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Noah Kojima

University of California Los Angeles

Claire C. Bristow

University of California Los Angeles

Neil Pollock

University of British Columbia

Pierre Crouse

Intramed Medical Centre

Harry Theodore

Les Centres GHESKIO

See next page for additional authors

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Authors

Noah Kojima, Claire C. Bristow, Neil Pollock, Pierre Crouse, Harry Theodore, Jerry Bonhomme, Claire F. Stephanie Gaston, Jessy G. Devieux, Jean William Pape, and Jeffrey D. Klausner

Rapid Training and Implementation of the Pollock Technique, a Safe, Effective Newborn Circumcision Procedure, in a Low-Resource Setting

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Noah Kojima, BS¹, Claire C. Bristow, MPH, MSc¹, Neil Pollock, MD², Pierre Crouse, MBChB³, Harry Theodore, MD⁴, Jerry Bonhomme, MD⁴, Claire F. Stéphanie Gaston, MA⁴, Jessy G. Dévieux, MA, PhD⁵, Jean William Pape, MD^{4,6}, and Jeffrey D. Klausner, MD, MPH^{1,7}

Abstract

Male circumcision is highly protective against urinary tract infections, inflammatory conditions of the penis, sexually transmitted infections, and urogenital cancers. We aimed to reintroduce newborn male circumcision through the creation of a training program in Port-au-Prince, Haiti—an area with a considerable burden of preventable urogenital infections, sexually transmitted infections, and low circumcision rate—after an earlier study reported that a majority of Haitian medical providers were in need of and wanted newborn circumcision training. The program was conducted at the GHESKIO Health Centers, a large, non-governmental clinic offering comprehensive pediatric and adult health services. Two Haitian obstetricians and seven nurses learned circumcision procedures. On training completion, one of two obstetricians achieved surgical competence. Introduction of a newborn male circumcision training program was feasible, achieving an acceptable rate of procedural competency and high-quality services. Permanent resources now exist in Haiti to train additional providers to perform newborn male circumcisions.

Keywords

circumcision, global health, HIV/AIDS, Haiti, general pediatrics

Background

Male circumcision is a highly effective medical procedure that is protective against various medical conditions including urinary tract infections, inflammatory conditions of the penis, sexually transmitted infections—such as those caused by human papillomaviruses, herpes simplex virus type 2, and human immunodeficiency virus (HIV)—and urogenital cancers.^{1–7} Recently, the US Centers for Disease Control and the American Academy of Pediatrics concluded that the health benefits of newborn male circumcision outweighed the risks.^{8,9} Male circumcision has been found to reduce the susceptibility to heterosexually acquired HIV infection by over 60%.^{10–12} Newborn male circumcision only requires a safe, rapid, one-time intervention and has been reported to be not only highly cost-effective but also cost saving.¹³

In a study of Haitian immigrants in the Dominican Republic, it was reported that a majority of the Haitian men

were willing to be circumcised if the procedure was offered to them after learning about the medical benefits.¹⁴ A recent survey of medical professionals in Haiti found that Haitian medical providers have positive opinions and good knowledge of newborn male circumcision with strong willingness to provide the service, if trained. A large majority of the participants of the survey needed and wanted newborn

¹University of California Los Angeles, CA, USA

²University of British Columbia, Vancouver, British Columbia, Canada

³Intramed Medical Centre, Calgary, Alberta, Canada

⁴Les Centres GHESKIO, Port-au-Prince, Haiti

⁵Florida International University, Miami, FL, USA

⁶Weill Medical College of Cornell University, New York, NY, USA

⁷David Geffen School of Medicine at UCLA, Division of Infectious Diseases and Department of Epidemiology, CA, USA

Corresponding Author:

Noah Kojima, David Geffen School of Medicine at UCLA, 10833 Le Conte Ave, Los Angeles, CA 90095, USA.
Email: nkojima@ucla.edu



male circumcision training, with few providers having prior experience with newborn male circumcision.¹⁵

Here we report the results of a “train-the-trainers” program, a rapid training and implementation program for newborn male circumcision at the GHESKIO Health Centers in Haiti. Our aim was to help reintroduce newborn male circumcision through the creation of a permanent newborn male circumcision training program in Port-au-Prince, Haiti—an area with a considerable burden of preventable urogenital infections, sexually transmitted infections, and low circumcision rate.^{14,16-19}

Methods

Program Design and Participants

The training was performed at the GHESKIO Health Centers in Port-au-Prince, Haiti. The GHESKIO Health Centers is a large, non-governmental clinic offering comprehensive pediatric and adult health services. The GHESKIO Health Centers treats urban patients infected with HIV and continues to address infectious diseases through service, training, and research.²⁰ Their history, strong urban infrastructure, and large patient pool made them an ideal site to introduce the newborn male circumcision training program to create a sustainable, accessible circumcision training and service center in Haiti.

