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Full length article

Operative vaginal delivery and invasive procedures in pregnancy among women living with HIV

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ABSTRACT

Objectives: To describe the use and outcomes of operative delivery and invasive procedures in pregnancy amongst women living with HIV.
Study design: The National Study of HIV in Pregnancy and Childhood (NSHPC) is a comprehensive population-based surveillance study in the UK and Ireland. The NSHPC has collected data on operative delivery since 2008, and invasive procedures in pregnancy (amniocentesis, cordocentesis, chorionic villus sampling) from 2012. Descriptive analyses were conducted on 278 pregnancies expected to deliver from 1 January 2008 with outcome reported to the NSHPC by 31 March 2016.
Results: Among 9372 pregnancies in 2008–2016, there were 9072 livebirths with 251 operative deliveries and 27 invasive procedures in pregnancy reported. Information was available for 3023/3490 vaginal deliveries, and use of forceps or vacuum reported in 251deliveries (8.2%), increasing over calendar time to almost 10% by 2014–16. Forceps were used twice as often as vacuum delivery, and forceps use increased over time. One infant delivered operatively is known to have acquired HIV. From 2012 there were 4063 pregnancies resulting in 3952 livebirths, 83 terminations and 28 stillbirths. 2163/4063 had information on use (or not) of invasive procedures in pregnancy. Amniocentesis was reported in 25/2163 pregnancies, there was one report of chorionic villus sampling and one of cordocentesis. There were no reported transmissions following invasive procedures in pregnancy.
Conclusions: This is the largest study to date to report on operative delivery in women living with HIV on combined antiretroviral therapy (cART), and provides an up-to-date picture of invasive procedures during pregnancy in this group. Findings from this comprehensive national study are reassuring but numbers are currently low; on-going monitoring is crucial as obstetric care of women with HIV becomes normalised.

Introduction

A high and increasing proportion of pregnant women living with HIV are achieving viral suppression by the time of delivery (in the UK this was 80% in 2007–2011 [1] and 90% in 2012–2014 [2]). The UK continues to move towards ensuring that these women have the same obstetric options as their uninfected peers, with such "normalising" of obstetric care remaining a priority both in guidelines and practice. A key example of this is the recommendation for vaginal delivery in this group [3,4].

As planned vaginal deliveries increase, the number of women requiring operative vaginal deliveries is also likely to rise. Historically, operative delivery has been avoided in women living with HIV owing to theoretical fears of mother-to-child transmission (MTCT) [3]. Although studies from the pre-combined antiretroviral therapy (cART) era suggested little or no increase in MTCT risk associated with operative vaginal deliveries [5,6] these were based on small numbers. The 2008 British HIV Association (BHIVA) guidelines [7] recommended avoidance of mid or rotational forceps and favoured low cavity forceps over vacuum delivery if operative vaginal delivery was necessary; since 2012 guidance has been revised to indicate that if viral load (VL) is suppressed the most appropriate instrument should be used, consistent with national obstetric guidelines [3]. Contemporary data on operative delivery in women living with HIV are lacking, with studies in the cART era not re-examining these factors [3].

Invasive procedures in pregnancy were traditionally avoided where possible in women living with HIV because research before

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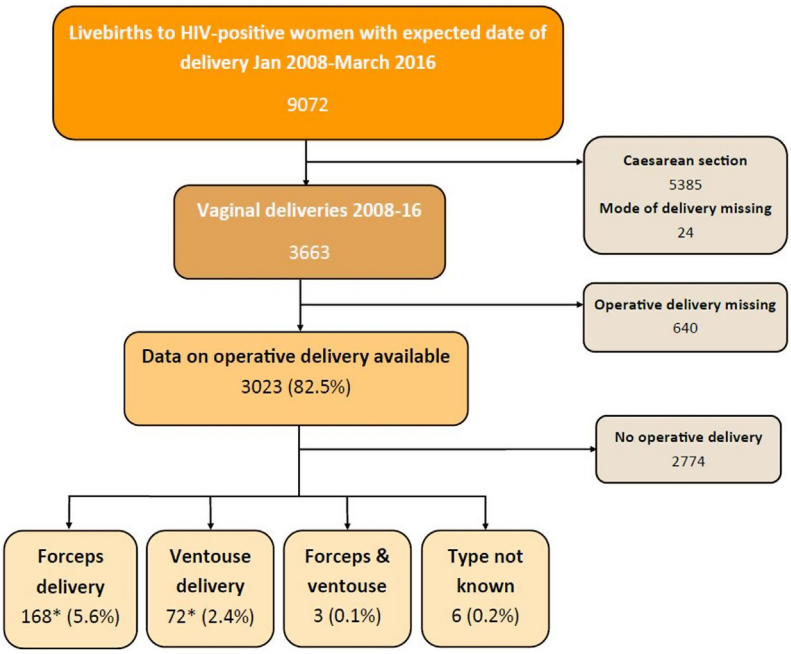

