



Original Research Article

Comparative study and outcomes of stapler circumcision and conventional circumcision

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Abstract

Background: Male circumcision is one of the age-old procedures performed and most commonly performed surgical procedure even today. The advantages of circumcision include protection from sexually transmitted infections like genital ulcer disease, HIV infection, and human papillomavirus. It also lowers the risk of penile cancer and balanitis and enhances penile topical cleanliness. Many methods of circumcision are available – conventional, ring and stapler circumcision.

Aims and Objective: To study the efficacy of stapler circumcision in comparison to conventional circumcision.

Materials and Methods: A comparative study was conducted in the Department of General Surgery, Navodaya Medical College and Hospital for 3 months, among the patients who were admitted to undergo circumcision, were randomly divided into two groups. One group of 16 patients underwent conventional procedure and other group underwent Stapler circumcision.

Results: Stapler group had significant lesser blood loss when compared to conventional group with P value of <0.0000001. Similar observation was made in terms of time required for surgery. It was significantly lesser in Stapler group with P value of <0.0000001.

Conclusion: Stapler group had significantly lesser blood loss and required lesser time duration of surgery.

Keywords: Circumcision, Conventional surgery, Stapler

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1. Introduction

Male circumcision is one of the age-old procedures performed and most commonly performed surgical procedure even today. The advantages of circumcision include protection from sexually transmitted infections like genital ulcer disease, HIV infection, and human papillomavirus.¹⁻³ It also lowers the risk of penile cancer and balanitis and enhances penile topical cleanliness.⁴⁻⁵

There are three methods of conventional male circumcision as advised by the World Health Organization (WHO). They are sleeve resection, the forceps-guided procedure, and the dorsal slit.⁶ However, these techniques have certain limitations and complications like hemorrhage, edema and poor cosmetic appearances.⁷⁻⁸ It also need technical expertise and is time consuming. Owing to the complications, recovery period also varies.

A new technique called as Ring circumcision was introduced to overcome the complications and limitations of conventional technique. The advantages include lesser operating time, lesser blood loss and fewer complications.⁹⁻¹⁰ Pain is persistent throughout the period from placement of ring to period of complete recovery, which is between 7-16 days. Wound dehiscence is also one of the commonest complications as the procedure is suture-less and therefore, time required for healing is longer.

Lately, a novel disposable circumcision tool called the circular stapler has been introduced in the market for use. An inner bell and an outer bell are its two components. The purpose of the inner bell is to shield the glans. For simultaneous hemostasis, the outer bell has a circular blade to cut the foreskin and staples to seal the wound. The complications or limitations of the conventional and ring

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circumcision were significantly reduced with the use of staplers.

Circumcision in children in certain countries is primarily conducted for religious purposes.¹¹⁻¹² A study indicated that neonatal circumcision is cost-effective for disease prevention.¹³ The circular stapler described may be utilized in paediatric populations due to its simplicity and reduced operative and recovery durations.

With the above background, the present study was taken up to study the effectiveness of circumcision with a circular stapler in comparison with conventional technique in adult male patients.

2. Aim

To study the efficacy of stapler circumcision in comparison to conventional circumcision.

3. Objectives

1. To study the time taken for surgery in both the study groups.
2. To study the time taken to heal in both the study groups.
3. To study the blood loss in both the study groups.
4. To study the rate of complications in both the study groups.
5. To compare the findings of both the study groups.

4. Materials and Methods

A comparative study was conducted in the Department of General Surgery, Navodaya Medical College and Hospital for 3 months, among the patients who were admitted to undergo circumcision, were randomly divided into two groups. One group of 16 patients underwent conventional procedure and other group underwent Stapler circumcision.

The penis just below the glans was measured in order to determine the proper size of the stapler device for the stapler group. After that, povidone-iodine was used to surgically disinfect the penis. The procedure followed a predetermined protocol and involved performing a dorsal penile nerve block and a circumferential block using 1% lidocaine. According to the WHO guidance handbook, all patients in the conventional group had circumcision using the dorsal slit technique with an electric scalpel. All circumcisions were carried out by single general surgeon with extensive training.

The outcome indicators monitored were Time taken for surgery, time taken to heal, blood loss during surgery and complications in terms of infections and re-suturing required.

