

# Maternal, Perinatal and Neonatal Outcomes of Triplet Pregnancies According to Chorionicity: A Systematic Review of the Literature and Meta-Analysis

Bernal Claverol M, Ruiz Minaya M, Aracil Moreno I, Tizón SG, Pintado Recarte P, Alvarez-Mon M, Arribas CB, Ortega MA, De Leon-Luis JA.

Hospital General Universitario Gregorio Marañón. Madrid. Spain



## INTRODUCTION

Triplet pregnancies are rare events that affect approximately 93 in 100,000 deliveries in the world, especially due to the increased use of assisted reproductive techniques and older maternal age. They are associated with a higher risk of maternal and fetal morbimortality. The aim of this study was to conduct a systematic review and meta-analysis of the maternal and perinatal outcomes of triplet pregnancies, evaluating how chorionicity may influence these results.

## MATERIAL AND METHODS

- Studies published from 2005 to 2020 in english, non-intervention nor clinical essays, were independently evaluated and selected according to inclusion criteria.
- This systematic review brings together a large population sample from a large number of studies (46 studies with a total of 43,653 triplet pregnancies and 128,145 live births), collecting data on 47 variables.
- Similarly, this meta-analysis included many articles with a large total population sample (12 studies, 2188 pregnant women, 5790 fetuses and 5441 live newborns).

## RESULTS

**Table 7.** Maternal y perinatal characteristics of the triplet pregnancies included in the meta-analysis according to chorionicity.

Maternal and Perinatal Characteristics	Number of Studies	Number of Pregnancies* or Newborns+	Combined OR (CI 95%)	OR Test (p)	Heterogeneity 12%	Heterogeneidad $\chi^2$ (p)	Egger Test (p)
Reproductive assisted techniques	9	1807*	3.115 (1.635-5.933)	0.001 #	79.7	0.000	0.034 #
Cesarean section	8	1624*	1.658 (0.928-2.965)	0.088	30.6	0.184	0.846
GA <37 weeks	3	1135*	0.51 (0.25-1.00)	0.051	0.0	0.395	0.581
GA <32 weeks	3	225*	0.56 (0.31-1.00)	0.051	0.0	0.531	0.032 #
Very low birth weight (<1500 g)	3	3025*	0.68 (0.40-1.14)	0.144	87.2	0.000	0.892

# statistical significance  $p < 0.05$ . OR = odds ratio. (\*): Total number of pregnancies for which this outcome measure has been reported. (+): Total number of newborns for which this outcome measure has been reported.

**Table 8.** Neonatal results of the triplet pregnancies included in the meta-analysis according to chorionicity.

Neonatal Results	Number of Studies	Number of Newborns	Combined OR (CI 95%)	OR Test (p)	Heterogeneity 12%	Heterogeneidad $\chi^2$ (p)	Egger Test (p)
Neonatal intensive care unit	4	2780	0.57 (0.44-0.72)	0 #	0.0	0.591	0.332
Respiratory distress	5	3139	0.46 (0.22-0.97)	0.043 #	92	0.000	0.239
Hyaline membrane disease	3	1062	0.52 (0.21-1.27)	0.151	67.3	0.047	0.371
Sepsis	5	3255	0.57 (0.37-0.89)	0.013 #	23.5	0.265	0.016 #
Necrotizing enterocolitis	5	2979	0.32 (0.15-0.69)	0.003 #	0.0	0.561	0.022 #
Retinopathy	4	2754	0.38 (0.11-1.29)	0.123	64.4	0.038	0.108
Intraventricular hemorrhage III-IV	5	3086	0.34 (0.10-1.21)	0.097	71.3	0.007	0.386

