

CONCEPT PAPER

## KhitanAid Model: An Innovative and Realistic Homemade Circumcision Model

Firdaus Hayati<sup>1\*</sup>, Nik Amin Sahid Nik Lah<sup>1</sup>, Nornazirah Azizan<sup>2</sup>, Fairrul Kadir<sup>3</sup>

<sup>1</sup> Department of Surgery,  
Faculty of Medicine and Health Sciences,  
Universiti Malaysia Sabah, 88440 Kota  
Kinabalu, Sabah, Malaysia

<sup>2</sup> Department of Pathology and Microbiology,  
Faculty of Medicine and Health Sciences,  
Universiti Malaysia Sabah, 88400 Kota  
Kinabalu, Sabah, Malaysia

<sup>3</sup> Department of Emergency Medicine,  
Faculty of Medicine and Health Sciences,  
Universiti Malaysia Sabah, 88400 Kota  
Kinabalu, Sabah, Malaysia

\*Corresponding author's email:  
m\_firdaus@ums.edu.my

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### ABSTRACT

Circumcision is a procedure of removal of the penile foreskin. It is among the highest procedures performed worldwide, primarily for ritual and religious purposes among Muslims and Jews. It is also performed for hygiene and the prevention of malignancy. All practitioners must master the procedure, especially in identifying the normal anatomy and avoiding possible morbidities. Since the available simulated circumcision model is costly and not readily available, we invented a step-by-step technique to create a model for circumcision aiming to master this standard procedure, especially the dorsal slit.

### INTRODUCTION

Circumcision is a procedure of removal of the excess skin at the tip of the penis (preputial or foreskin skin). It is called khitan or khatna in Arabic. According to the global prevalence from the World Health Organization, almost 70% of cases of circumcision occurred due to religious reasons, especially among Muslims and Jews (World Health Organization & UNAIDS, 2008). It is among the highest procedures performed worldwide, with a prevalence of 30% (World Health Organization & UNAIDS, 2008). Besides ritual reasons, circumcision is performed for hygiene as it can reduce cases of urinary tract infections and human papillomavirus (Larke et al., 2011; Singh-Grewal et al., 2005). Among

other reasons why circumcision is performed is to protect against penile cancer. The incidence of penile cancer is 0.84 among the 100,000 population. However, the rate is almost 0% among Jews, Asian and African (Montes Cardona & García-Perdomo, 2017). The risk of developing penile and cervical cancer is 5-10 times higher among those harbouring the human papillomavirus (Morris et al., 2011).

There are various methods of performing circumcision, but two widely used techniques are dorsal slit and guillotine circumcision. All practitioners must master performing the procedures, especially identifying the normal anatomy and avoiding possible morbidities. Currently, there is one available simulated circumcision model for training in the market by Limbs & Things (n.d.). Still, it is without cost.

Traditionally, most healthcare providers performed it during a circumcision event on an actual patient. However, healthcare providers can practice this procedure with a simulator before performing it on a patient. This will avoid any intraoperative complications. The need for this training is crucial, as published by previous innovators and researchers (Campain et al., 2017; Abdulmajed et al., 2012).

To pursue the objectives, we have developed a step-by-step technique for creating a circumcision model which is low-cost and reproducible as well as has a realistic-feeling and tactile sensation during circumcision. Besides, by having this model, we aim to assist the practitioners in mastering the standard technique of circumcision, namely the dorsal slit.

## Steps of Model Construction

Our model was slightly modified from the Brill and Wallace model, especially on the model base (Brill & Wallace, 2007). We introduced our model as the KhitanAid model, in which we adapted the Arabic word for circumcision to our model's name. This model is designed to **Kickstart** as a pandemic-proof **H**ands-on training and performed **I**nnovatively to have a **T**actile sensation. It is **A**ffordable and feels **N**atural as a real organ. Hence, the abbreviation KHITAN is derived.

