Section: General Surgery

Original Research Article

TO EVALUATE THE EFFECTIVENESS OF V FLAP METHOD OF CIRCUMCISION IN TREATMENT OF PHIMOSIS IN ADULTS

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ABSTRACT

Background: Circumcision is a surgical procedure performed for therapeutic, prophylactic, and hygienic reasons. In adults it is commonly used to treat pathological phimosis caused by scarring and fibrosis. Traditional surgical methods like dorsal slit and sleeve resection are effective for treatment of phimosis but have complications such as bleeding and poor cosmetic outcomes. The V flap method is a relatively newer technique that preserves the inner foreskin and frenulum thereby enhancing postoperative sensitivity and providing better cosmetic results. It also reduces complications and recovery time. However, limited studies and lack of standardized guidelines highlight the need for further research on its safety, efficacy and long-term outcomes.

Materials and Methods: This prospective study was conducted at Government Stanley Medical College Chennai. The purpose of study was to evaluate the V-flap circumcision method for phimosis. Male patients having phimosis were included in this study on the basis of a predefined inclusion and exclusion criteria. Penile block anesthesia was used for surgery in all cases. An inverted T-incision and V-flap technique was used. chromic catgut sutures were used for closure. Postoperative care included antibiotics, analgesics. Follow-up visits were done at 1, 2, and 4 weeks to assess healing, complications, and patient satisfaction. Data was analyzed using Chi-square and ANOVA tests. SPSS Version 23 was used for statistical analysis. A p-value of <0.05 was considered statistically significant.

Results: This study included 30 male patients aged 14 to 30 years (mean age: 21.23 ± 4.54) with phimosis who underwent V-flap circumcision. The mean surgery duration was 30.02 ± 4.4 minutes. No complications occurred in 22 (80%) cases, while 5 (16.66%) reported skin color discrepancy, and 3 (10%) had suture line bleeding. No visible scars were noted. Significant postoperative improvements were observed in urinary symptoms (spraying of urine, dysuria), pain during erections and sexual intercourse, inflammation (swelling, redness, foul-smelling discharge), and psychological impacts (anxiety, embarrassment), with p-values < 0.05. Overall, the V-flap method effectively relieved multiple symptoms and enhanced patient satisfaction.

Conclusion: V Flap method of circumcision is a simple, safe and effective method with a comparable outcome to the Dorsal slit method but with reduced incidence of erection related complications.

Keywords: Circumcision, Phimosis, V-flap method, Postoperative outcomes.

INTRODUCTION

Circumcision is a surgical procedure in which foreskin (prepuce) that covers the glans penis is surgically removed.[1] Circumcision is performed for a variety of reasons that includes therapeutic and hygienic purposes. Therapeutically, it is indicated in conditions like phimosis, paraphimosis, recurrent

balanitis, and posthitis. Prophylactic circumcision is advocated in certain populations to reduce the risk of urinary tract infections, sexually transmitted diseases and penile cancer. Additionally, in regions where HIV prevalence is high circumcision has been shown to lower the risk of heterosexual transmission of HIV.[2]

Phimosis is characterized by inability to retract the foreskin over the glans penis. Phimosis is classified into physiological and pathological types. Physiological phimosis is a normal developmental condition that is seen in infants and young children where the foreskin is non-retractable due to presence of adhesions between the glans and the prepuce. This resolves on its own as the child grows. Pathological phimosis is abnormal and is often caused by scarring, fibrosis, or inflammation secondary to conditions such as balanitis xerotica obliterans (BXO), chronic balanoposthitis and trauma. The pathophysiology of pathological phimosis involves chronic inflammation leading to fibrosis and cicatricial ring formation at the preputial orifice which hinders retraction.[3]

Treatment options for phimosis differs on the basis of severity and underlying cause. Conservative management includes topical corticosteroids which have shown efficacy in mild to moderate cases. Topical immunomodulators such as tacrolimus, have also been used with varying success. Surgical intervention is indicated when conservative measures fail or when complications like recurrent balanitis, urinary obstruction paraphimosis occur. Surgical options include preputioplasty, dorsal slit and circumcision.[4] Circumcision is widely regarded as the definitive surgical treatment for pathological phimosis. It involves complete or partial removal of the foreskin thereby effectively eliminating the constrictive preputial ring. Conventional circumcision techniques (such as the dorsal slit and sleeve resection methods) are effective but are often associated with complications (bleeding, infection, pain and unsatisfactory cosmetic results). With the advancement of surgical techniques use of devices like the Plastibell, Gomco clamp, and Shang Ring have gained popularity due to their ease of use and reduced complication rates.[5]