Circumcisions were scheduled for newborns whose mothers were receiving obstetrical and gynecological care from the GHESKIO Health Centers. Inclusion criteria, exclusion criteria, and contraindications for newborn male circumcision are listed in Figure 1. Parents (or guardians) were informed about the risks, benefits, and alternatives to the procedure; observed a 20-minute educational video (available from the authors on request); and provided written documentation of consent. Newborns received physical examinations and tests for HIV status, syphilis status, bleeding time (Duke TS test), and clotting time (Lee and White test).^{21,22} HIV status was assessed with the Determine HIV-1/2 test (Alere Inc, Waltham, MA). If the test was positive, the newborn was retested with a colloidal gold anti-HIV Antibody Diagnostic Kit (Beijing Wantai Biological Pharmacy Enterprise Co, Ltd, Beijing, China). Syphilis status was tested with the SD Bioline Syphilis 3.0 test (Standard Diagnostics, Giheung-gu, Korea). If the test was positive, the newborn was retested with a Biotec RPR test kit (BIOTEC Laboratories Ltd, Suffolk, UK).

The Pollock Technique

For this low-resource setting, the Pollock technique of newborn male circumcision (see Figure 2), a procedure

Inclusion criteria

Male infant born within the last 60 days
Parents able to provide informed consent

Exclusion criteria

HIV-positive newborn
Abnormal clotting or bleeding tests

Contraindications

Hypospadias
Penile torsion
Megalourethra
Other urogenital abnormality

Figure 1. Newborn male circumcision inclusion criteria, exclusion criteria, and contraindications, GHESKIO Health Centers, Haiti, 2014-2015.

that utilizes the Mogen clamp, was selected due to its expediency and association with minimal bleeding and pain. Among experienced practitioners, the removal of foreskin can be performed in less than 30 seconds.^{23,24}

Training Preparation and On-Site Activities

Prior to the training trip, weekly conference calls were held over a period of three months to review the Pollock technique and discuss logistics and supplies with the GHESKIO Health Centers’ staff. Written manuals translated into French and Creole were provided to the GHESKIO Health Centers’ staff to read before the rapid training program started (see Table 1).

Classroom instruction was given on the first day of the course to the selected GHESKIO Health Centers’ newborn male circumcision staff—two obstetricians and seven nurses—on (a) the technique, (b) common complications and management, and (c) outcome survey data collection. After the lectures, the GHESKIO Health Centers’ obstetricians practiced the technique on latex glove tips made to resemble foreskins under the instruction of the two physician-trainers. Nurses were taught to (a) assemble equipment trays, (b) deliver information for pre- and post-procedure instruction, (c) ensure the sterility of the instruments, and (d) prepare newborns for the procedure.

Over the next 2½ days, the physician-trainers taught the GHESKIO Health Centers’ obstetricians with hands-on demonstrations and supervised procedures. Initially, the physician-trainers performed the procedure with the obstetricians directly observing and assisting. Later, the GHESKIO Health Centers’ obstetricians prepared and performed the procedure while the physician-trainers observed and coached them. Two newborns were

The Pollock Technique for newborn male circumcision

Liquid infant acetaminophen is administered orally 20 minutes before the procedure

The room is heated to 25 °C to help keep the newborn warm

A parent (or guardian) accompanies the child into the procedure room to help calm him, if he is distressed

The newborn is secured onto a soft restraining board wearing a clean diaper

The parent gives a grape-juice-soaked cotton ball to the infant orally to help soothe the newborn during the procedure

2.5 ccs of 0.5% Xylocaine is administered into the dorsal and ventral nerves of the penis eight minutes prior to the circumcision

Hemostats are used to open adhesions from the foreskin to the glans to the level of the corona

Hemostats are placed about two-thirds of the way up the foreskin

The Mogen clamp is applied over the foreskin using the pair of hemostats as a guide

The foreskin is excised with the #23 scalpel

The glans is liberated

Hemostasis is promoted with pressure applied with Coban tape over gauze with petroleum jelly

A blanket is used to help comfort the infant

The infant is assessed after 15 minutes

Figure 2. Key aspects of the Pollock technique, GHESKIO Health Centers, Haiti, 2014-2015.

assigned to each procedure room to increase training and throughput capacity. Between circumcisions, 15-minute post-procedure check-ups were performed to assess bleeding and outcomes of the procedure.

