

A Hospital Based Comparative Study to Evaluate Outcome of Circumcision: Conventional Dorsal Slit Technique Versus Sleeve Technique in Adult Patients

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ABSTRACT

Background: Circumcision is the surgical removal of the prepuce (foreskin) either in whole or in part. There are several techniques of circumcision. Dorsal slit technique is practised all over the world most commonly. The sleeve technique introduced later on which helps in preventing common complications of open technique for male circumcision. This is a prospective study was conducted to compare sleeve technique versus conventional dorsal slit technique for circumcision in adults.

Materials & Methods: A hospital based prospective study done on 40 patients in department of general surgery & department of urology at SMS hospital Jaipur, Rajasthan. Equal number (N=20 each) of patients divided in two groups; Conventional dorsal slit technique groups (N=20) and sleeve technique groups (N=20). The qualitative data of intraoperative and post-operative were calculated by Proportion and analysed by Chi-square test. SPSS software 26 version were used for data analysis.

Results: Patients were having an average age of 18.76 yrs in dorsal slit technique group and 18.13 yrs in sleeve technique group, which was statistical non-significant ($p>0.05$). Operative time was more in sleeve technique (25.60 min.) as compared to Dorsal slit technique (24.47 min.) but statistical non-significant ($P>0.05$). Blood loss and VAS score was less in sleeve technique as compared to dorsal slit technique, which

was statistically significant ($P<0.05$). Healing time was disappearance of all stitches with no ulcer at local site. For dorsal slit technique, the mean of healing time was 16.22 days and for sleeve technique, the mean of healing time was 15.38 days.

Conclusion: We concluded that the sleeve technique provides lower pain scores, more precision for suture side and a reduced incidence of agitation after elective MC.

Keywords: Circumcision, VAS Score, Dorsal Slit Technique, Sleeve Technique.

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INTRODUCTION

Male circumcision (MC) is one of the most commonly used surgical procedures worldwide for medical and traditional reasons. Circumcision is the surgical removal of the prepuce (foreskin) either in whole or in part. Religion, cultural, medical, and recently public health reasons are known to be the major indications of the procedure.^{1,2}

Religious circumcision is practiced by the Jews; religious and cultural circumcision is also practiced by Muslims, Black Africans, Australian aborigines, and other ethnic groups in different parts of the world.³ In Western societies, circumcision is mostly performed for medical reasons, the most common of which is phimosis.^{3,4}

Other medical indications are paraphimosis, balanitis (inflammation of the prepuce), posthitis (inflammation of the glans), localized condylomata acuminata, and localized carcinoma.^{4,6} There are several techniques of circumcision. The device methods are thought to have lower complication rates when compared to the open methods. The devices for circumcision may not be readily available or may be expensive. The basic principle in circumcision is to ensure that safety and morbidity should be kept to the barest minimum, no matter what technique is employed. There are several conventional open techniques for circumcision, namely the dorsal slit, the sleeve, and

the quilotine.⁷ Circumcision is also performed with the use of devices such as the plastibell, the mogan clamp, or the gomco clamp. Dorsal slit technique is practised all over the world most commonly. The sleeve technique introduced later on which helps in preventing common complications of open technique for male circumcision. It is safe, mostly complication free and gives good cosmetic outcome. This is a prospective study was conducted to compare sleeve technique versus conventional dorsal slit technique for circumcision in adults.

MATERIALS & METHODS

A hospital based prospective study done on 40 patients in department of general surgery & department of urology and at SMS Medical college & attached groups of hospital, Jaipur.

Inclusion Criteria

- Age group: 15 yrs to 30 years
- Patients with intact prepuce requiring circumcision for religious or cultural reasons.
- Medical indications for circumcision such as phimosis, paraphimosis, and balanoprophitis.

Exclusion Criteria

- Hypospadias
- Bleeding Disorders
- Buried penis

METHODOLOGY

Pre-operative Preparation

Routine blood investigations were done and patients were prepared for local anaesthesia with plain lignocaine (2%). The patients were positioned supine with legs little apart and cautery plate placed under the buttocks. The penis and the adjoining area were prepared with povidone iodine and draped, with a single long sterile sheet with central whole.

