytopaenia can have adverse outcome especially in life threatening conditions like HELLP syndrome which poses a great challenge to the treating obstetrician. Platelet count monitoring should be routinely done at antenatal visits for timely diagnosis of thrombocytopaenia and to achieve favourable foetal and maternal outcome in all types of thrombocytopaenia. Neonatal platelet count should be done in all cases where maternal thrombocytopaenia is diagnosed.

Limitation(s)

The sample size being very small is the limitation of this study.

CONCLUSION(S)

Thrombocytopaenia is a significant problem in pregnant women. Maternal platelet count monitoring should be done as a routine antenatal investigation for timely diagnosis of thrombocytopaenia, which will help in administering accurate management and thereby, preventing maternal and neonatal morbidity and mortality.

REFERENCES

[1] Burrows RF, Kelton JG. Thrombocytopenia at delivery: A prospective survey of 6715 deliveries. Am J Obstet Gynecol. 1990;162:732-34.
[2] Boehlen F, Hohlfeld H, Extermann P, Perneger T, de Moerloose P. Platelet count at term pregnancy: A reappraisal of the threshold. Obstet Gynecol. 2000;95:29-33.
[3] Slichter SJ. Relationship between platelet count and bleeding risk in thrombocytopenic patients. Transf Med Rev. 2004;18:153-67.
[4] Mundkur A, Nambiar KPMK, Rai L. Low platelet counts in pregnancy: An alarm signal for abruption. Int J Reprod Contracept Obstet Gynecol. 2018;7:1191-95.
[5] Anita H, Reddy A, Vanaja S, Anupama H. Thrombocytopenia in pregnancy. Indian J Obstet Gynecol Res. 2016;3(1):07-12.
[6] Williamson DR, Albert M, Heels-Ansdell D, Arnold DM, Lauzier F, Zarychanski R, et al. Thrombocytopenia in critically ill patients receiving thromboprophylaxis: Frequency, risk factors, and outcomes. Chest. 2013;144:1207-15.
[7] Chauhan V, Gupta A, Mahajan N, Vij A, Kumar R, Chadda A, et al. Maternal and fetal outcome among pregnant women presenting with thrombocytopenia. Int J Reprod Contracept Obstet Gynecol. 2016;5:2736-43.
[8] Singh N, Amita D, Uma S, Tripathi AK, Pushplata S. Prevalence and characterization of thrombocytopenia in pregnancy in Indian women. Indian J Hematol Blood Transfus. 2012;28(2):77-81.
[9] Ajibola SO, Akinbami A, Rabiu K, Adewunmi A, Dosunmu A, Adewumi A, et al. Gestational thrombocytopaenia among pregnant women in Lagos Nigeria. Niger Med J. 2014;55(2):139-43.
[10] Onisai M, Vladareanu AM, Delcea C, Ciorascu M, Bumbea H, Nicolescu A, et al. Perinatal outcome for pregnancies complicated with thrombocytopenia. J Matern Fetal Neonatal Med. 2012;25(9):1622-26.
[11] Suri V, Aggarwal N, Saxena S, Malhotra P, Varma S. Maternal and perinatal outcome in idiopathic thrombocytopenic purpura (ITP) with pregnancy. Acta Obstet Gynecol Scand. 2006;85(12):1430-35.
[12] Jaleel A, Baseer A. Thrombocytopenia in preeclampsia: An earlier detector of HELLP syndrome. J Pak Med Assoc. 1997;47(9):230-32.
[13] Borna S, Borna H, Khazardoost S. Maternal and neonatal outcomes in pregnant women with immune thrombocytopenic purpura. Arch Iran Med. 2006;9(2):115-18.
[14] Turgut A, Demirci O, Demirci E, Uludogan M. Comparison of maternal and neonatal outcomes in women with HELLP syndrome and women with severe preeclampsia without HELLP syndrome. J Prenat Med. 2010;4(3):51-58.
[15] Dwivedi P, Puri M, Nigam A, Agarwal K. Fetomaternal outcome in pregnancy with severe thrombocytopenia. Eur Rev Med Pharmacol Sci. 2012;16(11):1563-66.
[16] Brohi ZP, Perveen U, Sadaf A. Thrombocytopenia in pregnancy: An observational study. Pak J Med. 2013;52(3):67-70.
[17] Katke RD, Gohil DP. Thrombocytopenia during pregnancy: An institutional based study. Int J Reprod Contracept Obstet Gynecol. 2014;3:947-51.
[18] Parnas M, Sheiner E, Shoham-Vardi I, Burstein E, Yermiahu T, Levi I, et al. Moderate to severe thrombocytopenia during pregnancy. Eur J Obstet Gynecol Reprod Biol. 2006;128(1-2):163-68.
[19] Bouzari Z, Firoozabadi S, Hasannasab B, Emamimeybodi S, Golsorkhtabar-Amiri M. Maternal and neonatal outcomes in HELLP syndrome, partial HELLP syndrome and severe pre-eclampsia: Eleven years experience of an obstetric center in the North of Iran. World Applied Sciences Journal. 2013;26(11):1459-63.
[20] Lin YH, Lo LM, Hsieh CC, Chiu TH, Hsieh TT, Hung TH, et al. Perinatal outcome in normal pregnant women with incidental thrombocytopenia at delivery. Taiwan J Obstet Gynecol. 2013;52(3):347-50.
[21] Vyas R, Shah S, Yadav P, Patel U. Comparative study of mild versus moderate to severe thrombocytopenia in third trimester of pregnancy in a tertiary care hospital. NHL Journal of Medical Sciences. 2014;3(1):08-11.
[22] Usha S, Renuka P, Vandana P. Prospective study of thrombocytopenia in pregnancy and its effect on maternal and foetal outcome. J Evid Based Med Healthc. 2016;3(82):4463-69.
[23] Begam A, Sujatha TL, Nambisan B, Vasanthakumari KP. Risk factors of thrombocytopenia in pregnancy. Int J Reprod Contracept Obstet Gynecol. 2017;6:700-06.

PARTICULARS OF CONTRIBUTORS:
1. Associate Professor, Department of Obstetrics and Gynaecology, NRI Medical College, Mangalagiri, Andhra Pradesh, India.
2. Professor, Department of Obstetrics and Gynaecology, NRI Medical College, Mangalagiri, Andhra Pradesh, India.
3. Resident, Department of Obstetrics and Gynaecology, NRI Medical College, Mangalagiri, Andhra Pradesh, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Rao Bahadur Badugu,
House No. 8-471/E, 8th Cross Road, Kuppurao Colony, Devunimanyam,
Mangalagiri, Andhra Pradesh, India.
E-mail: drraobahadur@yahoo.com

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