

A prospective cohort study of 6511 birth outcomes in India

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Background: Globally caesarean section rates and unnecessary intervention rates are rising. Perinatal morbidity and mortality is still unacceptably high, especially in LMIC.

Objective: To explore maternal and perinatal risk factors, outcomes, indications for operative birth and fetal monitoring practices in an urban Government tertiary referral hospital in India.

Design: Prospective cohort study

Methods: After ethical approval, prospective data were collected after birth and at discharge on consecutive births between 01/11/2019 and 01/02/2020. Discharge/NICU data was collected for a further six weeks. Stillbirths <28 weeks, confirmed dead on admission, <1000g or gestation and birth weight unknown were excluded from the full analyses. This was a post hoc analysis of a dataset collected to evaluate the impact of a fetal monitoring training programme.

Results: Of 6989 cases screened, full analysable data was available on 6379 women and 6511 babies (6453 live births and 58 fresh stillbirths).

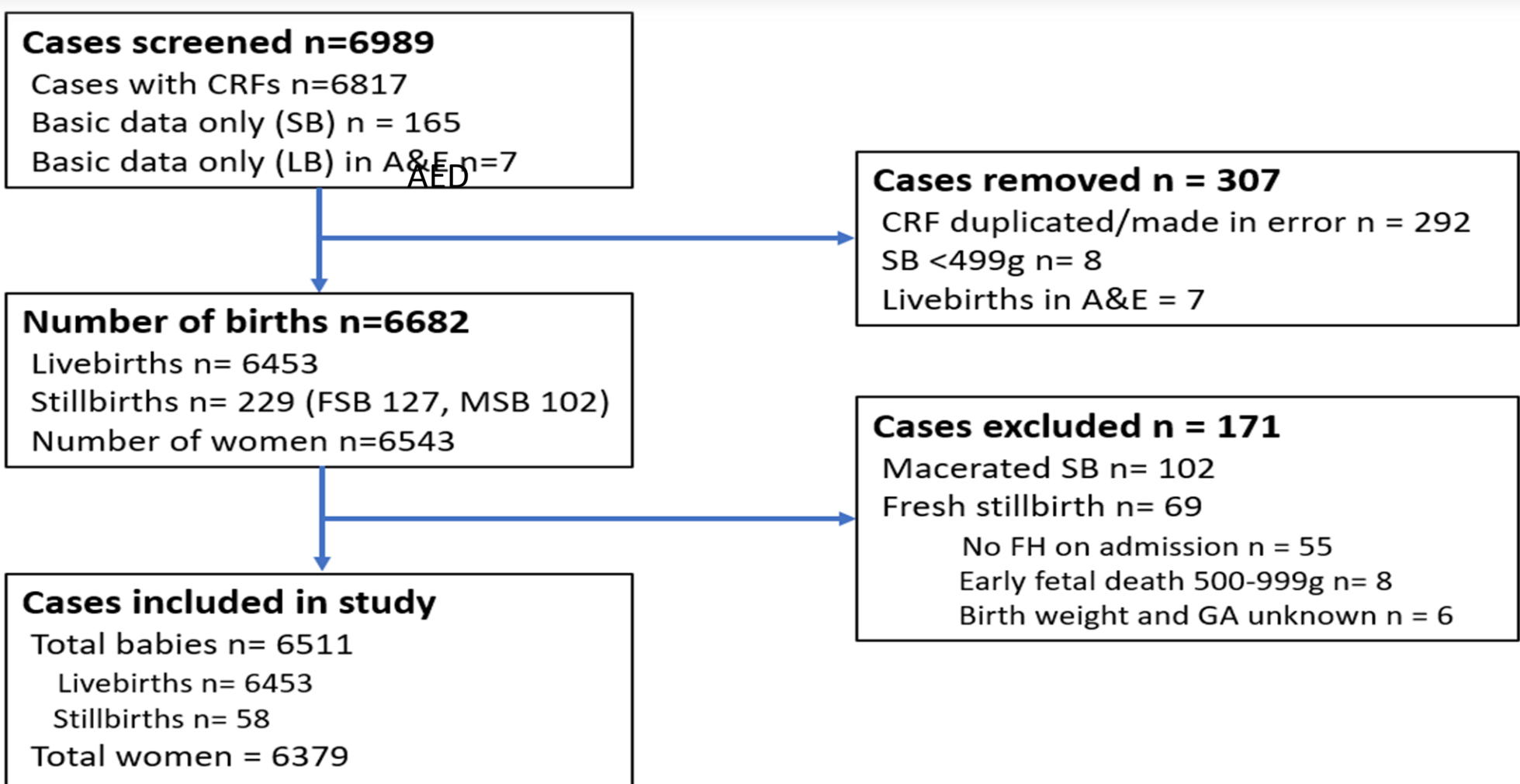


Fig 1. STROBE diagram

Maternal characteristics/outcomes:

Maternal parameters and risk factors

- Mean age 25.7 years (SD 4.0)
- Mean parity 0.6 (SD 0.7) (PG 51.3%)
- 39.2% patients were referred
- 99.5% patients were booked

This was a very high-risk population:

- 25.5% had medical conditions
- 46.2% were induced/augmented
- 20.9% had previous caesarean
- 22.6% were preterm

Mode of birth:

56.4% NVD, 42.5% CS

0.5% breech, 0.6% operative vaginal birth.

