

## Use of assisted vaginal birth to reduce unnecessary caesarean sections and improve maternal and perinatal outcomes



Far too many birth-related maternal and perinatal deaths still occur in low-income and middle-income countries. Prolonged labour is a common cause of stillbirths, maternal deaths, and lifelong disabilities.<sup>1-3</sup> Prolonged second stage of labour is a common indication for caesarean section; however, many of these caesarean sections could be prevented by the use of assisted vaginal birth, with vacuum extraction being the method of first choice.<sup>1-3</sup> Compared with caesarean section, vacuum extraction is associated with a lower risk of infection and haemorrhage, and shorter decision-to-birth interval and therefore lower rates of birth asphyxia, intrapartum stillbirths, and severe maternal morbidity.<sup>2,3</sup> Caesarean section is also associated with increased risks of pregnancy-related hysterectomy and, in future pregnancies, abnormal placentation and uterine rupture.<sup>5</sup> Furthermore, caesarean section usually means slower physical and mental maternal recovery and higher health service costs as compared with assisted vaginal birth.<sup>4-6</sup> When indications align, such as prolonged second stage of labour or fetal distress during the second stage of labour, use of vacuum extraction can lead to a reduction of unnecessary caesarean sections—an issue discussed at length in a 2018 *Lancet Series*<sup>4,5</sup> on caesarean sections.

Risk reduction associated with assisted vaginal birth is larger in settings where safe surgery and anaesthesia cannot be taken for granted and where fertility rates are high.<sup>2,7</sup> Studies in low-income and middle-income countries have shown that fewer than 1% of institutional births were by assisted vaginal birth compared with up to 16.4% in northwest Europe.<sup>1,8</sup> This difference is largely because obstetric skills required for assisted vaginal birth have disappeared from many of the areas where these skills are most needed and could potentially have the highest beneficial effect. WHO states that skilled attendants at primary care levels should be able to do vacuum extraction as one of the basic obstetric functions. Inexperience with or inadequate skills required for assisted vaginal birth have been associated with a greater frequency of caesarean section use.<sup>4</sup> Other reported obstacles to assisted vaginal birth are a paucity of functioning equipment

and exaggerated fear of scalp and brain injury for the neonate. Additionally, unjustified fear of mother-to-child transmission of HIV, policies forbidding available professional cadres such as midwives to do assisted vaginal birth, and fear of litigation also play a role.<sup>1-4</sup>

At the same time, studies<sup>8-10</sup> evaluating the re-introduction of vacuum extraction in several low-income and middle-income countries have revealed promising results. A 2018 study<sup>9</sup> showed that it was feasible to re-introduce vacuum extraction in 15 health facilities in Tanzania with adequate training and supervision of staff. In the main referral hospital in Kampala, Uganda, a programme was implemented in 2012, consisting of the development of a guideline, supply of equipment, and training of staff. Among all births, vacuum extraction use rose from 0.6% to 3.7%. This was accompanied by a 23.6% ( $p < 0.01$ ) decrease in intrapartum stillbirths and a 25.5% ( $p < 0.01$ ) decrease of uterine rupture.<sup>8</sup> Remarkably, mean decision-to-birth interval for vacuum extraction was 34 min versus 4 hours and 38 min for caesarean section: this reduction in time was the most likely explanation for the significant decrease ( $p < 0.01$ ) in intrapartum deaths from birth asphyxia. Increased use of vacuum extraction also reduced the waiting time for women who really need caesarean section, which in turn led to a reduction of uterine rupture and improved outcome for these women and neonates.<sup>2,8</sup> In a cohort of 289 women who had vacuum-assisted vaginal birth in this hospital, 257 (91%) were satisfied with their birthing experience.<sup>6</sup>

Similarly, a series of interventions (training of staff, monitoring and evaluation, audit, and constructive feedback) were implemented in Mozambique in 2015. These interventions reversed the underutilisation of vacuum extraction, and led to a substantial reduction of maternal mortality and stillbirths.<sup>10</sup> A 2018 report<sup>11</sup> from Papua New Guinea documented four decades of audit in a large public hospital, where a focus on maintaining obstetric skills, including the use of vacuum extraction, has been associated with low perinatal mortality and caesarean sections.

Re-introduction of vacuum extraction in low-income and middle-income countries can play a major role in

the prevention of mortality and morbidity related to prolonged labour and the reduction of unnecessary caesarean section in the second stage of labour. It is therefore of utmost importance to promote and support international and institutional efforts to work towards the re-introduction of vacuum extraction through intervention programmes.

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