Congenital Anomalies: Impact of Prenatal Diagnosis on Mode of Delivery

Abstract

An important aspect of prenatal diagnosis is the avoidance of emergency caesarean delivery (CD) where the abnormality is considered lethal and the infant will not survive. A consecutive cohort of 211,163 women delivered of infants weighing 500 grams or more in three tertiary referral centers from January 1995 to December 2004, was analyzed for perinatal death attributed to congenital malformations. In the group that died during the neonatal period, the incidence of emergency CD was significantly lower when a congenital abnormality was diagnosed prenatally (17.5% versus 31.1%, p = 0.004). Indications for CD also differed between the prenatally diagnosed and the undiagnosed groups. In the prenatally diagnosed group, the rate of emergency CD was 17.5%, compared with 31.1% in the undiagnosed group (p = 0.004). The incidence of emergency CD was found to be significantly lower in the cohort in which fetal abnormality had been diagnosed prenatally. The rate of emergency CD in this prenatally diagnosed group was 17.5%, compared with 31.1% in the undiagnosed group (p = 0.004). Indications for CD also differed between the prenatally diagnosed and the undiagnosed groups. In the prenatally diagnosed group, nonreassuring fetal monitoring required and consequently on mode of delivery of the affected fetus. In our cohort of 634 perinatal deaths attributable to fetal abnormality, we have demonstrated the significant positive impact that prenatal diagnosis could have on mode of delivery. The objective of this study was to evaluate whether knowledge of a serious congenital abnormality in advance of delivery has a meaningful impact on obstetric management, for example, in the avoidance of unnecessary caesarean delivery.

Introduction

Evidence based medicine has shown that vaginal delivery carries the least maternal morbidity when compared to caesarean delivery (CD). The majority of patients will deliver vaginally, if there is deterioration in the fetal condition, as demonstrated by abnormalities in a fetal heart rate tracing, the mother will likely be delivered by emergency caesarean section. Caesarean delivery (CD), particularly when carried out in the emergency setting, is associated with greater morbidity for both mother and child.

Methods

The three major Dublin maternity hospitals maintain detailed records of pregnancy and perinatal outcome. We evaluated a consecutive retrospective cohort of 211,163 patients, delivered of infants weighing 500g or more in these three tertiary referral centers from January 1995 to December 2004, for perinatal death attributed to congenital malformation. Two comparative cohorts were created, comprising prenatally diagnosed and prenatally undiagnosed lethal congenital abnormalities. In the former group, a diagnosis of likely lethal fetal abnormality had been made prior to delivery and this information was available to clinical staff managing delivery. We excluded from the database all patients who requested a PM. Terminally undiagnosed congenital abnormality was attributed to a congenital abnormality not assessed prenatally if the diagnosis was made prior to delivery and this information was available to clinical staff managing delivery.

Results

During the 10 year study period a total of 211,163 patients were delivered of infants weighing at least 500g. Perinatal death attributable to congenital malformation occurred in 869 pregnancies during the study period (incidence 0.40%). The inclusion criteria for this study were met by 634 patients, amongst whom the fetal abnormality was correctly diagnosed prenatally in 621 (98.1%) and 13 (2.1%) in the remaining 397 (62.6%) cases the fetal abnormality was not diagnosed prenatally. A total of 240 (37.3%) patients were delivered of infants with lethal abnormalities which were not prenatally diagnosed and were not anticipated by clinical staff. This latter group formed the cohort that we hypothesized would be at greater risk of emergency CD for fetal heart rate abnormalities during labour.

In 237 (37.4%) cases an intra-uterine death (IUD) was diagnosed before delivery of the fetus, and in the remaining 397 (62.6%) cases the infant died during the neonatal period. The incidence of emergency CD was found to be significantly lower in the cohort in which the congenital abnormality had been diagnosed prenatally. The rate of emergency CD in this prenatally diagnosed group was 17.5%, compared with 31.1% in the undiagnosed group (p = 0.004). Indications for CD also differed between the prenatally diagnosed and the undiagnosed groups. In the prenatally diagnosed group, the indication for emergency CD was due to a fetal heart rate abnormality, fetal distress or fetal asphyxia in 216 (64.5%) cases and live birth in 121 (35.5%) cases. In the prenatally undiagnosed group, such maternal reasons for CD were only found in 19% of cases. Nonreassuring fetal monitoring required and consequently on mode of delivery of the affected fetus. In our cohort of 634 perinatal deaths attributable to fetal abnormality, we have demonstrated the significant positive impact that prenatal diagnosis could have on mode of delivery.

Discussion

In Ireland patients who wish to terminate a pregnancy must travel to another jurisdiction to do so, as pregnancy termination for fetal malformation is illegal in Ireland. Therefore, patients in Ireland are more likely to be faced with this scenario if a live fetus is viable at term in which a lethal malformation is present. Such pregnancies frequently result in non-reassuring fetal heart rate traces during labour, and if knowledge of the lethality of the malformation is not available, the patient will likely undergo emergency caesarean delivery. The objective of our study was to evaluate whether knowledge of a lethal fetal malformation was of benefit to patients, as it may result in the safe avoidance of an emergency caesarean delivery. While some consider the main reason to undergo prenatal diagnosis for fetal abnormalities is to provide patients with an opportunity for pregnancy termination, our objective was to evaluate whether prenatal diagnosis has other practical benefits for patients, other than a simple decision to continue or interrupt the pregnancy.

Our data clearly demonstrate that advanced knowledge of the condition of the fetus can have a significant impact on the level of intrapartum monitoring required and consequently on mode of delivery of the affected fetus. In our cohort of 634 perinatal deaths attributable to fetal abnormality, we have demonstrated the significant positive impact that prenatal diagnosis could have on mode of delivery. A diagnosis of lethal congenital anomaly has been made in the prenatal period, the reduction in the emergency CD rate by almost half in this study supports a pivotal role for prenatal diagnosis in optimizing maternal care.

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References