## Equipment

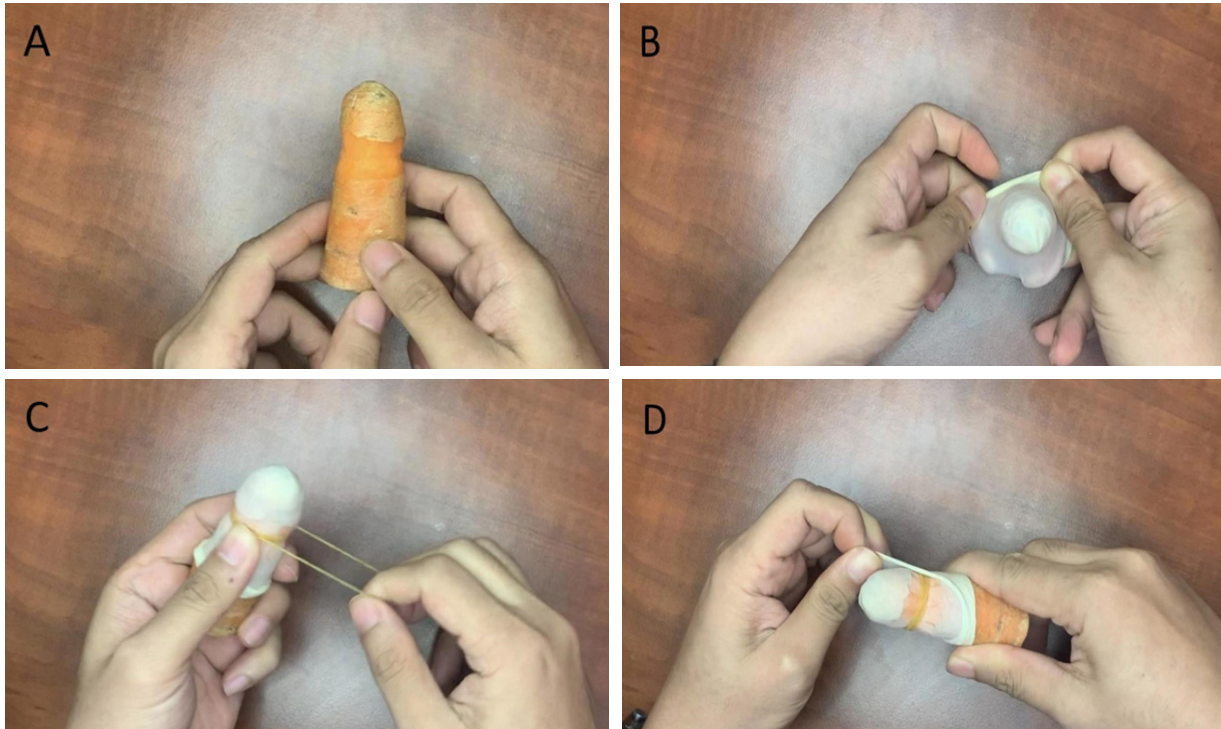
Among the essential supplies and equipment used include non-latex gloves size 6 to 7, carrots, packages of rubber bands of any colour (clear colour will be the best), a blade or knife and a scissor.

## Preparation of the Penile Body Model

Firstly, we need to find a suitable size and diameter carrot. The carrot must be fresh and not too ripe. Next, we need one side of the carrot to form a round end. Meanwhile, the other end must be cut flat to create a base. Finally, the rounded end must be carved to resemble the glans penis (Figure 1A).

## Preparation of the Glans Penis

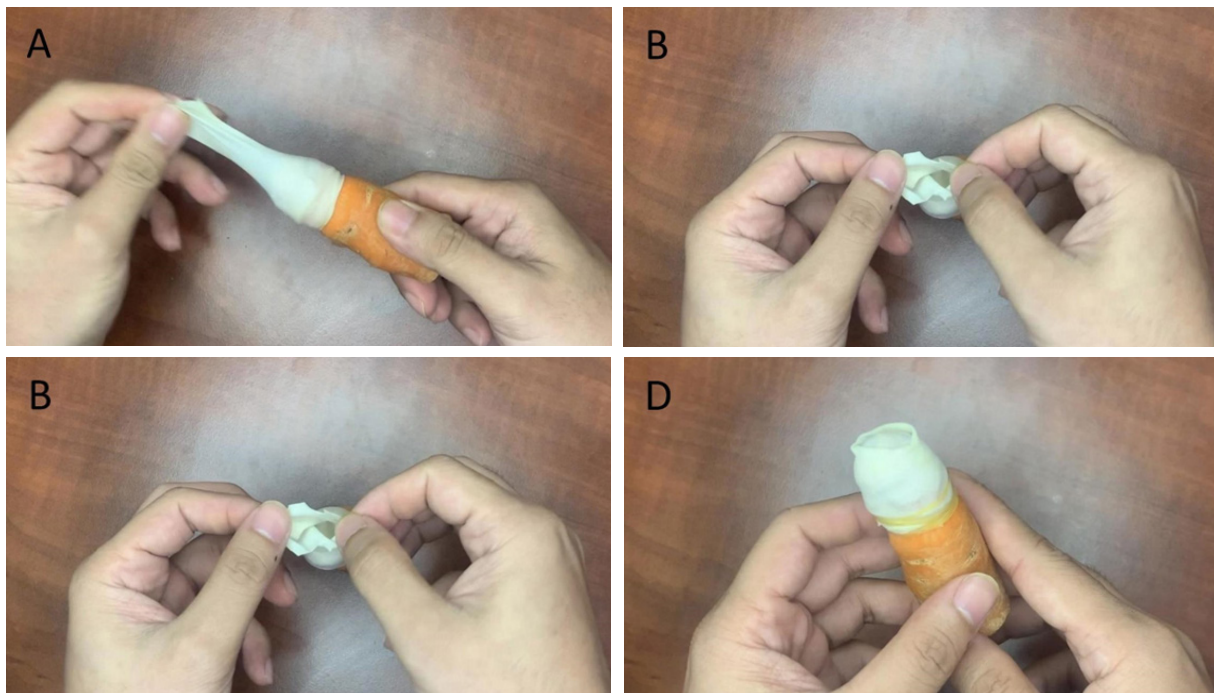
The gloves will be prepared to form the surfaces of the glans and the foreskin. Since the whole length of glove fingers will be utilised, getting the ring, middle or index finger is the option. The glove finger will be stretched to cover the carrot's round end/glans penis (Figure 1B). The rubber band will be applied and tightened at the groove of the glans penis (Figure 1C). The tip of the glove finger will resemble the skin surface of the glans penis.