The obstetricians carried cell phones continuously as “hotlines” to receive notifications of any potential complications related to the circumcision procedure. The newborns’ parents were informed to call the hotline if the newborn had signs of sustained bleeding, fever, excessive fussiness, or for any questions or concerns.

Nurses were trained to ensure proper participant flow, preparation, and education. Nurses administered an infant dose of liquid acetaminophen to the newborns while educating parents prior to the procedure; other nurses (*a*) prepared aseptic equipment trays, (*b*) assisted with the circumcision procedures, (*c*) assigned appointments for 1-day and 1-week follow-ups to assess the healing, and (*d*) instructed parents about post-procedure care.

Data Collection

Data collection surveys were prepared in English and French for the doctors and nurses. Nurses collected surveys in either French or Creole. The surveys assessed patient satisfaction, complications, and how well the various steps of the Pollock technique were followed.

Ethics Statement

The collection and analysis of the programmatic health services data were approved by the GHESKIO Ethics Committee. The University of California, Los Angeles,

institutional review board deemed the review of de-identified data and analysis nonresearch, exempt from institutional review requirements.

Results

In the week prior to the training, 207 male newborns age <2 months were registered for circumcision; 24 newborns were excluded due to medical exam findings (2), testing HIV-positive (16), the lack of HIV test results (2), refusal of testing (1), and inability to contact (3). Of the 183 newborns remaining, 92 (50%) newborns presented during the 2½-day period for the procedure and were circumcised. On training completion, one of two obstetricians achieved procedural competence to perform the technique independently and teach others. All seven nurses achieved competence to assist with the procedure. The second obstetrician will need further training.

The obstetricians and nurses reported that they were very satisfied (100% and 92% respectively) with the training program (Table 2). The staff indicated that they thought the facility could comfortably support between 20 and 40 procedures per day. To improve the program, the obstetricians suggested (*a*) having four full days of training (vs 3½ days) and (*b*) spending more time learning to excise excess foreskin post-procedurally. The nurses suggested (*a*) increasing the number of on-site nurses, (*b*) decreasing the number of patients per day, (*c*) increasing the course length, and (*d*) improving the protocol as a means to expedite follow-up visits.

The parents of the newborns (*n* = 92) reported that they were very satisfied with the procedure (Table 2). Among the parents, 100% reported they would recommend newborn male circumcision to their friends and

Table 1. Equipment required for up to 500 procedures of the Pollock Technique, GHESKIO Health Centers, Haiti, 2014-2015.

Procedure Materials per Tray	Quantity	Notes
2 Sets of surgical gloves	10 boxes, 100 per box	
1 × 8 Inch petroleum dressings	5 boxes, 50 per box	
Iodine preparation pads	3 boxes, 200 per box	
Coban tape	5 packages, 12 per pack	
1 Scalpel blade #23	5 boxes, 100 per box	
2 Pieces of 3 × 3 inch unsterile gauze (one piece with petroleum jelly)	5 packages, 200 per pack	
3 mL syringe filled with 2.5 cc of 0.5% Xylocaine	5 boxes, 100 per box	60 vials of 20 mL 0.5% Xylocaine
3 Pairs of 5 inch hemostats	60	
1 Mogen clamp	30	
1 Cotton ball with alcohol		Staff prepared
2 Sugar balls (cotton balls dipped in grape juice)	1000	
Other equipment		
Infant restraining board	6	2 extra leg straps
Autoclave	1	
Autoclave stopper bags	As needed	
Infant liquid acetaminophen	30, 15 mL each	
Plastic instrument trays	24	
18 G needle (to draw up Xylocaine)	1 box, 100 per box	
30 1/2 G needle for anesthetic	5 boxes, 100 per box	
Petroleum jelly tubes, 30 g	4 boxes, 144 packets per box	
3 × 3 sterile gauze	13 trays, 40 per tray	
Latex gloves, for training	2 boxes	
Vice grips for training	1	
Emergency kit	1	1 needle driver 1 chromic gut suture 1 pair of scissors 2 pairs of hemostats 1 tissue forceps

Table 2. Obstetrician, nurse, and parent satisfaction, GHESKIO Health Centers, Haiti, 2014-2015.

Obstetrician response (n = 2)	
Overall satisfaction with the training program	Very satisfied (100%)
Confidence to perform the procedure	Very confident (100%)
Number of procedures obstetricians feel comfortable to perform per day	11-20
Number of procedures obstetricians feel the facility can handle per day	31-40
Nurse response (n = 5)	
Overall satisfaction with the training program	Very satisfied (92%)
Confidence to assist with the procedure	Very confident (96%)
Number of procedures nurses feel comfortable to assist with per day	27-36
Number of procedures nurses feel the facility can handle per day	23-32
Parent (or guardian) response (n = 92)	
Overall satisfaction with the procedure	Very satisfied (94%)
Percentage of parents (or guardians) of newborns that would recommend newborn male circumcision to a friend	100%
Percentage of parents (or guardians) of newborns agreeing that the procedure gave a satisfactory cosmetic result	100%

Table 3. Outcomes of newborn male circumcision procedures, GHESKIO Health Centers, Haiti, 2014-2015.

