

High complication rates challenge the implementation of male circumcision for HIV prevention in Africa

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SUMMARY

This commentary discusses the study by Bailey and colleagues, who aimed to assess the safety of male circumcision practices in both clinical and traditional settings in Bungoma, Kenya. The study evaluated 1,007 males who underwent circumcision in a clinical ($n=562$) and traditional ($n=445$) setting. All young men who underwent circumcision were interviewed after surgery to assess their satisfaction and complication rates, and a sample of the practitioners who performed the circumcisions were interviewed to determine their circumcision training and experience. Additionally, 24 circumcision procedures (12 each in the clinical and traditional settings) were directly observed by the study investigators. The study found complication rates of 17.7% and 35.2% in the clinical and traditional groups, respectively. Furthermore, the study revealed shortcomings in practitioner knowledge, training and resources in both groups. Before scaling up male circumcision services in countries with a high prevalence of HIV, a careful strategy to minimize unnecessary morbidity, and fundamental improvements on current circumcision techniques, are required.

KEYWORDS Africa, AIDS, complications, HIV, male circumcision

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COMMENTARY

Between 2005 and 2007, three African randomized controlled trials were published that showed that adult male circumcision could reduce the risk of HIV incidence by 60%.^{1–3} In these three well-publicized trials, the complication rates of the procedure ranged from 1.7% to 8%; however, other studies comparing clinical and traditional circumcisions in the developing world have reported higher complication rates than these trials. As adult male circumcision is the only new prevention method to demonstrate consistent efficacy for HIV prevention in randomized controlled trials,⁴ it represents an important global health intervention strategy. In light of the recent interest in the role of adult male circumcision for HIV prevention, Bailey *et al.*⁵ have conducted a prospective study in Bungoma, Kenya to assess the safety of male circumcision practices in both clinical and traditional settings.

In this study, 1,007 males underwent circumcision and were interviewed after surgery to determine complication rates and satisfaction levels. In total, 562 circumcisions were performed in a clinical setting (i.e. in hospitals, health centers, dispensaries or private clinics), and 445 circumcisions were

performed by traditional practitioners in villages or household compounds. A sample of 21 traditional and 20 clinical circumcisers were interviewed to assess their circumcision training and experience. The first 24 procedures (12 clinical and 12 traditional procedures) were directly observed by the investigators.

Overall complication rates were high in both groups: 35.2% among the traditional circumcisions and 17.7% among the clinical circumcisions ($P<0.001$). Complications included excessive bleeding, infection, excessive pain, pain upon urination, incomplete circumcision requiring additional surgery, and lacerations of the glans, scrotum and thighs. Wounds had not healed by postoperative day 60 in 24% of the traditional and 19% of the clinical cases. An estimated 6% of procedures resulted in permanent adverse sequelae. The consequences of adverse effects were exacerbated by limited access to health facilities for postoperative care.

Although the authors pointed to several study limitations, including the small number of direct observations of circumcisions and the provision of medical intervention by the research team, the study conclusions are based on sound methodology and a respectable sample size. If anything, the complication rates would probably have been

higher without the occasional medical assistance provided by the study team.

Perhaps even more compelling than the high complication rates were the revelations of shortcomings in knowledge, training and resources. The design of this study, which included interviews of both the practitioner and the patient, facilitated the exposure of potential factors contributing to the high rates of adverse events. The authors, well versed in circumcision practices in the region (Bailey was the lead author of the randomized controlled trial of male circumcision in Kisumu, Kenya²), provided additional insight into the underlying deficiencies. About half of the circumcisers in both groups believed that additional surgical and anatomical training would be beneficial. Some of the clinical officers had never performed the procedure under supervision, and the nurses usually received no formal instruction. Many of the providers lacked adequate supplies, resulting in jagged foreskin excision with dull scissors, widely spaced stitches leading to wound separation, poor healing and an increased rate of wound infection from inadequately sterilized equipment. Surgical complications contributed to the financial burden on patients and their families, and on the health-care system of the region. Nonmedical sequelae included loss of productivity and missed school for younger patients. Such losses are particularly detrimental in countries with limited resources.

The authors of this study have hit upon a maxim that is well known to wise surgeons: don't be fooled by a deceptively simple surgical procedure. Many urologists who had scoffed at the ease of vasectomies have sweated through the torture of repeated grasping and loss of a slippery vas deferens in a squirming patient. The same holds true for adult male circumcision. Current circumcision methods are too prone to complications, especially for practitioners with limited surgical skills or supplies. Reduced to its individual components, the procedure involves an injection of local anesthetic, excision of the foreskin and suturing of the cut skin edges. This method sounds easy, but a safe and effective surgical procedure requires training in preoperative assessment, patient informed consent and preparation, pain management, postoperative care, wound care counseling and management of adverse events. This study demonstrates that deficiencies in training and resources lead to unacceptably high complication rates in resource-poor regions.

Williams *et al.*⁶ have estimated that male circumcision could prevent 5.7 million new HIV

infections over 20 years, and the WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) have recommended the urgent scaling up of male circumcision services in countries with a high prevalence of HIV and low male circumcision rates.⁷ Bailey *et al.*⁵ invite circumcision proponents to pause and develop a careful strategy to minimize unnecessary morbidity. Furthermore, in addition to the increased training and resources advocated by this study, we support the call for fundamental improvements on current circumcision techniques. Whether by the conventional surgical technique, or by a circumcision device, circumcision methods must be simplified in order to reduce the complication rates before the application of this HIV prevention strategy becomes widespread. A new device developed in China seems to simplify circumcision by eliminating the need for suturing and reducing the risk of complications.⁸ Clinical trials outside of China are required to confirm these findings.

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PRACTICE POINT

This study revealed high complication rates after male circumcision in both the clinical and traditional settings, and shortcomings in practitioner knowledge, training and resources; a strategy to minimize unnecessary morbidity and improvements in circumcision techniques are required before circumcision services can be scaled up in countries with a high prevalence of HIV.

Competing interests

The authors have declared associations with the following company/organization: The Frederick J and Theresa Dow Wallace Fund of the New York Community Trust. See the article online for full details of the relationships.