VOLUME-7, ISSUE-2, FEBRUARY-2018 • PRINT ISSN No 2277 - 8160

Original Research Paper

General Surgery

USE OF BIPOLAR CAUTERIZATION IN CIRCUMCISION

Dr. Parvez Mujawar	Associate Professor, Dept. of General Surgery, Government Medical College, Dhule,
Dr. Agraj Mishra	Junior Resident, Dept. of General Surgery, A.C.P.M. Medical College, Dhule,
Dr. Tabish Rayee	Junior Resident, Dept. of General Surgery, A.C.P.M. Medical College, Dhule,
Dr. Nirav Patel	Junior Resident, Dept. of General Surgery, A.C.P.M. Medical College, Dhule,

ABSTRACT Male circumcision is done very frequently in all Pediatric surgery set up. Though several open and device based techniques of circumcision have been described in literature but no single procedure is taken as gold standard in terms of prevention of complications. In India, generally population are from tribal regions and due to non availability of resources dorsal slit technique is preferred and accepted but had complications like injury to urethra/glans, skin laceration, bleeding and infection. Bipolar cauterization holds its merits and demerits. In our experience the use of bipolar technique is safe, mostly complication free and gives good cosmetic outcome.

KEYWORDS : Circumcision, bipolar cautery, dorsal slit technique, mujawar technique.

Introduction:

Circumcision is the surgical removal of the foreskin of the penis or prepuce. The procedure is most often an elective surgery performed on babies and children for religious or cultural reasons.[1] In other cases it may be done as a treatment for certain medical conditions like phimosis, balanoposthitis and chronic UTI or for preventative reasons which reduces the risk of HIV and carcinoma of penis.

Circumcision is commonly practiced in the Jewish, Islamic faiths and Christianity. Certain African cultural groups, such as the Yoruba and the Igbo of Nigeria, customarily circumcise their infant sons. About 93% of Filipino men are circumcised.[2]

Circumcision is contraindicated in infants with certain genital structure abnormalities, such as a misplaced urethral opening (as in hypospadias and epispadias), curvature of the head of the penis (chordee), or ambiguous genitalia, because the foreskin may be needed for reconstructive surgery. Circumcision is contraindicated in premature infants and those who are not clinically stable and in good health.[3][4][5] It is contraindicated in individual, child or adult, who is known to have or has a family history of serious bleeding disorders (hemophilia).

Female circumcision (also known as female genital mutilation) is usually performed for cultural and social reasons by family members and others who are not members of the medical profession.

Currently, most circumcisions in boys and men are performed using one of three open surgical methods. The forceps-guided method, the dorsal slit method, and the sleeve resection method are well described by the World Health Organization in their Manual for Male Circumcision under Local anesthesia.[5]

Circumcision instruments are used at the time of surgery, and the circumcision is complete at the end of the procedure. The Gomco clamp, the Mogen clamp, and Unicirc are surgical instruments.[7] Plastibell, Prepex, Shang Ring and other plastic rings are all circumcision devices, also known as "in situ" devices.[8] Circumcision devices remain on the penis for 4 to 7 days and either spontaneously detach or are removed surgically at a subsequent visit.[8] Circumcision via instrument results in healing by primary intention and healing via devices is by secondary intention, so healing is delayed. All circumcision procedures should involve adequate general or topical anesthesia.[9]

Electrocauterization is the process of destroying tissue (or cutting through soft tissue) using heat conduction from a metal probe heated by electric current. The procedure stops bleeding from small vessels (larger vessels being ligated). Electrocautery applies high frequency alternating current by a unipolar or bipolar method.

In unipolar cauterization, the physician contacts the tissue with a single small electrode while bipolar electrocautery passes the current between two tips of a forceps-like tool. It has the advantage of not disturbing other electrical body rhythms (such as the heart) and also coagulates tissue by pressure.

Currently, bipolar cauterization is in demand and is useful in many surgeries like thyroidectomy, intraspinal surgeries, intracranial surgeries, various endoscopic surgeries and open surgeries.

Materials and method-

The study was conducted in time duration of 1 year in the patient who came to GMC, dhule or in A.C.P.M. Medical college with elective or emergency presentation indicative for circumcision. The study is conducted in 100 patients which were included in the group after excluding patients who did not meet the inclusion criteria and those who met the exclusion criteria.

It was a prospective study in which two groups were made distributing them equally on random basis. One group patient underwent for dorsal slit circumcision and other group of patient underwent with circumcision using bipolar cauterization.

Source data is collected from specially designed case recording progress pertaining to selected patients after explaining them all the opinions of treatment to each patients in the language understood by them or their parents or guardians if minor, and taking their consent is subjected to detailed history of eliction followed by through clinical examination.

INCLUSION CRITERIA:

1. Age more than 1 year to less than 60 years of age.
2. Children with intact prepuce requiring circumcision for religious or cultural reasons.
3. Medical indications for circumcision such as phimosis, paraphimosis, and balanoposthitis.
4. Patient willing to give informed consent.
5. Patient with no other co-morbid conditions.