# statistical significance  $p < 0.05$ . OR = odds ratio.

**Table 9.** Mortality results of the triplet pregnancies included in the meta-analysis according to chorionicity.

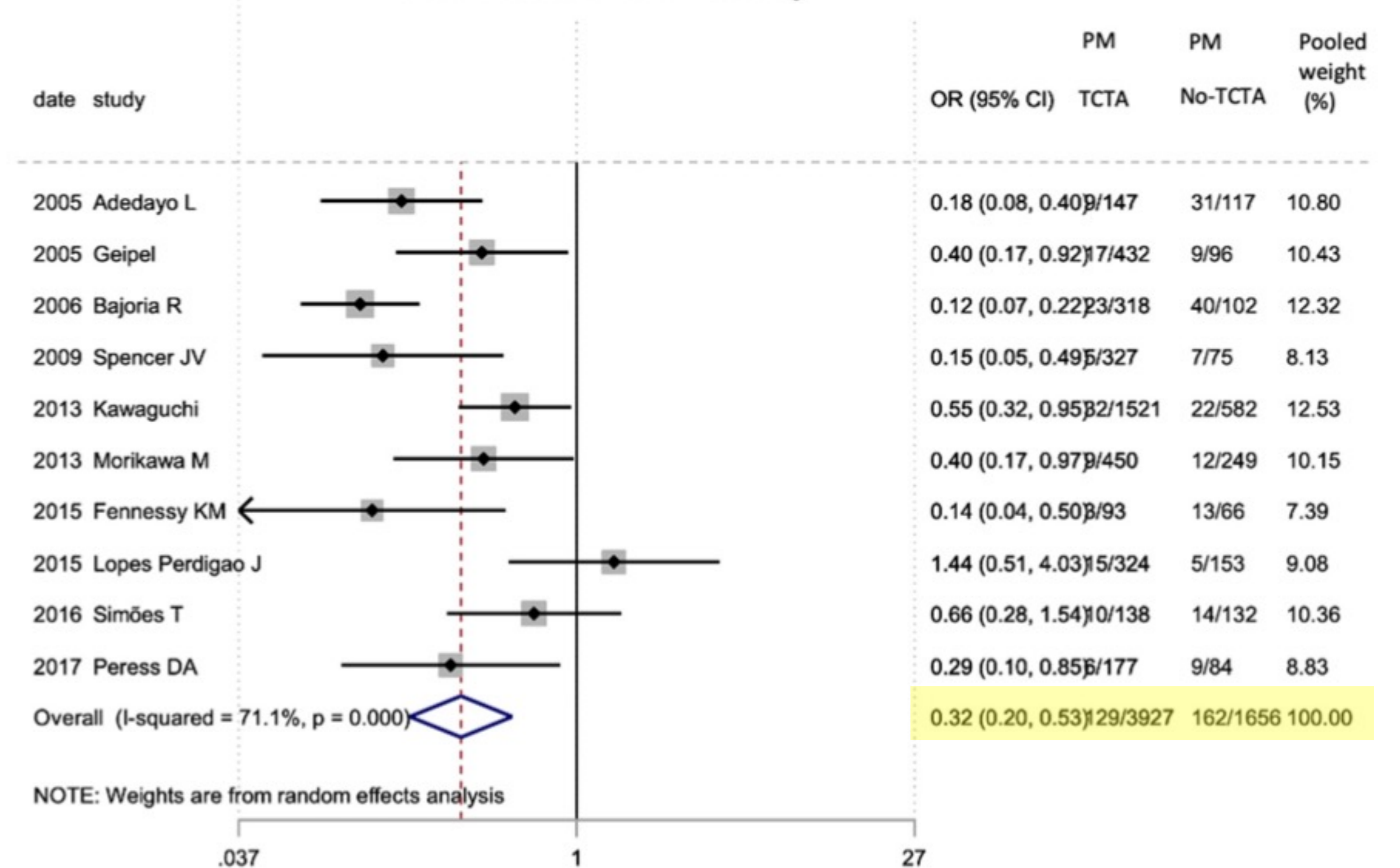
Mortality	Number of Studies	Number of Live Newborns	Combined OR (CI 95%)	OR Test (p)	Heterogeneity 12%	Heterogeneidad $\chi^2$ (p)	Egger Test (p)
Intrauterine mortality	9	5367	0.29 (0.14-0.62)	0.001 #	64.9	0.004	0.165
Neonatal mortality	7	3906	0.53 (0.24-1.16)	0.114	75.8	0.000	0.224
Perinatal mortality	10	5583	0.32 (0.20-0.53)	<0.001 #	71.1	0.000	0.882

# statistical significance  $p < 0.05$ . OR = odds ratio.

Non-trichorionic triplet pregnancies are at a higher risk of

- ✓ Admission to NICU
- ✓ Respiratory distress syndrome
- ✓ Sepsis
- ✓ Necrotizing enterocolitis
- ✓ Perinatal mortality
- ✓ Intrauterine mortality

### Perinatal Mortality



**Figure 14.** Results of the meta-analysis on the effect of chorionicity (TCTA vs no TCTA) on perinatal mortality. PM: perinatal mortality; TCTA: trichorial-triamniotic, non-TCTA: non-trichorial-triamniotic. OR = odds ratio, CI = confidence interval.

## CONCLUSION

Non-trichorionic triplet pregnancies present higher rates of NICU admission, respiratory distress, sepsis, necrotizing enterocolitis, perinatal and intrauterine mortality when compared to their trichorionic counterparts.

To date, our meta-analysis includes the largest population sample and number of studies conducted in this field, evaluating a wide variety of outcome measures. The heterogeneity and retrospective design of the studies included in our research represent the main limitations of this review.

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