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EDITORIAL COMMENTARY

Assisted Reproduction and Neonatal Outcome

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Assisted reproductive techniques (ART) account for an increasing proportion of live births with numbers almost doubling from about 230,000 in 2003 to 439,000 in 2014 [1, 2]. Although both the proportion among live births and the absolute numbers are low in India, the rate of increase is much higher (from 4212 in 2003 to 14325 in 2014). Neonates born after ART have a higher incidence of adverse perinatal and neonatal outcomes due to an increased risk of premature birth [3]. Multiple gestation is the single most important reason for premature birth after ART. However, the risk of preterm birth is higher even in singleton pregnancies conceived after ART. Other reasons for prematurity in ART pregnancies include a higher incidence of placenta previa and iatrogenic prematurity due to labor induction or elective cesarean section at a lower gestation [3]. An increased risk of adverse outcomes in ART pregnancies has been reported, even in neonates born at term gestation. Contributory factors include a higher incidence of fetal growth restriction (FGR) and congenital malformations [4]. Hypotheses raised to explain the poor outcome also include the effect of the specific technique of assisted reproduction on the embryo and the altered metabolic–endocrinal milieu of the mother due to infertility and artificial ovarian stimulation.

In this issue of the Journal, Acharyya and Acharyya compare the growth and neurodevelopmental outcomes of neonates born after ART or spontaneous conception [5]. The study includes only those neonates who were born at term gestation and after singleton pregnancies. Neonates in the ART group had significantly lower weight, head circumference, and length at birth. The difference persisted in early infancy, but catch-up to 'normal' growth was observed by 24 mo of age. Similarly, neonates in the ART group had lower mental and motor development quotients at 6 and 12 mo of age, which increased to levels comparable to children born after spontaneous conception by 24 mo of age. Many important issues emerge with implications for the future growth and development of this cohort of infants and for children born to ART pregnancies in general. First, lower growth at birth and early infancy followed by catch-up by 24 mo of age can be explained by the effect of FGR. However, as both length and head circumference were observed to be affected (in addition to birth weight), these neonates were most likely affected by early-onset FGR. Follow-up to adulthood is needed to evaluate the effect on metabolic and cardiovascular outcomes. This is especially relevant as, based on the ART method used, these children would have been exposed during early fetal life to an endocrinal–metabolic environment that is different from spontaneous conception [6]. Second, developmental follow-up is needed to determine the effect of ART birth on cognition, behavior, and executive functions. Third, factors other than those highlighted above may influence growth and development. Some of the apparent singleton births after ART result from the vanishing twin phenomenon [3]. These 'singleton' births are at higher risk of adverse outcomes and therefore need to be identified for more careful follow-up. Fourth, the type of ART used has been associated with the risk of preterm birth and other complications. In developed countries, due to a higher rate of complications related to multiple pregnancies, the use of single embryo transfer has increased. However, due to the high cost associated with ART, multiple embryo implantation remains prevalent in India. The catch-up in growth and development by 24 mo observed in the studied cohort should take into account that still, a large proportion of births after ART are complicated by prematurity or multiple births. Only a study enrolling an unselected population of neonates conceived by ART can give a true picture of the reproductive outcomes and the child health outcomes attributable to ART.

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Declarations

Conflict of Interest None.

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