EXCLUSION CRITERIA:

1. Hypospadias
2. Buried penis
3. Bleeding disorders

Procedure-

Routine blood investigations like CBC, Bleeding time, Clotting time, Blood urea & serum creatinine, random blood sugar are done and child is prepared for IV sedation with caudal block. After caudal block (which takes almost 10-15 minutes for its optimum effect) the child is positioned supine with legs little apart and cautery plate placed under the buttocks. The penis and the adjoining area is prepared with povidone iodine and draped, with a single long sterile sheet with central whole.

- In the first group patient underwent for dorsal slit circumcision where two artery forceps are applied on either side of the prepuce. With slight traction on the prepuce another circumferential knife mark incision is made over the penile skin just proximal to the corona. A dorsal slit is made on the preputial skin down to penile skin mark, after crushing with an artery forcep for 3-5 minutes. The penile skin incision is then deepened to the level of buck's fascia. The preputial skin is resected leaving a 0.5 cm sleeve proximal to the corona. The ventral part of the penile skin incision is deepened only to the level of dartos fascia initially. Then bucks fascia is divided and hemostasis is secured by ligating the bleeding vessels, starting with the frenular artery. The proximal penile skin is then sutured to the coronal preputial sleeve using 4/0 chromic catgut or 4/0 vicryl.

- In the second group, the initial procedure was same and adhesion between glans and prepuce were separated by artery forceps and applying hemostats at 3 and 9 clock position; prepuetial skin was stretched in vertical direction and was cross clamped just beyond tip of glans penis. Penis was protected by left hand of operating surgeon. Skin above the clamp is cut with bipolar diathermy with application of pressure at tip of bipolar forceps after complete removal of skin, clamp is released and hemostasis is checked and prepuetial skin is stitched to mucosa at 12, 3, 6 and 9'o clock position with 4/0 rapid vicryl. Dressing applied.

Steps of bipolar cauterization circumcision:

Figure 1: Application of artery forceps at 3'o clock and 9'o clock position and separation of adhesions.

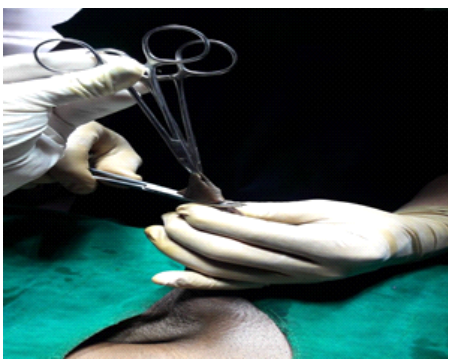


Figure 2: Cross clamping with artery forceps just above the tip of glans.

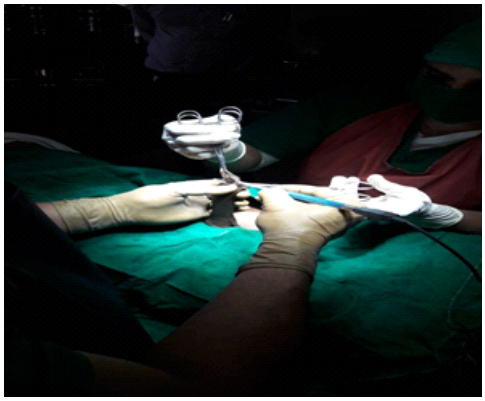


Figure 3: skin above the clamp is cut with bipolar cautery.

Figure 4: Preputial skin is removed.

Figure 5: Skin is stitched to glans mucosa at 12, 3, 6 and 9'o clock position.

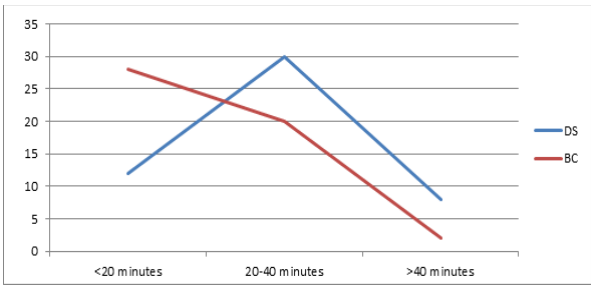
Results:

Table 1: Comparative evaluation of variables in both the group:

Serial numbers	Parameters	Variables	Dorsal slit technique	Bipolar cauterization
1.	Age-	1-5 years	22	26
		6-20 years	12	14
		21-40 years	6	4
		41-60 years	10	6
2.	Marital status-	Married	11	8
		Unmarried	39	42

3.	Duration of surgery-	<20 minutes	12	28
		20-40 minutes	30	22
		>40 minutes	8	00
4.	Injury-	Injury to glans	6	0
		Injury to urethra	0	0
		Dorsal slit technique	Bipolar cauterization	
5.	Post–operative pain	11	12	
6.	Swelling	09	03	
7.	Haematoma formation	05	03	
8.	Wound dehiscene	01	00	
9.	Infection	01	00	

Diagram 1: Line diagram depicting the time taken for circumcission by dorsal slit technique and bipolar cauterization and number of patient operated:



DS- Circumcision by dorsal slit technique; BC- circumcision by bipolar cauterization Here vertical line shows the total number of patients and horizontal line showing the time duration for surgery.

