Main findings from this research

◊ Of 558 patients that met strict criteria for HLHS, 95 were excluded due to extracardiac birth defects, known genetic disorders, or being a twin, leaving a total of 463 cases for analysis.

◊ For infants born less than 10 minutes from a CSC, neonatal mortality (death before 28 days of age) was 21.0%. For those born between 10 and 90 minutes from a CSC, neonatal mortality was 25.2%, and for those born more than 90 minutes away, neonatal mortality was 39.6% (p value for trend <0.001). Therefore, there was a significant increase in neonatal mortality with increasing driving time from birth center to a CSC.

◊ When compared with infants born less than 10 minutes from a CSC, even when controlling for other factors like low birthweight, delivery more than 90 minutes from a CSC was associated with two-fold higher odds of neonatal mortality (adjusted odds ratio (OR), 2.03; 95% confidence interval (CI), 1.19-3.45).

◊ In 39% of newborns, HLHS was prenatally diagnosed, but no association was found between prenatal diagnosis alone and improved survival (p=0.14).

◊ Substantially higher pre-transport mortality was found in infants born greater than 90 minutes from a CSC (adjusted OR, 6.69; 95% CI, 2.52-17.74).

◊ Lower surgical mortality was associated with higher CSC volume, with an adjusted OR of 0.88 per 10 HLHS patients (95% CI, 0.84-0.91), meaning the odds of neonatal death decreased by 12% for every 10 additional HLHS patients seen in a CSC.

Conclusion and discussion

Increased neonatal mortality was found in infants with HLHS born far from a CSC. Therefore, improving prenatal diagnosis, which allows planning of delivery near a large volume CSC, may improve survival in infants with HLHS.