Indications for operative birth

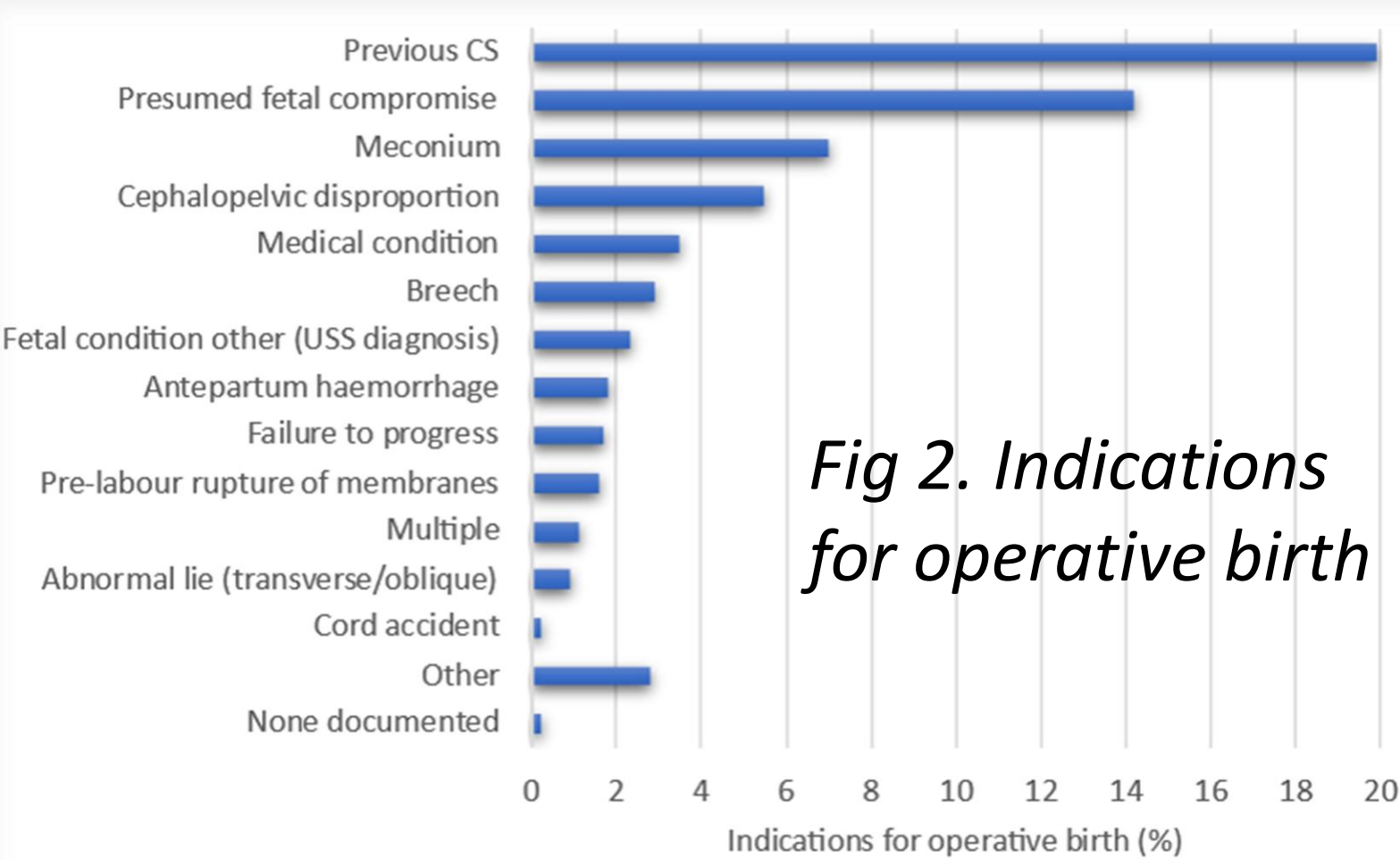


Fig 2. Indications for operative birth

The majority of decisions for operative birth for presumed fetal compromise were based on intermittent auscultation (88.5%), either alone (45.9) or with meconium-stained liquor (37.1%). CTG was only used for 6.2% of decisions for operative birth.

