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# A COMPARATIVE STUDY OF STAPLER CIRCUMCISION AND CONVENTIONAL CIRCUMCISION

General Surgery

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## ABSTRACT

**Aims and Objectives:** To do comparative study between conventional and stapler circumcision. **Materials and Methods:** The study enrolled 24 cases in total. 12 cases of conventional circumcision and 12 cases of staplercircumcision. The results were compiled and analyzed. **Results:** Majority of study subjects belonged to age group 26-35 yrs followed by 36-45 yrs. Both groups were compared on basis of - Diagnostic parameters (BXO, congenital phimosis, recurrent balanoposthitis, recurrent UTI, and others).Intra- op parameters (Mean operative time, mean blood loss, mean pain score) Post-op parameters (Mean healing time, mean satisfaction, post-operative stay) We observed that complications such as bleeding, wound dehiscence, oedema and infection were seen in conventional circumcision and no such complications were seen in suture less circumcision. **Conclusion-** Today is the era of 'Wireless' in technology and here comes era of 'Suture less' in field of surgery. Every surgeon wishes for better wound healing with better cosmesis without complications and early back to activities.All this is possible with use of staplers for circumcision. Stapler circumcision is associated with short operative time, lower blood loss volume, less pain, few post- operative complications and less post-operative stay.

## KEYWORDS

circumcision, phimosis, paraphimosis, recurrent balanitis, posthitis, prepucial pearls, redundant foreskin, STD, genital ulcer disease, dorsal slit.

## INTRODUCTION

### AIM

Comparative study between conventional and stapler circumcision.

### OBJECTIVES

To do comparative study between conventional and stapler circumcision in terms of:

1. Operative time
2. Pain score
3. Blood loss
4. Healing time
5. Patient satisfaction
6. Post-operative stay
7. Post-operative complication

## MATERIAL AND METHODS

**Study Design:** Study design is observational prospective study.

**Study Site:** The prospective study will be conducted in Department of General Surgery, S V Medical college,Tirupati

**Study Duration :** June 2022 to may 2023 (12 Months)

**Source of Data:**

Patients admitted to S V Medical college and presenting as case of Phimosis, balanopasthitis, recurrent balanoposthitis, balanitis xerotica obliterans, recurrent UTI

**Sample Size:** 12 cases of conventional circumcision and 12 cases by stapler. Results expressed in percentage.

**Study Criteria Inclusion Criteria**

1. Religious or cultural
2. Balanitis Xerotica Obliterans
3. Phimosis
4. Balanoposthitis
5. Recurrent balanoposthitis
6. Recurrent UTI

**Exclusion Criteria**

1. Hypospadias
2. Concealed penis
3. Sexually Transmitted Diseases
4. Paraphimosis

**Period of Follow Up**

All patients were evaluated during hospital stay and followed up on - day 1, 1, 2, 3 weeks, 1 and 3 months and were observed for any complications.

**METHODOLOGY**

- Study was based on prospective randomized clinical trial.
- All those cases which satisfy inclusion criteria were included in study.
- Data was collected from detailed history, clinical examination and preoperative investigations, duration of procedure, duration of hospital stay, total expenditure, postoperative pain, postoperative immediate and delayed complications, using a standard, semi-structured, pre-validated case record proforma.

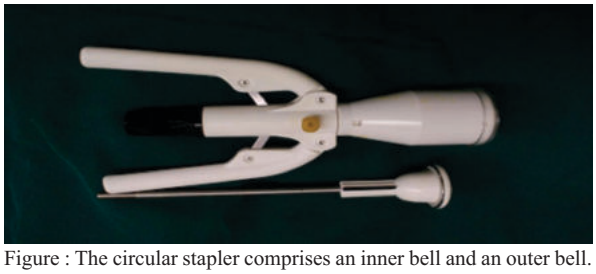

Figure : The circular stapler comprises an inner bell and an outer bell. The inner bell is designed to protect the glans. The outer bell has two cutting trigger handles, a regulating screw, a circular blade, staples, a safety shield, and a bolt. The circular blade and staples are hidden in the outer bell and protected by the safety shield and bolt[1].

**Procedure :**

1) The penis is measured just below the glans to determine the appropriate size of the stapler device.
2) After surgically scrubbing the penis with povidone-iodine, a dorsal penile nerve block and circumferential block are performed with 1% lidocaine.
3) The inner bell is placed inside the foreskin to cover the glans; the edge of the bell is at the level of the coronal sulcus. If the patient has severe phimosis, a dorsal slit should be made to correctly position the inner bell.
4) The safety shield is removed from the outer bell.
5) The outer bell is placed over the inner bell. The frenulum should be kept intact. The safety bolt is then removed.
6) The screw is rotated clockwise to sandwich the foreskin tightly; the handles are triggered to cut the foreskin and the wound is closed by staples at the same time.

