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Thermal Coagulator Technology in the Treatment of HIV among Children

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Abstract: Ritual circumcision is one of the most common surgical procedures performed in developing and some developed countries. Circumcision of HIV-infected children requires great caution. To do this, we used the thermal coagulators that are heated to high temperatures and meet all our requirements. The study was performed in all HIV-infected children who were at the mother and child's center in the city of Shymkent, Kazakhstan over a 5 year period. Data analysed were the ages, operation time, postoperative bleeding rates and infection rates. A total of 34 patients were enrolled in the study. Age at operation was an average of 4.7 years and a median 1.5 years. Return for bleeding complication for all surgeons was 0/34 (0.0%). Operative time in the thermo coagulator was significantly decreased than with bipolar (1.5±0.1 min; $p<0.01$). Early and late postoperative morbidity were significantly decreased in circumcised patients with thermo coagulator as compared with those who underwent the conventional approach regardless of the postoperative edema. Using thermal coagulator for circumcision HIV-infected children is a safe and fast method. Ritual circumcision is one of the most common surgical procedures performed in Muslim countries. Potential benefits of decreased incidwence of urinary tract infection and carcinoma of penis has been acknowledged by the American Academy of Pediatrics. For the procedure, it should be easy to perform to be successful, avoid excessive hemorrhage and achieve a good cosmetic and functional result with minimal postoperative care. One of shortcomings of electrosurgery is the infection rating that is the active electrode can remain cold during all operation and the probability of transfer of bacteria and viruses on an operational field remains high. Use of thermal coagulator with removable tips completely excludes the above shortcomings. Application of a thermal coagulator at excision of an extreme flesh in one step by our technique reduces operation time by 6-8 times. And temperature increase of a tip to high temperatures reduces risk of a bacterium and viruses transfer. Using thermal coagulator for circumcision of HIV-infected children is a safe and fast method.

Key words: Circumcision, thermal coagulator, HIV-infected children, bacterium, fast method

INTRODUCTION

Ritual circumcision is one of the most common surgical procedures performed in Muslim countries. Potential benefits of decreased incidwence of urinary tract infection and carcinoma of penis has been acknowledged by the American Academy of Pediatrics (Wiswell and Hachey, 1993; Anonymous, 1999; Peters and Kass, 1997; Hoopes *et al*., 2001). Circumcision of HIV-infected children requires great caution. Device for circumcision of HIV-infected children should be safe and prevent transmission of infection. For the procedure, it should be easy to performto be successful, avoid excessive hemorrhage and achieve a good cosmetic and functional result with minimal postoperative care.

Extensive hemostasis at the time of circumcision is necessary to avoid bleeding complications post-operatively. Electrosurgery can be used safely and effectively for routine penile procedures, providing a bloodless operative field with good cosmetic results (O'Sullivan *et al*., 1996; Arash *et al*., 2014; Brill, 2011). Bipolar electrocautery has inherent advantages regarding safety and potentially efficacy when compared to monopolar electrocautery use for obtaining hemostasis. When we use electrosurgery current is passed through the body of the child, it is not safe for the body (Tokar *et al*., 2013; Anonymous, 2013).

We performed prospective review of our patients in order to compare the rate of postoperative bleeding complications following circumcision and revision circumcision with bipolar electrocautery or thermo coagulator.

MATERIALS AND METHODS

The study was performed in all HIV-infected children who were at the mother and child's center in the city of

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Shymkent, Kazakhstan during 5 year period. Data analysed were the ages, operation time, postoperative bleeding rates and infection rates.

Procedures performed with use of bipolar electrocautery as the method for achieving hemostasis for dissection there was used a scalpel technique. Following marking of the incisions, the outer and inner layers of the prepuce were incised with ascalpel. Complete haemostasis was ensured using bipolar diathermy.

When we used thermo coagulator, we had cut the foreskin in a single step. Simultaneous dissection with coagulation which economized operative time.

Data analysed were the patient age, procedure, method of electrocautery (thermo coagulator vs bipolar), operation time, postoperative bleeding rates and infection rates. Statistical analysis was performed using SAS 9.1 Software.

RESULTS AND DISCUSSION

A total of 34 patients were enrolled in the study. Age at operation was an average of 4.7 years and a median 1.5 years (Table 1). There were an increase and drop in the number of circumcision done at our centre over the years (2008-2012) (Fig. 1). Return for bleeding complication for all surgeons was 0/34 (0.0%). Operative times were shorter in the thermo coagulator group (mean 1.5 min) compared to conventional group (mean 15.3 min) ($p<0.01$). Early postoperative morbidity were significantly decreased in circumcised patients with thermo coagulator as compared with those who underwent the conventional approach regardless of the postoperative edema (22 against 10; $p = 0.02$).

The research conducted by us showed that application of a thermal coagulator for a dissection and coagulation at a circumcision at HIV-positive children is priority. According to researchers bipolar coagulators have a number of shortcomings. Modern electrosurgical devices do not influence on work of heart. Nevertheless, if in the generator there are not service ability or failures in the power supply network, there is a big probability of negative impact on work of heart.