Table 1. Maternal risk factors

Pre-existing risk factors	n (%)
Medical condition*	1627 (25.5)
- haematology	745 (11.6)
- cardiac	114 (1.8)
- diabetes	64 (1.0)
- hypothyroidism	539 (8.4)
- renal disease	12 (0.2)
- respiratory disease	35 (0.5)
- other	255 (8.7)
Previous CS	1334 (20.9)
Infertility	298 (4.7)
Previous IUD	52 (0.8)
Previous "bad obstetric history"/abortions	108 (1.7)
Antenatal complications / reason for admission to hospital	
Preterm	1444 (22.6)
Hypertensive disorder	1326 (20.8)
Prelabour ROM	1189 (18.7)
USS abnormality	797 (12.5)
Post term (or 41/40 GA)	290 (4.5)
Antepartum haemorrhage	183 (2.9)
Multiple pregnancies	141 (2.2)
Acute infection/sepsis	103 (1.6)
Reduced fetal movements	35 (0.5)
Intrapartum complications	
IOL/augmentation of labour	2949 (46.2)
Meconium	591 (9.3)
CPD	373 (5.8)
Malpresentation	224 (3.4)
Prolonged labour	83 (1.3)
Abnormal lie	59 (0.9)
Hyperstimulation	11 (0.2)
Cord accident	12 (0.2)

Fetal indications including presumed fetal compromise in labour and ultrasound findings were the most common indication for operative birth; 983 (15.4% total births).

Perinatal characteristics/outcomes:

Special care baby unit admission:

SCBU admission rates were high n=884 (13.7%).

Most common indications for admission were low birth weight (31.5%) and preterm (26.3%).

Only 3.4% were admitted for birth asphyxia and 1.2% for meconium aspiration syndrome.