Question	Observations	Percentage
Adherence to protocol		
Sterilization protocol confirmed for all surgical instruments	92/92	100
Injected anesthesia used	92/92	100
Grape-juice-soaked cotton ball given to the baby	92/92	100
The infant's penis and surrounding skin cleaned using aseptic technique prior to the procedure	92/92	100
The infant was checked for active bleeding after the procedure and prior to leaving the facility	92/92	100
No complications from the circumcision procedure	92/92	100
Entire glans visible	92/92	100
Complications^a		
Evidence of injury to the shaft and/or glans (laceration, amputation, etc) and/or to the urethra	0/92	0.0
Other potential findings suggesting a complication resulting from the circumcision	0/92	0.0
Evidence of bleeding	1/92	1.1
Evidence of an infection	0/92	0.0
Evidence of wound disruption	0/92	0.0
Suturing required	0/92	0.0
Problem with the appearance	0/92	0.0
Evidence of an injury to the glans	0/92	0.0
Evidence of a structural issue	0/92	0.0
Problem with appearance of penis	0/92	0.0

^aComplication criteria based on the Male Circumcision Services Quality Assessment Toolkit guidelines provided by the World Health Organization.²⁵

100% reported that they were satisfied with the cosmetic result. One parent reported difficulty with post-procedural care and described that the newborn's grandparents disapproved of the procedure. Another parent was distressed because her child was crying through the first post-procedural night.

The nurse-collected survey indicated that 100% of the procedures followed the Pollock technique protocol (Table 3). There were no moderate or severe complications. Nurses reported one episode of minor bleeding that quickly resolved with direct pressure.

As of January 31, 2015, the GHESKIO Health Centers have dedicated two days a week to perform newborn male circumcisions, averaging 14 procedures per week.

Discussion

We successfully created and implemented a newborn male circumcision training program in Port-au-Prince, Haiti—an area with a considerable burden of preventable urogenital disease, sexually transmitted infections, and low circumcision rate.^{17,18,26} In 2½ days of procedures, about 40 procedures were completed per day. Surveys indicated a high-level of satisfaction from obstetricians, nurses, and parents of newborns. The

complication rates were low and thus far the program has been sustained. Through those measures, we found that implementation of a rapid newborn male circumcision training program was feasible, achieving an acceptable rate of surgical competency and high-quality services.

The success of the training project was largely based on community support, the experience of the trainers, and a dedicated and capacitated local non-governmental health organization.¹⁵ Prior models for teaching newborn male circumcision procedures exist, but often long-term, international training programs are not feasible due to difficulties obtaining travel visas, identifying patients, and finding suitable mentors.¹ The greatest challenges in enacting our training program were (a) transferring equipment, materials, and supplies; (b) coordinating physician-trainers' schedules with those of local staff; and (c) ensuring an adequate number of eligible newborns were available for the procedure during the training period. Compared to prior reports, our training program was unique in terms of the speed with which it was implemented and the reduced time commitment from mentors.²⁷

The GHESKIO Health Centers have dedicated two days a week for permanent newborn male circumcision

services since the completion of the program. Additional non-governmental health organizations in Haiti are planning to train their staff in the procedure. Efforts will continue to secure funding and supplies for long-term sustainability and ultimately introduction in the government-funded health systems.

Newborn male circumcision is a highly effective medical procedure to reduce urinary tract infections, inflammatory conditions of the penis, sexually transmitted infections, and urogenital cancers. Recent conclusions from the US Centers for Disease Control and the American Academy of Pediatrics found that the health benefits of newborn male circumcision outweigh the risks. We aimed to help reintroduce newborn male circumcision through the creation of a training program in Port-au-Prince, Haiti, after an earlier study reported that a majority of Haitian medical providers were in need of and wanted newborn circumcision training. We found that implementing a rapid newborn male circumcision training program was feasible, achieving an acceptable rate of procedural competency and high-quality services. Permanent resources now exist in Haiti to train additional providers to perform newborn male circumcisions.

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Author Contributions

NK generated the survey, analysed data, and wrote the paper with the guidance of CCB and JDK. NK, JDK, NP and PC assisted with the implementation the program. HT, JB, CFSG, JGD, and JWP coordinated the program in Haiti.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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