7) The device is unscrewed and removed.
8) The wound in the foreskin is checked and pressed with gauze for 1 to 2 min to stop any bleeding.
9) Hemostasis is achieved with a compression bandage.

## RESULTS

### Age distribution

In the present study we assessed the age distribution of the study subjects. We observed that majority of the study subjects belonged to the age group of 26 to 35 years (33.33% and 41.66% in either group), followed by 36 to 45 years (16.66% and 25% in either group.)

| Age distribution | Conventional group | | Sutureless group | |
|---|---|---|---|---|
| | Number of subjects | Percentage | Number of subjects | Percentage |
| Less than 25 years | 3 | 25 | 2 | 16.66 |
| 26 to 35 years | 4 | 33.33 | 5 | 41.66 |
| 36 to 45 years | 2 | 16.66 | 3 | 25 |
| 46 to 55 years | 2 | 16.66 | 2 | 16.66 |
| More than 55 years | 1 | 8.33 | 0 | 0.00 |
| Total | 12 | 100 | 12 | 100 |

### Diagnosis

In the current study we assessed the Diagnosis among the study subjects. We observed that Balanitis Xerotica Obliterans was reported in 16.66% subjects in first group, while 8.33% subjects in second group, Congenital phimosis was reported in 8.33% subjects in first group, while 16.66% subjects in stapler group, Recurrent balanoprosthatitis was reported in 25% subjects in both groups, Recurrent UTI was reported in 25% subjects in both groups, Others was reported in 25% subjects in both groups.

| Diagnosis | Conventional group | | Stapler group | |
|---|---|---|---|---|
| | Number of subjects | Percentage | Number of subjects | Percentage |
| Balanitis Xerotica Obliterans | 2 | 16.66 | 1 | 8.33 |
| Congenital phimosis | 1 | 8.33 | 2 | 16.66 |
| Recurrent balanoprosthatitis | 3 | 25 | 3 | 25 |
| Recurrent UTI | 3 | 25 | 3 | 25 |
| Others | 3 | 25 | 3 | 25 |
| Total | 12 | 100.00 | 12 | 100.00 |

### Sexual satisfaction

In the current study we assessed Sexual satisfaction among the study subjects. We observed that 58.33% subjects in first group and 66.66% subjects in stapler group had sexual experience. The study subjects were comparable (The chi- square statistic is 0.1576. The p-value is. 691398. Not significant at p < .05.)

| Sexual satisfaction | Conventional group | | Stapler group | |
|---|---|---|---|---|
| | Number of subjects | Percentage | Number of subjects | Percentage |
| Yes | 7 | 58.33 | 8 | 66.66 |
| No | 5 | 41.66 | 4 | 33.33 |
| Total | 12 | 100.00 | 12 | 100.00 |
| significance | The chi-square statistic is 0.1576. The p-value is. 691398. Not significant at p < .05. | | | |

### Intra operative parameters

In the current study we assessed **Intra operative parameters** among the study subjects. We observed that Mean Operating time in Conventional group was24.2 min and in Stapler group was 6.8 min,

Mean Blood loss in Conventional group was9.4 ml and in Stapler group was 1.8 ml, Mean Pain score in Conventional group was 5.8 and in Sutureless group was 4.

| Parameters | Conventional group | Stapler group | Significance |
|---|---|---|---|
| Mean time Operating | 24.2 ± 3.41 min | 6.8 ± 1.5 min | The t-value is 18.66649. The p-value is < .00001. The result is significant at p < .05. |
| Mean Blood loss | 9.46 ± 1.19ml | 1.8 ± 0.68 ml | The t-value is 19.86633. The p-value is < .00001. The result is significant at p < .05. |
| Mean Pain score | 5.84 ± 0.80 | 40 ± 0.70 | The t-value is 6.23149. The p- value is < .00001. The result is significant at p < .05. |

### Post operative parameters

In the current study we assessed **Post operative parameters** among the study subjects. We observed that Mean Healing time in Conventional group was 14.4 days and in Stapler group was 12.5 days, Mean Satisfaction in Conventional group was 90% and in Stapler group was 92%, Post operative hospital stay Conventional group was 3.5 days and in Stapler group was 2.2 days

| Parameters | Conventional group | Stapler group | Significance |
|---|---|---|---|
| Mean Healing time | 14.4 ± 0.87 days | 12.5 ± 1.05 days | The t-value is 5.06803. The p-value is .000017. The result is significant at p < .05. |
| Mean Satisfaction | 90±1.47 % | 92±1.77 % | The t-value is 3.1225. The p-value is .002315. The result is significant at p < .05. |
| Post operative hospital stay | 3.5±0.51 days | 2.2±0.43days | The t-value is 6.94022. The p-value is < .00001. The result is significant at p < .05 |

### Complications

In the current study we assessed Complications among the study subjects. We observed that conventional group reported higher percentage of complications as compared to stapler group. Conventional group: Bleeding (16.66%), Wound dehiscence (8.33%), edema (25%), and infection (16.66%). Stapler group did not report any case of bleeding, edema and infection.