The choice of circumcision method largely depends on the surgeon's preference, patient's condition and desired cosmetic outcome. The ideal circumcision technique should not only relieve the obstruction but also provide an aesthetically pleasing result with minimal complications. This has led to the development of alternative techniques, including the V flap method of circumcision, which is gaining recognition for its functional and cosmetic advantages.[6] The V flap method of circumcision is a relatively new technique that involves creating a V-shaped incision on the prepuce, preserving the inner foreskin, and then advancing the flap to widen the constricted preputial ring. This technique allows for preservation of the mucosal surface. Additionally, the V flap method provides a more natural-looking cosmetic outcome compared to conventional circumcision techniques. For these reasons this method is becoming a preferred choice among patients concerned with aesthetics.[7]

One of the primary advantages of the V flap method is its ability to preserve the frenulum and mucosal collar. This plays a significant role in penile sensitivity. The technique also minimizes tissue excision thereby reducing the risk of complications such as meatal stenosis, excessive bleeding, and painful erections.[8] Moreover the V flap circumcision offers the advantage of a shorter recovery period and reduced postoperative pain. Despite its potential benefits this method is underutilized and not widely known partly due to limited studies and a lack of standardized surgical guidelines.[9]

This study aims to evaluate the outcome of the V flap method of circumcision in patients with phimosis.

MATERIALS AND METHODS

A prospective observational study was conducted in the Department of General Surgery, Government Stanley Medical College, Chennai. The duration of study was 6 months extending from June 2024 to November 2024. Institutional Ethics Committee was obtained before undertaking study. Written and informed consent was taken from all participant. Patients diagnosed with phimosis were included in this study on the basis of a pre-defined inclusion and exclusion criteria. Before surgery a thorough clinical evaluation was done in all cases. A detailed history was taken and physical examination was done in all cases. Routine investigations including complete blood count and coagulation profile was done in all cases. Patients were counselled in detail about the surgical procedure after which written informed consent was obtained.

Surgical Procedure

All surgeries were performed under penile block anesthesia using 2% lignocaine infiltration. Preputial dilatation was performed and adhesions between the glans and prepuce were released. The surgical procedure involved the V-flap method. An inverted T-shaped incision was made on the dorsal skin of the penis. The arms of the T-incision were extended circumferentially around the penile shaft. Excess prepuce was excised distally and the V-flap was fashioned with the help of inner mucosal layer of the prepuce. Excess mucosal tissue was excised thereby leaving a 0.5 cm cuff. The V-flap was then fed into the defect that was created by the stem of the T-incision. The flap was then sutured into the V-shaped defect created on the penile skin using 2-0 or 3-0 chromic catgut suture with simple interrupted stitches. Stay sutures were placed at 12, 3, and 9 o'clock positions. The rest of the wound was then closed by suturing the mucosa to the penile skin. The suture line was covered with betadine ointment and a sterile dressing was applied. [Figure 1]

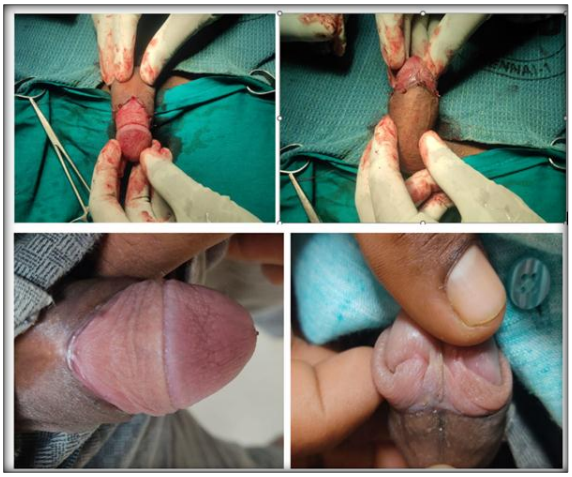

Figure 1: Post-Operative Images showing V flap (Upper row), Penile appearance during follow up (lower row)

Postoperatively, patients were administered antibiotics. Analgesics were prescribed for pain as required. Sterile dressings were changed regularly and sutures were inspected for signs of complications such as infection or dehiscence. Patients were followed up at 1 week, 2 weeks, and 4 weeks postoperatively to assess wound healing, pain and possibility of complications (infection, bleeding, or wound dehiscence). Functional outcomes such as patient satisfaction and cosmetic appearance were assessed at each follow up. Any complications were managed accordingly.

Data was recorded in a pre-designed study pro forma. Qualitative data were represented as frequency and percentage, while quantitative data were presented as mean ± standard deviation (SD). The association between qualitative variables was analyzed using the Chi-square test. A p-value of <0.05 was considered statistically significant. Results were graphically represented where deemed necessary. Statistical analysis was performed using SPSS Version 23.0, and Microsoft Excel 2021 was used for graphical representation.

