Antenatal Diagnosis of Apert Syndrome with an Unusual Chromosomal Mutation

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INTRODUCTION
Apert syndrome is a rare genetic disorder with an incidence of 1 in 65,880 newborns and is more commonly sporadic but also known to be autosomal dominant. It is most commonly caused by a mutation in the Fibroblast Growth Factor Receptor 2 gene found in Chromosome 10q25-26, however other modifications have been reported. Also known as acrocephalosyndactyly, it presents with a combination of bicornoral craniosynostosis creating a cloverleaf skull and midface hypoplasia, hypertelorism and exorbitism. Another significant feature is the varying degrees of syndactyly of both hands and feet. Cleft palate, nervous system anomalies, cardiac anomalies and urogenital disorders may also be present. In most cases survival is quite high. Mental retardation with an intelligence quotient of less than 70 is common. Postnatal management usually includes craniosynostosis release with frontal bone advancement within the first year of life followed later on with a midface advancement. There may be some limitation to mobility of hands and feet and release of syndactyly may be done in the first 3 years of life.

THE CASE
A 21 year old primigravid with gestational diabetes initially admitted for threatened preterm labor underwent a scan at 31 weeks age of gestation, an the fetus was noted to have bicornoral craniosynostosis (Figure 1) with frontal bossing and a small and depressed nasal bone (Figure 2). A 3D scan using confirmed a midface hypoplasia (Figure 3) with fused 2nd-5th digits of both upper and lower extremities (Figures 4 & 5). No other gross cranial, cardiac or visceral anomalies were noted. Polyhydramnios and fetal macrosomia was also noted with an estimated fetal weight above the 95th percentile for age. The patient and her family were counseled regarding the high possibility of mental retardation and physical difficulties. The patient was discharged after 4 days of treatment with tocolytics and completion of steroids but went into preterm labor at 34 weeks and delivered by cesarean section due to dystocia. Upon delivery the baby was large for gestational age with a weight of 3050 grams with a maturity testing of 34 weeks. She had frontal bossing, midface hypoplasia (Figure 6) and syndactyly (Figure 7) as previous described on ultrasound. No other anomalies were noted. Karyotyping done showed a 46 XX with a material of unknown origin inserted into the long arm of chromosome 9 at band 9q13 (Figure 8). The baby was referred to pediatric neurology, neurosurgery and orthopedics for surgical correction of craniosynostosis and syndactyly.

DISCUSSION
Antenatal diagnosis by of Apert syndrome has a significant role in prenatal counseling. Two-dimensional scan may provide adequate views in revealing the triad of Apert syndrome which include craniosynostosis, midface hypoplasia and syndactyly. 3D sonography allows a more detailed visualization with good postnatal clinical correlation and aids in prenatal counseling. Definitive diagnosis should ideally be aided by molecular studies by testing for a mutation in the FGFR2 receptor. However, in areas where this is not available, as in this case, karyotyping may also reveal other variations of this disorder. Further genetic studies may also help in the prognostication of the various presentations of Apert syndrome.

REFERENCES