Procedure Related Risk of Invasive Prenatal Testing: Retrospective Review in a Tertiary Centre

Authors contact: Claudia.coates@health.qld.gov.au

Coates C JHO, BSc/MMBS , Sekar R Clinical Lead MFM, FRANZCOG, CMFM

Royal Brisbane Women's Hospital

The uptake of Non Invasive Prenatal Testing (NIPT) has steadily increased in Australia. Despite this Invasive prenatal testing; Amniocentesis and Chorionic Villus Sampling (CVS), remain the gold standard for definitive diagnosis of chromosomal and genetic abnormalities in the unborn fetus[1]. These procedures, while best practice, are associated with a risk of pregnancy loss. RCOG guidelines state that institutions should aim for loss rates of <1% for amniocentesis and <3% for CVS[2]. CVS may be performed via two approaches; transabdominally (TA-CVS) or transcervically (TC-CVS) using a flexible cannula. TC-CVS has been shown to confer a higher rate of loss[3].

Objective: This study aims to investigate the procedure related risk of miscarriage following invasive prenatal testing at a large tertiary institution in Australia and to compare this to both published standards and international data.

Methods: A retrospective chart review of all invasive tests performed over a 32 month period between May 2014 – December 2017 was conducted. A total of 634 invasive tests were identified; 376 amniocenteses and 258 CVS. Of the CVS procedures, 24 (9.7%) were TC-CVSs. The primary outcome assessed was loss of pregnancy fourteen or less days post procedure with total pregnancy loss following procedure and failure of test also assessed. Pregnancy outcomes were identified from either RBWH clinical notes or 'The Viewer' database.

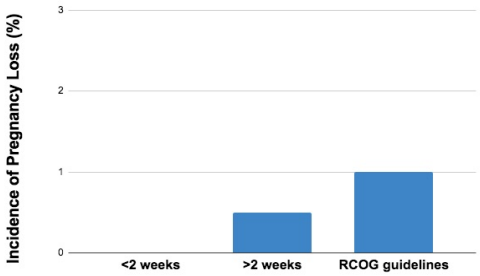

Figure 1: Rates of pregnancy loss following amniocentesis compared to guidelines

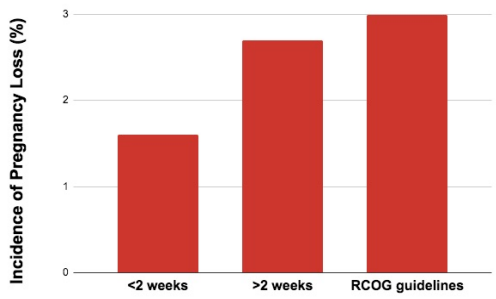

Figure 2: Rates of pregnancy loss following CVS compared to guidelines

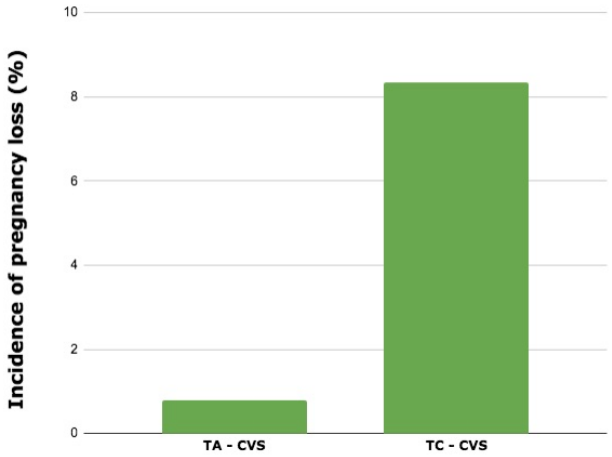

Figure 3: Rates of pregnancy loss following TA-CVS and TC-CVS

Results. Final pregnancy outcomes were identified for 372 of the 634 pregnancies. There were no cases of pregnancy loss reported less than two weeks following amniocentesis (0%) and two cases of intrauterine fetal demise identified greater than two weeks post procedure, 2/376 (0.5%). Both of these fetuses were noted to have severe fetal hydrops. Of the chorionic villous samplings reviewed, there were four cases of loss of pregnancy reported within two weeks, 4/258 (1.6%) and seven cases in total 7/258 (2.7%). Three of these seven fetuses were affected by Trisomy 21. TC-CVS was shown to confer a higher rate of pregnancy loss less than two weeks post procedure 2/24 (8.3%) compared to TA-CVS 2/234 (0.8%). Two amniocenteses 2/376 (0.5%) and eight CVSs 8/258 (3.1%) failed to obtain an adequate sample to enable testing.

Conclusion: Pregnancy loss rate following invasive prenatal testing at the RBWH is comparable to both published guidelines and recent data. Given that we are a tertiary hospital, all final pregnancy outcomes can be difficult to obtain. It appears that TC-CVS has a higher loss rate than TA-CVS. Although an expected result this is an area that would benefit from further review.

References:

1. RANZCOG (2018). *Prenatal screening and diagnostic testing for fetal chromosomal and genetic conditions.* Available at: https://ranzcog.edu.au/
2. RCOG (2010). *Amniocentesis and Chorionic Villus Sampling Green-top Guideline No. 8.* Available at: https://www.rcog.org.uk
3. Alfirevic, Z. et. al. (2017), Amniocentesis and chorionic villus sampling for prenatal diagnosis. *Cochrane Database of Systematic Reviews*, Issue 9