A RANDOMIZED TRIAL OF EARLY INFANT MALE CIRCUMCISION PERFORMED BY CLINICAL OFFICERS AND REGISTERED NURSE MIDWIVES USING THE MOGEN CLAMP IN RAKAI, UGANDA
Background


• Observational studies of men circumcised in infancy or childhood show long-term protection from HIV acquisition in adulthood (Weiss HA et al, 2008)

• The long-term sustainability of MMC programs could best be achieved by early infant male circumcision (EIMC).

• EIMC procedure is technically simpler and can be performed by lower cadres especially in settings with low physician coverage.

The acceptability and safety of EIMC provided by non-physicians is unknown.
Methods

Subjects
- 500 Healthy newborn boys of interested, consenting mothers, aged 1-28 days, weighing ≥ 2.5kg (no medical or surgical contraindications).

Participant recruitment
- Radio messages to inform parents on availability of services.
- Mothers also approached at Reproductive, Maternal, Newborn and Child Health (RMNCH) units at the centers.
- Health education using WHO/JHPIEGO manual for EIMC

Randomization
- Mothers selected envelopes from a block of 10, with immediate envelope replacement.
- Random assignment in a 1:1 ratio to either Clinical Officer (CO) or Registered Nurse Midwife (RNMW) in all blocks.

Procedure and participant follow up
- Vitamin K to prevent bleeding (<2 weeks of age)
- Pain control with topical lignocaine/prilocaine cream, rectal paracetamol & 24% sucrose.
- Post operative follow up at 1 hour, 24 hour phone call, and physical visits at day 4-7 and week 4.

Ethical considerations
- Review and approval by 3 Institutional review boards
- A Data Safety Monitoring committee reviewed safety at 100th baby mark prior to proceeding

Figure 1: Nursing midwife screening a neonate
Figure 2: Mogen clamp was used
Methods (2)

Statistical analysis.

- Analyses used Stata 13.1
- The characteristics of mother and infants at enrollment were assessed by study arm to determine comparability.

- The primary endpoint was adverse events (AEs) related to the study.
- Secondary endpoints included; acceptability of EIMC, pain control levels, time to completion of procedure and proportion of wound healing at day 4-7 and week 4.

Adverse events (AEs)

- Analyses were by intention-to-treat.
- AE rates were stratified by trial arm and compared using chi-square tests in bivariate analyses.
- A logistic mixed effects model was used to generate random effects at provider and health facility level in order to account for clustering effects.
Other outcomes

- These included; acceptability of EIMC, pain control levels, time to completion of procedure and proportion of wound healing at day 4-7 and week 4.

Acceptability

- Acceptability was defined as the number of mothers who consented to EIMC as a proportion of the numbers directly invited to enroll in the trial, retention rates at follow up visits and Proportion of maternal satisfaction assessed by arm at the 4 week visit.

Pain

- Pain during surgery was measured using NIPS scores.

- A binary outcome variable was constructed with no pain/mild pain as the referent versus moderate/severe.

- The adjusted prevalence risk ratios estimated using modified Poisson regression, adjusting for clustering at the provider and facility level and covariates of infant characteristics.
Of the 701 babies that were registered, 501 were circumcised with 256 randomized to the clinical officer arm and 245 in the nursing midwife arm.

There were no differences in maternal characteristics by study arm.

Infants were comparable in most respects except the mean birth weight of infants circumcised by RNMWs was 100 g higher than those circumcised by COs (p=0.04)

Figure 3 consort diagram
Adverse Events

- There were a total of 13 adverse events and the AE rate was similar among infants circumcised by COs, 2.3% (6/256) and RNMWs, 2.9% (7/245); adj. OR = 1.21, 95% CI 0.38, 3.85, p = 0.330.

- Likelihood of AEs: Only elevated pre-operative temperature (>37.1°C vs 36.0-36.5°C) had a higher odds of AEs (adj. OR = 6.30, 95% CI 0.94, 42.33) which was of borderline statistical significance (p = 0.058).

Table 1 Adjusted Odds ratios of AEs by trial arm and infant characteristics
Results (3)

Time to completion of procedure
- The average time to completion of an EIMC by the COs was 11.78 minutes (10.73, 12.92) compared to the RNMWs 10.47 minutes (9.54, 11.41).
- Time to complete EIMC by RNMWs decreased with more experience (r = -0.13, 95%CI -0.072, -0.182)

Acceptability
- Estimated Acceptability 74.9% (525/701). See figure 3
- Retention rates were greater than 90% at all scheduled follow ups and did not differ between study arms
- Maternal satisfaction was 99.6% of infants circumcised by COs and 100% among infants circumcised by RNMWs.
Results (4)

Pain
• Overall, 24.6% of infants experienced pain in the CO compared to 22.9% in RNMWs (adj.PRR=0.92, 95%CI0.42, 2.02). The NIPS scores increased with infants’ age.
• The number of circumcisions performed, use of a pacifier and infant’s bodyweight were associated with a lower prevalence of pain but these differences were statistically not significant in the adjusted analyses.

Wound healing
• All wounds were healed by 4 weeks post-circumcision.

Figure 4: Wound healing at day 4, with a normal scab.

Figure 5: Wound healing at week 4.
Conclusion

• **EIMC was acceptable** in this rural Ugandan population.

• Registered nurse midwives (RNMWs) **can safely provide EIMC** using the Mogen clamp in health centers with minimal surgical facilities.

• Since the RNMWs have direct contact with mothers during pregnancy and delivery, they are ideally situated to offer these services for newborn boys.

• The cream-based analgesia ameliorated but did not abolish infant pain.

• **In the long-term, provision of EIMC could be important for sustaining high rates of circumcision** in order to prevent HIV and STIs when adolescents become sexually active and would provide immediate benefits to young boys by prevention of UTIs and foreskin pathologies.

• **EIMC services should be made available** to parents who are interested in the service.