**Figure 1** (A) The round end is carved to form a glans penis, (B) The glove finger will be stretched to cover the carrot's round end/glans penis, (C) A rubber band is tightened at the groove of the glans penis, (D) The remaining glove finger will be pulled distally

### **Preparation of the Foreskin**

The body of the glove finger will later form the foreskin of the glans. The remaining glove finger will be pulled distally while maintaining the tight rubber band at the groove. The remaining glove finger will cover the glans penis, and it acts as the mucosal surface of the foreskin (Figure 2A). The remaining glove finger will be folded (Figure 2B). The cut end of the glove finger will be pulled proximally. It will be pulled until the base of the glans penis. The cut end will be placed on the initial groove of the glans penis (Figure 2C). Another rubber band will be tightened on the remaining residual glove (Figure 2D). This is to ensure the foreskin is tight and not loose during circumcision.



**Figure 2** (A) The remaining glove finger will cover the glans penis, (B) The remaining glove finger will be folded, (C) The cut-end will be placed on the initial groove of the glans penis, (D) Another rubber band will be tightened on the rest of the residual glove

### FINAL RESULT

The model shows a similar appearance to the uncircumcised male genitalia. The foreskin can be retracted, exposing the glans. The operator can practice this to mimic cleaning the glans from smegma.

### Limitation

Firstly, our penile model is made of a carrot. Even though it has the benefit of carving to create a glans, the consistency of the penile body is hard, not mimicking the real penile organ. Secondly, our current model does not have a base, including the scrotum. This, unfortunately, cannot provide a model for operators to learn how to give a penile ring block. Nevertheless, modifying the model in the future can improve all the limitations.

### CONCLUSION

The step-by-step technique of creating the KhitanAid model is simplistic. Being economical, the model is easily reproducible and can assist practitioners in mastering the standard technique of circumcision.

### ACKNOWLEDGEMENTS

Video of this circumcision model has been registered as copyright with a registration number of LY2022S02128, dated 14/6/2022.

### REFERENCES

Abdulmajed, M. I., Thomas, M., & Shergill, I. S. (2012). A new training model for adult circumcision. *Journal of Surgical Education*, 69 (4), 447 – 448. <https://doi.org/10.1016/j.jsurg.2011.12.004>

Brill, J. R., & Wallace, B. (2007). Neonatal circumcision model and competency evaluation for family medicine residents. *Family Medicine*, 39 (4), 241–243.

- Campaign, N. J., Parnham, A. S., Spasojevic, N., Reeves, F., Venn, S., & Biyani, C. S. (2017). Use of a simulated model to teach male adult circumcision in Sub-Saharan Africa. *World Journal of Surgery, 41* (1), 10 – 13. <https://doi.org/10.1007/s00268-016-3681-0>
- Larke, N. L., Thomas, S. L., dos Santos Silva, I., & Weiss, H. A. (2011). Male circumcision and penile cancer: A systematic review and meta-analysis. *Cancer Causes & Control: CCC, 22* (8), 1097 – 1110. <https://doi.org/10.1007/s10552-011-9785-9>
- Limb & Things. (n.d.). *Adult male circumcision trainer*. <https://limbsandthings.com/global/products/60395/60395-adult-male-circumcision-trainer-light-skin-tone>
- Montes Cardona, C. E., & García-Perdomo, H. A. (2017). Incidence of penile cancer worldwide: systematic review and meta-analysis. *Revista Panamericana de Salud Publica = Pan American Journal of Public Health, 41*, e117. <https://doi.org/10.26633%2FRPSP.2017.117>
- Morris, B. J., Gray, R. H., Castellsague, X., Bosch, F. X., Halperin, D. T., Waskett, J. H., & Hankins, C. A. (2011). The strong protective effect of circumcision against cancer of the penis. *Advances in Urology, 812368*. <https://doi.org/10.1155%2F2011%2F812368>
- Singh-Grewal, D., Macdessi, J., & Craig, J. (2005). Circumcision for preventing urinary tract infection in boys: A systematic review of randomised trials and observational studies. *Archives of Disease in Childhood, 90* (8), 853 – 858. <https://doi.org/10.1136/adc.2004.049353>
- World Health Organization & UNAIDS. (2008). Male circumcision: Global trends and determinants of prevalence, safety and acceptability. <https://apps.who.int/iris/handle/10665/43749>