| Complications | Conventional group | | Sutureless group | |
|---|---|---|---|---|
| | Number of subjects | Percentage | Number of subjects | Percentage |
| Bleeding | 2 | 16.66 | 0 | 0.00 |
| Wound dehiscence | 1 | 8.33 | 0 | 0.00 |
| Edema | 3 | 25 | 0 | 0.00 |
| Infection | 2 | 16.66 | 0 | 0.00 |

## DISCUSSION

Male circumcision is removal of the foreskin (prepucial skin) from the penis. According to the World Health Organization (WHO), global estimates suggest that 30% of males are circumcised[2]. In India incidence of circumcision in general population is approximately 33%. Most circumcisions are performed during adolescence for cultural or religious reasons.

The incidence of circumcision varies mostly with religious affiliation and sometimes due to culture.[3] Adult and adolescent circumcision is carried out using one of the methods: Dorsal slit method or sleeve method. Local anesthesia is the preferred method. The widely used dorsal slit method is used in the present study. All the methods of adult and adolescent circumcision require suturing and dressing. Surgical complications of male circumcision comprise excessive bleeding, hematoma formation, sepsis, unsatisfactory cosmetic effect, lacerations of the penis and injury to the glans, too little or too much of foreskin excised, meatal stenosis, urinary retention, phimosis and buried penis[4]. Amongst all these complications, hemorrhage and infection are the most common complications.

The WHO recommends three conventional methods to perform circumcision, and these techniques are used worldwide. However, conventional circumcision still has some drawbacks: it requires training; it may have a high complication rate, especially in some African countries, where circumcision is often performed by poorly trained and underequipped health workers; and it takes time, even when performed by experienced surgeons, which challenges the medical MC scale-up for HIV prevention in Africa[5]. The circular

stapler is a new device used to perform circumcision. It was commercially developed in China and is applied in some Chinese hospitals. In line with a study by Yuan et al., our data show that MC with a stapler has some advantages: a short operative time, minimal pain, and a low blood loss volume comparable with those of another new circumcision device, the Chinese Shang Ring[6]. Therefore, the stapler also has the potential to be used in high-volume settings by health care providers with minimal training and experience because of its simplicity, short operative and recovery times. Currently, its most substantial deterrent to widespread use is cost. A reusable version of the circular stapler might be a solution[7].

The other solution is to improve the material of the staples so that they fall off spontaneously within 1 month. In children in some countries, circumcision is mainly performed for religious reasons[8]. One study showed that neonatal MC is cost-effective for disease prevention. The herein-described circular stapler may eventually be applied to children and infants because of its simplicity, short operative and recovery time[9].

**Summary**

In the current study we assessed Sexual satisfaction among the study subjects. We observed that 58.33% subjects in first group and 66.66% subjects in second group had sexual satisfaction. Mean Operating time in Conventional group was 24.2 min and in Stapler group was 6.8 min which was significantly lesser in sutureless group. Mean Blood loss in Conventional group was 9.4 ml and in Stapler group was 1.8 ml which was also significantly lesser in sutureless group. Mean Pain score in Conventional group was 5.8 and in Stapler group was 4. it was lesser in stapler group.

Mean Healing time in Conventional group was 14.4 days and in Stapler group was 12.5 days which was significantly lesser Stapler in group. Mean Satisfaction in Conventional group was 90% and in Stapler group was 92% which was greater in Stapler group. Post operative hospital stay Conventional group was 3.5 days and in Stapler group was 2.2 days which was significantly lesser in sutureless group. Among the commonest complications in the Conventional group: Bleeding (16.66%), Wound dehiscence (8.33%), edema (25%), and infection (16.66%). group did not report any case of bleeding, edema and infection.

## CONCLUSIONS

- Balanitis Xerotica Obliterans, Recurrent balanoposthitis, Recurrent UTI, and Congenital phimosis were the commonest presentations of the patients.
- Mean Operating time in Conventional group was 24.2 min and in Stapler group was 6.8 min, Mean Blood loss in Conventional group was 9.4 ml and in Stapler group was 1.8 ml, Mean Pain score in Conventional group was 5.8 and in Stapler group was 4.
- Mean Healing time in Conventional group was 14.4 days and in Stapler group was 12.5 days, Mean Satisfaction in Conventional group was 90% and in Stapler group was 92%, Post operative hospital stay Conventional group was 3.5 days and in Stapler group was 2.2 days.
- Bleeding, wound dehiscence, edema and infection were the common complications reported in the conventional group, whereas Stapler group did not report any case of bleeding, edema and infection.
- Thus the stapler technique is an easy and user-friendly technique for performing male circumcision. It is associated with a shorter operative time, lower blood loss volume, and fewer postoperative complications than conventional circumcision. This new technique may greatly facilitate and standardize circumcision procedures.

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