Inclusion Criteria

- Male patients aged between 14 to 30 years diagnosed with phimosis.
- Patients ready to give written consent to be part of study.
- Patients fit for anesthesia and surgical intervention.

Exclusion Criteria

- Patients below 14 years and above 30 years of age.
- Patients with active balanoposthitis or urinary tract infections or balanoposthitis xerotica obliterans.
- Patients not willing for circumcision.
- Patients with comorbidities such as Diabetes mellitus or skin conditions like Tinea.
- Patients unfit for anesthesia.
- Patients with congenital anomalies including, Hypospadias, Epispadias and Megalourethra.
- Patients with a history of prior penile surgeries

RESULTS

30 male patients between the age group of 14 to 30 and having phimosis were included in this study. The mean age of the patients was 21.23 +/- 4.54 years. [Figure 2]

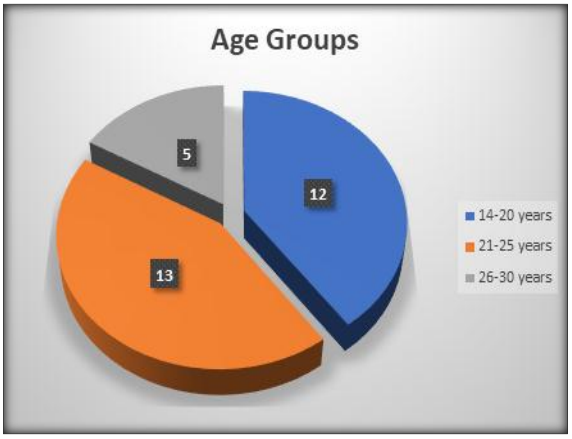

Figure 2: Age distribution of studied cases.

The duration of surgery ranged between 23 to 39 minutes. The mean surgery time was 30.02 +/- 4.4 minutes. [Figure 3]

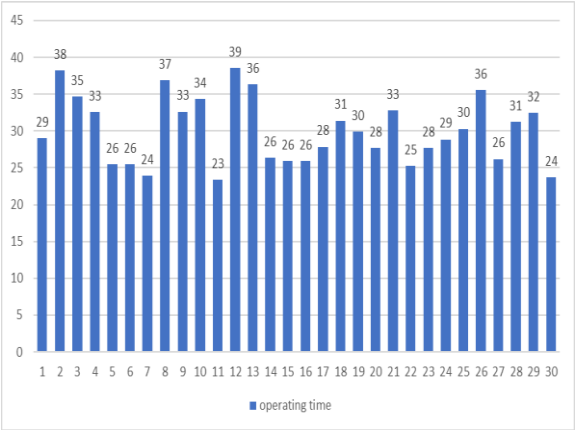

Figure 3: Surgical time of surgery in studied cases.

The analysis of complications in studied cases showed that there were no complication in 22 (80%) cases. In 5 patients (16.66%) cases there was Skin colour discrepancy as reported by the patients and in 3 (10%) cases suture line bleeding was seen (Figure 3). No obvious scar was seen in any of the cases. [Figure 4]

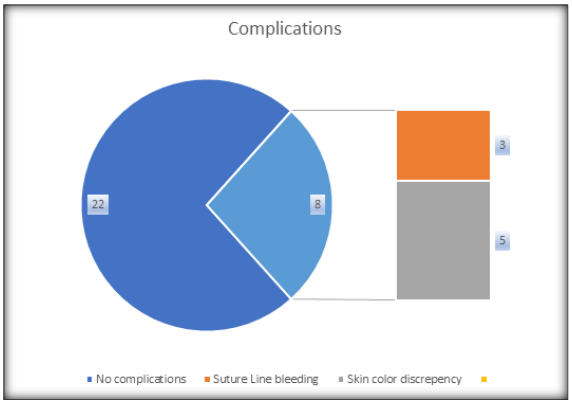

Figure 4: Complications in studied cases

The analysis of signs and symptoms before and after surgery showed significant improvements in several areas. Urinary symptoms like spraying of urine and painful urination decreased significantly ($p = 0.02$ and $p = 0.01$, respectively). Pain and discomfort, including pain during erections and sexual intercourse, were also significantly reduced ($p = 0.002$ and $p = 0.01$). Inflammation symptoms such as swelling, redness, and foul-smelling discharge showed significant decreases ($p = 0.005$ and $p = 0.014$). Psychological impacts like anxiety or embarrassment were notably lower postoperatively ($p = 0.014$). Most other symptoms improved, though some changes were not statistically significant. Overall, the surgery led to substantial relief in multiple symptoms. [Table 1]