Fig. 1. Flow chart-operative vaginal deliveries in pregnancies to HIV-positive women.
*169 infants had a forceps delivery (including one set of twins where both infants had a forceps delivery), 73 infants delivered by ventouse (including one set of twins where both twins had a ventouse delivery).

the pre-cART era suggested they were associated with an increase in MTCT rates [5,8,9]. With improved methods of trisomy-21 screening and use of non-invasive prenatal testing (NIPT), the need for invasive antenatal testing has (and continues to) decline in the UK, although on some occasions amniocentesis is still needed for optimum management. World literature on use of invasive procedures in the cART era has been sparse [9–11], and although the small numbers have precluded firm conclusions, it has been suggested that there is no increased risk of transmission. The most recent study from Italy presents data since 2001 and reinforces these findings [12]. Current BHIVA guidelines [3] recommend combined screening (including nuchal translucency testing) to reduce the number of invasive investigations; where required the procedure should be deferred until the VL is suppressed if possible.

Our aim is to present the current picture regarding operative deliveries and the use of invasive procedures in pregnancy among women living with HIV in the UK and Ireland, using data from the National Study of HIV in Pregnancy and Childhood (NSHPC).

Materials and methods

The NSHPC is a well-established comprehensive, active surveillance study collecting data on all pregnancies and deliveries in diagnosed women living with HIV in the UK and Ireland since 1990. HIV-exposed infants are followed up through paediatricians to establish infection status. To date details on over 20,000 pregnancies are held by the study. Full details are described elsewhere [13,14].

Details about operative delivery have been routinely requested by the NSHPC since 2008. Information regarding invasive procedures in pregnancy (amniocentesis, cordocentesis and chorionic villus sampling (CVS)) have been requested since 2012.

Analyses were based on pregnancies to diagnosed women with known outcomes, excluding miscarriages, reported between January 2008 and the end of March 2016:

Analysis 1: operative deliveries: 3663 pregnancies with expected date of delivery (EDD) from 1st January 2008 onwards, resulting in a vaginally delivered livebirth. Information on use of instruments was available for 3023/3663 deliveries (82.5%) (Fig. 1). Characteristics in pregnancy are reported per pregnancy, whereas outcome and delivery characteristics are reported per infant (as we include multiple births).

Analysis 2: invasive investigations during pregnancy: 4063 pregnancies with EDD from 1st January 2012 onwards. Information was available for 2163/4063 pregnancies (53.2%) (Fig. 2).

Maternal VL at the time of delivery and/or the invasive antenatal procedure was categorised as undetectable ($<$50 copies/ml) or detectable ($\geq$50).

Infant's HIV infection status was classified as uninfected if a negative polymerase chain reaction (PCR) test was reported after one month of age or a negative antibody test after 18 months of age, and infected if a positive PCR was reported at any time or a positive antibody test reported after 18 months of age. Some infants were below the age at which infection status could be confirmed (18 month antibody test), and so were excluded where appropriate.

Data analysis was mostly descriptive owing to the very small numbers of invasive procedures and operative deliveries. Where a vaginal delivery occurred, characteristics of operative and non-operative deliveries were compared. Categorical variables were compared using χ^2 tests or Fisher's exact tests.

Data were managed in Access 2010, and analysed using Stata version 13.1 (StataCorp LP, College Station, USA).

Results

There were 9372 pregnancies (in 7417 women) with an EDD in 2008–2016, with 4063 pregnancies (3952 deliveries) from 2012 onwards. Overall, 9072 (96.8%) were live deliveries, 217 (2.3%) terminations and 83 (0.9%) stillbirths. Among the deliveries resulting in a livebirth, 3663 (40.4%) were vaginal, 3054 (33.7%) elective caesarean sections and 2331 (25.7%) emergency caesarean sections (24 missing mode of delivery). There were 211 twin and three triplet deliveries.