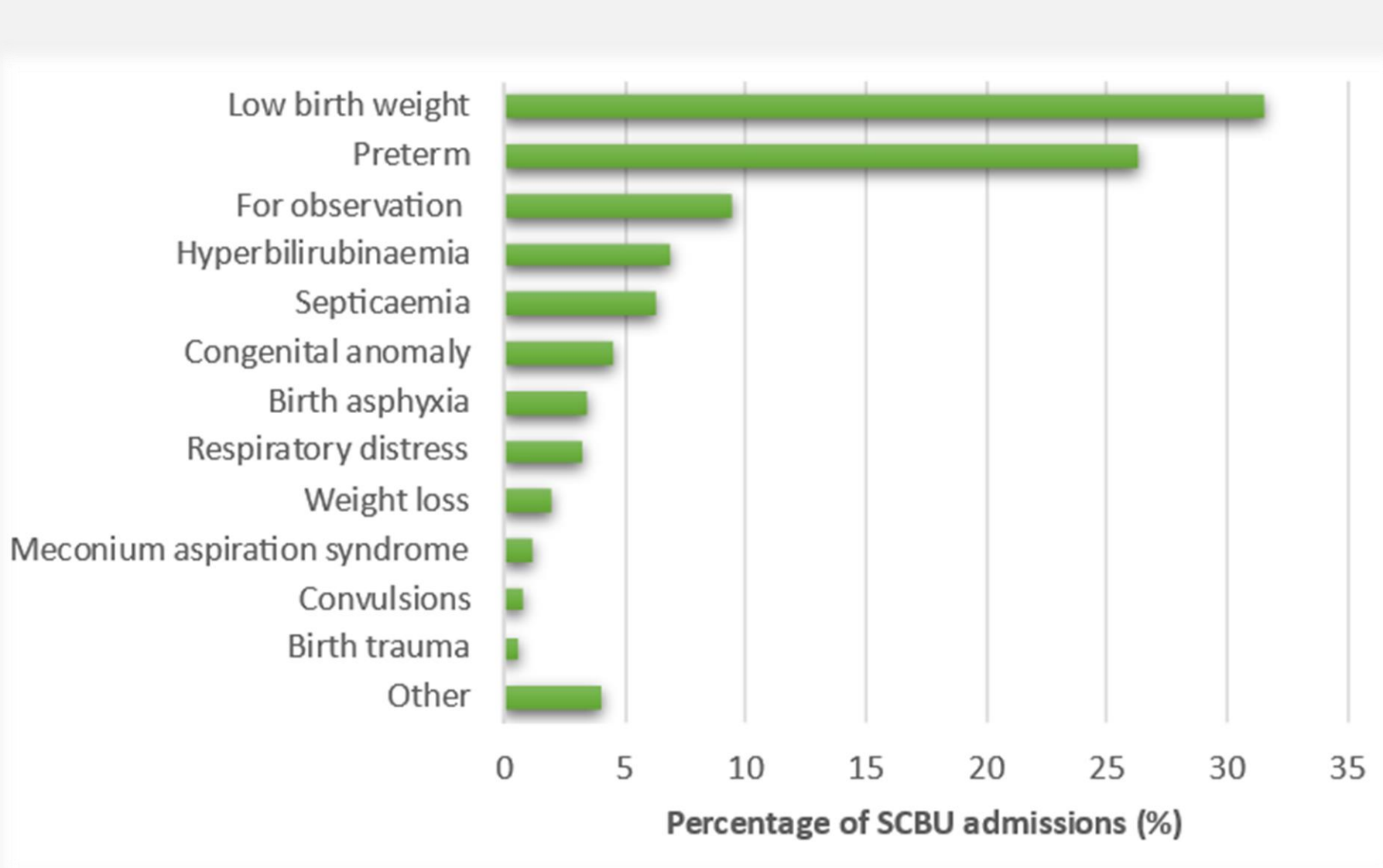


Fig 3. Indication for SCBU admission

Perinatal mortality:

Total perinatal mortality rate was 68.7/1000 (459/6682) (Indian definition)

Stillbirths: n=229 (34.3/1000)

Possible/confirmed intrapartum fresh stillbirth n=58 (8.9/1000 WHO definition) 40/58 were confirmed alive on admission. Of these mean gestational age was 33.5 (SD 3.9), 80% were preterm. Mean birth weight was 1517.7g (SD 560.9), and 92.5% had low birth weight.

In-facility neonatal deaths: n=230 (36.6/1000)

Low birth weight and prematurity were the leading causes of mortality (34.9%). 25 babies died due to asphyxia/HIE. Of these, 52.2% were preterm (n=24), and 80% <2500g (n=21).

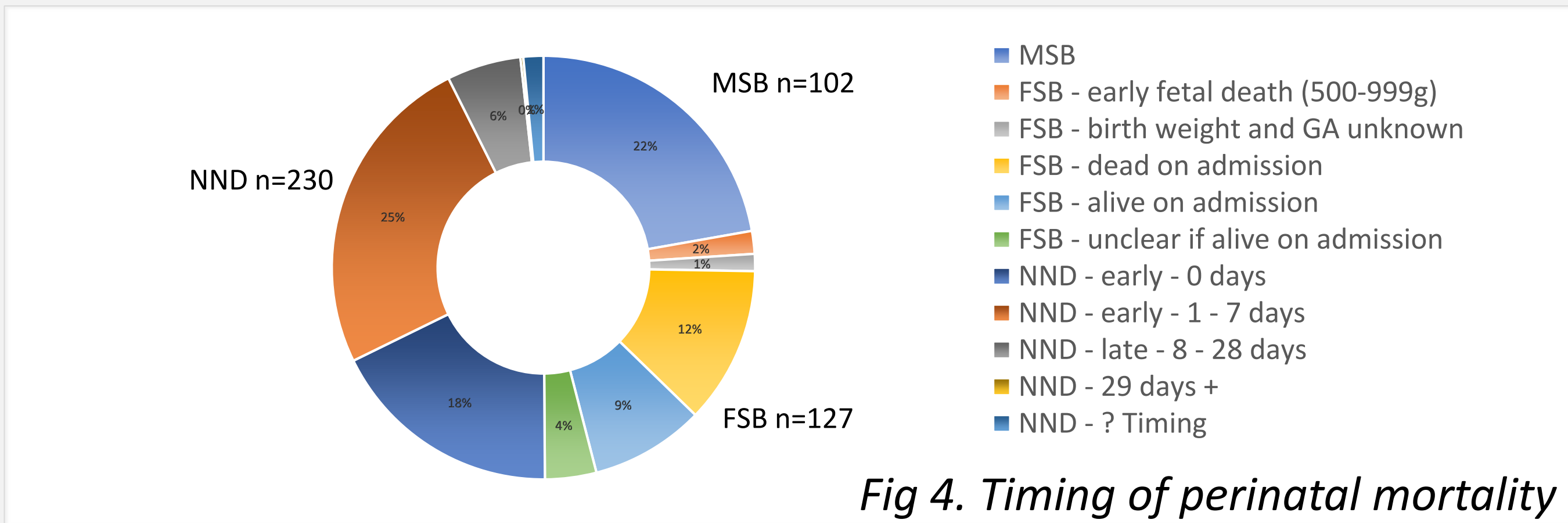


Fig 4. Timing of perinatal mortality

Conclusion:

- Fetal concerns were the most common indications for operative birth in this very high-risk population.
- Clinicians achieved low intrapartum fetal hypoxia-related morbidity and mortality rates, especially in term or normally grown babies, despite high perinatal mortality and SCBU admission rates.