Table 1: Comparison of Signs and symptoms in preoperative and postoperative period

ategory	Signs and Symptoms	Preoperative (Number, Percentage)	Postoperative (Number, Percentage)	P-Value
Urinary Symptoms	Difficulty urinating	6 (20.00%)	1 (3.33%)	0.11
	Spraying of urine	5 (16.67%)	0 (0.00%)	0.02*
	Painful urination (Dysuria)	13 (43.33%)	2 (6.67%)	0.01*
Pain and Discomfort	Pain during erections	17 (56.67%)	2 (6.67%)	0.002*
	Pain during sexual intercourse	10 (33.33%)	1 (3.33%)	0.01*
	Soreness or irritation	8 (26.67%)	1 (3.33%)	0.03*
Inflammation and Infection	Swelling and redness	12 (40.00%)	1 (3.33%)	0.005*
	Foul-smelling discharge	7 (23.33%)	0 (0.00%)	0.014*
	Recurrent infections	5 (16.67%)	1 (3.33%)	0.2022
Skin Changes	Cracking or bleeding	9 (30.00%)	2 (6.67%)	0.09
	Scarring or fibrosis	4 (13.33%)	1 (3.33%)	0.35
	Thickened or leathery foreskin	5 (16.67%)	0 (0.00%)	0.05
Psychological Impact	Anxiety or embarrassment	15 (50.00%)	3 (10.00%)	0.014*
	Reduced sexual satisfaction	9 (30.00%)	2 (6.67%)	0.09
Complications	Paraphimosis	2 (6.67%)	0 (0.00%)	0.49
	Phimosis-related balanoposthitis	3 (10.00%)	0 (0.00%)	0.23
	Obstructive uropathy	1 (3.33%)	0 (0.00%)	1

** Significant*
*** More than 1 sign/symptom was present in patients.*

DISCUSSIONS

Phimosis, the inability to retract the foreskin over the glans penis, is a common condition affecting males of various age groups. It can lead to complications such as pain, recurrent infections, difficulty in urination, and sexual discomfort, significantly impacting the quality of life. While conservative treatments like topical steroids are effective in mild cases, surgical intervention remains the definitive solution for persistent or severe phimosis. Traditional circumcision techniques, though widely practiced, may be associated with complications such as pain, excessive tissue removal, altered sensation, and unsatisfactory cosmetic outcomes.[10]

The V-flap method of circumcision has emerged as a promising alternative. One of the important aspect of this method is preservation of foreskin tissue while effectively treating phimosis. This technique involves creating a V-shaped incision, which is then reconstructed to allow adequate foreskin mobility without full circumferential excision. The V-flap method is believed to offer several advantages, including reduced postoperative pain, improved cosmetic appearance, and preservation of penile sensitivity. Moreover, by maintaining a more natural anatomical contour, this approach may lead to better psychological and sexual satisfaction postoperatively.[11]

Among various circumcision techniques, the ring method is the quickest, requiring the least surgical time due to its simplicity and efficiency. In contrast, the conventional cut-and-suture method takes slightly more time but remains faster than more

intricate procedures. The V-flap method requires the longest operative time because it involves creating and reconstructing a V-shaped flap to preserve more tissue and achieve better foreskin mobility. Despite the longer duration, the V-flap method is associated with superior cosmetic outcomes. Jin XD et al reported that conventional circumcision took an average of 24.2 ± 3.2 minutes.[12] This duration is longer than the ring method but shorter than the V-flap technique which in our study averaged 30.02 ± 4.4 minutes. Similar shorter durations for conventional circumcision have been observed by Wilcken A et al,[13] and Yue C et al.[14]

The analysis of outcome showed significant postoperative improvements in urinary symptoms, including spraying of urine and painful urination ($p = 0.02$ and $p = 0.01$, respectively). Pain during erections and sexual intercourse, as well as inflammation symptoms like swelling and redness, were also significantly reduced. Psychological impacts such as anxiety and embarrassment decreased notably ($p = 0.014$). Overall, the surgery provided substantial relief in multiple symptoms. A J Emmett et al conducted a study to evaluate the effectiveness of the 4 V-flap technique for repairing preputial stenosis (phimosis) as an alternative to circumcision.[15] For this purpose, the authors utilized the V-flap method over a period of 3 years, particularly in cases where preserving all available tissue was essential, such as when the penis was small. The study found that the V-flap repair was effective in treating phimosis without complications. The V-flap technique was generally simpler and equally effective. On the basis of these findings, the authors concluded that the V-flap method is a reliable and effective alternative to circumcision for the treatment of preputial stenosis.

CONCLUSION

The V-flap circumcision method demonstrated effective relief of phimosis symptoms with minimal complications. It significantly improved urinary symptoms, pain, inflammation, and psychological impacts, enhancing overall patient satisfaction. The procedure showed a low complication rate, with only minor issues like skin color discrepancy and suture line bleeding. Given its favourable functional and cosmetic outcomes, the V-flap technique is a promising alternative for circumcision in patients with phimosis.

Conflict of Interest: None.

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