The mean time duration required for surgery in dorsal slit technique is 30 minutes while for bipolar cauterization is 21 minutes.

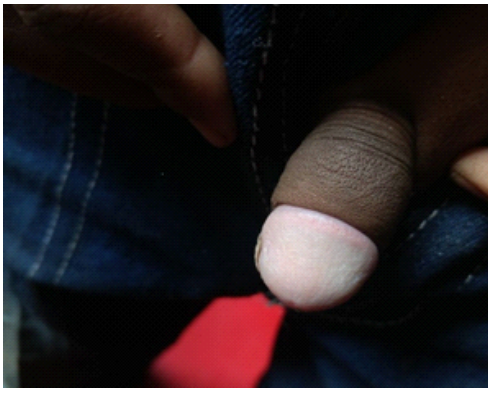


Figure 6: After 2 weeks follow up of patient underwent with bipolar cauterization circumcision.

Discussion:

Circumcision is one of the oldest surgical and ritual procedures.[10] Regardless of what type of procedure is performed, there may be complications. The most common post circumcision complication is bleeding. There are many methods, techniques, instruments, and substances used to reduce the risk of bleeding.11

The use of diathermy for circumcision is controversial.[12] The aim of using electrosurgery for circumcision is to achieve hemostasis.

As in all cases we saw that the most of patients presented were in age group of below 5 years suggesting the need for circumcision to be congenital or for religious purposes.

The study suggests that time required to perform the bipolar cauterization circumcision is less than the dorsal slit circumcision, reducing the operative time. The mean time required for surgery in dorsal slit is 30 minutes and in circumcision by bipolar cauterization is 21 minutes.

The adverse effect associated with bipolar cauterization circumcision is less as compared with dorsal slit technique. As we saw in our study; that no patient received injury to glans as it is non exploring procedure it minimizes or nullify the injury which generally occurs with other procedures.

As there is less handling of tissue in bipolar cauterization circumcision so post operative swelling is seen in less number of patient and post operative results were better.

References:

1. "Male circumcision: Global trends and determinants of prevalence, safety and acceptability. World Health Organization. 2007. Archived(PDF) from the original on 2015-12-22.
2. "Tuli a rite of passage for Filipino boys". May 6, 2011. Archived from the original on 8 December 2015. Retrieved 6 December 2015.
3. Rudolph C, Rudolph A, Lister G, First L, Gershon A (18 March 2011). Rudolph's Pediatrics, 22nd Edition. McGraw-Hill Companies, Incorporated. p. 188. ISBN 978-0-07-14972-7. Archived from the original on 18 January 2016.
4. Hay W, Levin M (25 June 2012). Current Diagnosis and Treatment Pediatrics 21/E. McGraw Hill Professional. pp. 18–19. ISBN 978-0-07-177971-5. Archived from the original on 18 January 2016.
5. "Manual for male circumcision under local anaesthesia". Geneva: World Health Organization. December 2009. Archived from the original on 2012-12-27.
6. Lane, V; Vajda, P; Subramaniam, R (2010). "Paediatric sutureless circumcision: a systematic literature review". Pediatr Surg Int. 26 (2): 141–4. doi:10.1007/s00383-009-2475-y.
7. Framework for Clinical Evaluation of Devices for Adult Male Circumcision (PDF)(Report). WHO. 2007.
8. Ridzon, R; Reed, JB; Sgaier, SK; Hankins, C (2016). "VMMC Devices-Introducing a New Innovation to a Public Health Intervention". Journal of acquired immune deficiency syndromes (1999). 72 Suppl 1: –1–4. doi:10.1097/QAI.0000000000000967. PMC 4936419 . PMID 27331583.
9. American Academy of Pediatrics Task Force on Circumcision (2012). "Technical Report". Pediatrics. 130 (3): e756–e785. doi:10.1542/peds.2012-1990. ISSN 0031-4005. PMID22926175.
10. Fraser ID, Tjoe J. Circumcision using bipolar diathermy scissors: A simple, safe and acceptable new technique. Ann R Coll Surg Engl 2000;82:190-1.
11. Kazem MM, Mehdi AZ, Golrasteh KZ, Behzad FZ. Comparative evaluation of two techniques of hemostasis in neonatal circumcision using the Plastibell device. J Pediatr Urol 2010;6:258-60.
12. Moreno CA, Realini JP. Infant circumcision in an outpatient setting. Tex Med 1989;85:37-40.