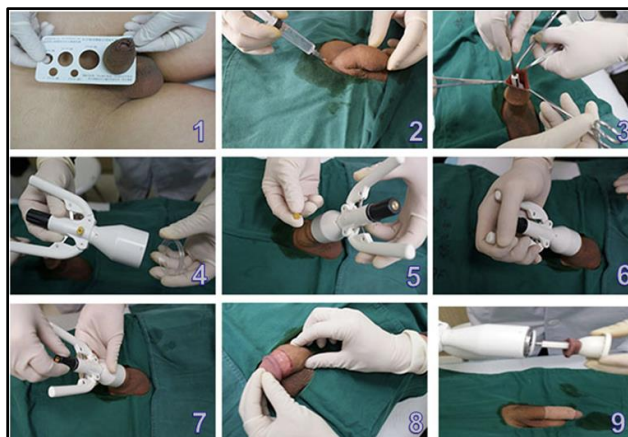


Figure 1: Showing the sequence of events in stapler circumcision

1. To choose the right size for the stapling device, the penis is measured immediately below the glans.
2. A dorsal penile nerve block and circumferential block are carried out using 1% lidocaine following a surgical cleaning of the penis with povidone-iodine.
3. The inner bell, whose edge is at the level of the coronal sulcus, is positioned inside the foreskin to cover the glans. To properly position the inner bell in a patient with severe phimosis, a dorsal incision should be constructed. 4. The outer bell's safety shield is taken off.
4. The inner bell is positioned beneath the outer bell. It is important to preserve the frenulum. Next, the safety bolt is taken out. 6. To securely sandwich the foreskin, the screw is turned clockwise. The handles are then activated to cut the foreskin, and the incision is simultaneously sealed with staples.
5. The gadget is taken out by unscrewing it.
6. To stop any bleeding, the foreskin wound is examined and covered with gauze for one to two minutes. 9. A compression bandage is used to establish hemostasis.(Figure 1)

5. Results

A total of 16 patients in both the groups were enrolled. The study population were comparable in terms of age. The time taken to heal and complications in terms of re-suturing required was similar in both the groups with insignificant P value.

Stapler group had significant lesser blood loss when compared to conventional group with P value of <0.0000001. Similar observation was made in terms of time required for surgery. It was significantly lesser in Stapler group with P value of <0.0000001

Table 1: Showing the comparison of study parameters between both the study groups

Sl. No	Parameter	Conventional group (N=16)	Stapler Group (N=16)	P value
1	Age in years	35.75±8.75	34.687 ± 15.24	0.8
2	Time taken for surgery in minutes	35.56 ± 4.45	8.06 ± 1.18	<0.0000001*
3	Time taken to heal in days	5.87 ± 1.54	5.31 ± 1.01	0.23
4	Complications	4 (25%)	3 (18.75%)	0.34
5	Blood loss in ml	31.25 ± 5.62	5±0	<0.0000001*
** Statistically significant P value (P<0.05 is considered as statistically significant).				

Table 2: Showing the comparison of findings of present study with available studies

Author/ Parameter	Present study	Huang C et al[2017] ¹⁴	Jin XD et al[2015] ¹⁵
Age	Comparable among the groups	NA	Comparable among the groups
Time taken for surgery in minutes	Stapler group had significantly lesser duration of surgery (8.06 Vs 35.56) with P value of <0.0000001	Disposable Circumcision Suture Device (DCSD) had significantly shorter operating time.	The operative time was significantly lower in the stapler group than in the conventional group (6.8 ± 3.1 vs 24.2 ± 3.2 min) with P value of 0.01.
Time taken to heal in days	No significant difference between the two groups (5.31 Vs 5.81)	Disposable Circumcision Suture Device (DCSD) had significantly shorter wound healing time.	Healing time was significantly lesser among the stapler group with P value of 0.01.
Complications	No significant difference between the two groups (18.75% Vs 25%)	Disposable Circumcision Suture Device(DCSD) had lesser complications in comparison to ring and conventional methods	The stapler group had significantly fewer complications than the conventional group (2.7% vs 7.8%) with P value of 0.01).
Blood loss in ml	Stapler group had significantly lesser blood loss during surgery (5 Vs 31.25) with P value of <0.0000001.	Disposable Circumcision Suture Device (DCSD) had significantly lesser blood loss.	The blood loss volume was significantly lower in the stapler group than in the conventional group (1.8 ± 1.8 vs 9.4 ± 1.5 mL) with P value of 0.01.

Stapler group had significantly lesser blood loss and required lesser time duration of surgery. The findings of the study are given below: (**Table 1**)

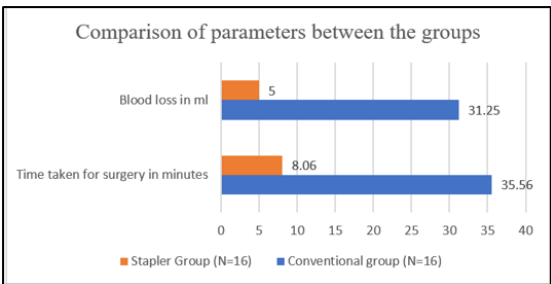


Figure 2: Showing the time taken for surgery and blood loss during surgery.

6. Discussion

A total of 16 patients in both the groups were enrolled. The study population were comparable in terms of age. The time

taken to heal and complications in terms of re-suturing required was similar in both the groups with insignificant P value.

Stapler group had significant lesser blood loss when compared to conventional group with P value of <0.0000001. Similar observation was made in terms of time required for surgery. It was significantly lesser in Stapler group with P value of <0.0000001.

The findings of the present study can be compared with the following studies: (**Table 2**)

7. Conclusion

Stapler group had significantly lesser blood loss and required lesser time duration of surgery.

8. Conflicts of Interest

None.

9. Source of Funding

None.

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