One of shortcomings of electrosurgery is the infection rating that is the active electrode can remain cold during all operation and the probability of transfer of bacteria and viruses on an operational field remains high (Lee *et al*., 2011; Hoffman *et al*., 1984).

Use of thermal coagulator with removable tips completely excludes the above shortcomings. Application of a thermal coagulator at excision of an extreme flesh in one step by our technique reduces operation time by 6-8 times. And temperature increase of a tip to high

Table 1: Age groups at circumcision of the children

Age groups (years old)	No. of patients	Percentage of total
3	6	17.6
4	10	29.4
5	10	29.4
6	6	17.6
7	1	2.9
9	1	2.9
Total	34	100.0

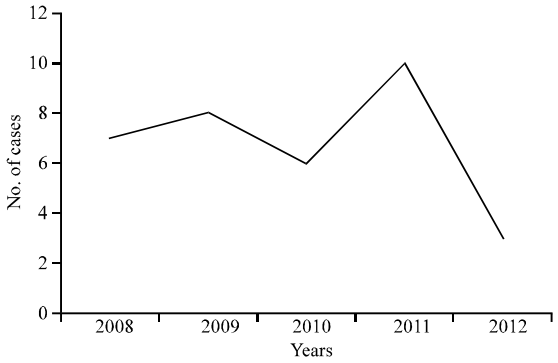

Fig. 1: Annual dynamics of the number of cases (2008-2012)

temperatures reduces risk of a bacterium and viruses transfer. There was not a recurrence of bleeding. Unfortunately in our research, we did not carry out the analysis of remote results.

In electrosurgery, heat is generated in tissue; therefore an active electrode may remain cold during electrosurgery and bacteria and viruses transfer to the surgical wound (Lucas, 1984; Ohjimi and Ohjimi, 1981; Twisselmann, 2008; Elmore *et al*., 2007). Disposable or sterilized electrodes should be used.

CONCLUSION

Minimum operating time and the complete absence of bleeding is achieved when we use thermo coagulator. Using thermal coagulator for circumcision of HIV-infected children is a safe and fast method.

REFERENCES

Anonymous, 1999. Circumcision policy statement. American Academy of Pediatrics. Task Force on Circumcision. Pediatrics; 103: 686-693.

Anonymous, 2013. The Association of Surgeons in Training web site. Principles of electrosurgery. http://www.asit.org/assets/documents/Prinicpals_in_electrosurgery.pdf.

Arash, T., M. Parisa and F.S. Laura *et al.*, 2014. Electrosurgery: Part II. Technology, applications and safety of electrosurgical devices. J. Am. Academy of Dermatology, 70 (e1-612.e14): 607.

Brill, A.I., 2011. Electrosurgery: principles and practice to reduce risk and maximize efficacy. Obstet. Gynecol. Clin. North Am., 38: 687-702.

Elmore, J.M., E.A. Smith, A.J. Kirsch, 2007. Sutureless circumcision using 2-Octyl Cyanocrylate (Dermabond): appraisal after 18 month experience. Urology, 70: 803-806.

Hoopes, P.J. D.J. Cozzolino, M. Cendron and L. Bartholomew, 2001. Is penile electrocautery safe? Histological and computational tempeature assessment in an animal model. SPIE; 4247: 77-87.

Hoffman, S., P. Metz and J. Ebbehoj, 1984. A new operation for phimosis: prepuce-saving technique with multiple Y-V-plasties. Br. J. Urol., 56 (3): 319-321.

Lee, H.S., D.H. Lee, C.H. Won, H.W. Chang, H.H. Kwon and K.H. Kim *et al.*, 2011. Fractional rejuvenation using a novel bipolar radiofrequency system in Asian skin. Dermatol. Surg., 37: 1611-1619.

Lucas, M.G., 1984. A method of circumcision. Br. J. Urol., 56 (5): 551-553.

O'Sullivan D.C., M.R. Heal and C.S. Powell, 1996. Circumcision: how do urologists do it? Br. J. Urol., 78: 265-70.

Ohjimi, T. and H. Ohjimi, 1981. Special surgical techniques for relief of phimosis. J. Dermatol. Surg. Oncol., 7 (4): 326-330.

Peters, K.M. and E.J. Kass, 1997. Electrosurgery for routine pediatric penile procedures. J. Urol., 157: 1453-1455.

Tokar, J.L., B.A. Barth, S. Banerjee, S.S. Chauhan, K.T. Gottlieb and V. Konda *et al.*, 2013. Electrosurgical generators. Gastrointest. Endosc., 78: 197-208.

Twisselmann, B., 2008. Circumcision: right or wrong?. BMJ., 336: 60.

Wiswell, T.E. and W.E. Hachey, 1993. Urinary tract infection and the uncircumcised state: An update. Clin. Pediatr. (Phila), 32: 130-134.