Operative Steps

Narrow prepuce opening identified and dilated with 2% lignocain jelly using the tip of a curved mosquito artery forcep. Then the prepuce was everted using gentle force, separating its adhesions from glans up to the corona glandis. All the smegmal deposits are cleaned using normal saline-soaked wet gauze.

For Sleeve Technique

A circumferential incision was made on the inner prepuce skin leaving a sleeve of 0.25-0.5cm proximal to corona. Prepuce was returned over the glans penis. With slight traction on the prepuce, another circumferential incision was made over penile skin just proximal to corona. A longitudinal cut was made between the two circumferential cuts and strip of skin was removed. Any bleeding during the procedure was stopped with the use of bipolar diathermy. Both Edges were pulled together, and stitches taken with 4-0 vicryl/ chromic on cutting needle. The wound was first covered with Jelonet (a gauze lubricated generously with petroleum jelly) and finally by a clean gauze on top of it.

For Dorsal Slit Technique

Two artery forceps were applied on 11 o'clock and 1 o'clock positions of prepuce skin. Prepuce skin was crushed at 12 o'clock position. Dorsal slit was made at 12 o'clock position, extending just proximal to corona. Slit was extended downwards and laterally on either side till frenulum. Frenular artery was tied with figure of 8 stitch. Edges were pulled together, and stitches taken with 4-0 vicryl/ chromic on cutting needle. The wound was first covered with Jelonet (a gauze lubricated generously with petroleum jelly) and finally by a clean gauze on top of it.

Post-Operative Care

Diclofenac suppository was placed in all patients at the procedure. Dressing was removed after 24 hours and neomycin ointment applied to wound daily for one week. Oral cefadroxyl was used for 5 days. Late complications like wound dehiscence and infection were assessed. Postoperative pain was evaluated by Visual Analogue Scale (VAS) at 1, 3, 6 and 24 hours. Operative time was a time from painting/draping to application of dressing. Blood loss was measured from number of 2x2 inches gauze pieces soaked. Healing time was disappearance of all stitches with no ulcer at local site. Patient was examined on follow up at 3 days, 1 and 4 weeks.

Statistical Analysis

The qualitative data were calculated by Proportion and analysed by Chi-square test. SPSS software 26 version was used for data analysis.

Table 1: Age wise distribution of patients in both groups

Age group (yrs)	Dorsal slit technique (N=20)	Sleeve technique (N=20)	P-value
15-20 yrs	11 (55%)	14 (70%)	>0.05
21-25 yrs	5 (25%)	4 (20%)	
25-30 yrs	4 (20%)	2 (10%)	

Table 2: Operative characteristics in both groups

Operative characteristics	Dorsal slit technique (N=20) (Mean±SD)	Sleeve technique (N=20) (Mean±SD)	P-value
Mean operative time (min.)	24.47±2.33	25.60±2.45	>0.05
Mean blood loss (pieces)	2.08±0.78	1.64±0.56	<0.05*
Mean VAS score	2.86±1.22	2.39±1.10	<0.05*
Mean healing time (days)	16.22±1.92	15.38±1.77	>0.05
Local oedema	9 (45%)	6 (30%)	>0.05

RESULTS

Patients were having an average age of 18.76 yrs in dorsal slit technique group and 18.13 yrs in sleeve technique group. Which was statistical non-significant ($p > 0.05$) (table 1).

Operative time was measured between time from painting and draping to application of dressing. For Dorsal slit technique, the mean of operative time was 24.47 minutes and for sleeve technique, the mean of operative time was 25.60 minutes. Blood loss was measured by numbers of 2x2 inches gauze pieces soaked intraoperatively. For Dorsal slit technique, the mean of gauze pieces used was 2.08 pieces and for sleeve technique, the mean of gauze pieces used was 1.64 pieces. Post-operative pain was assessed by VAS (Visual Analogue Scale). For Dorsal slit technique, the mean VAS score was 2.86 and for sleeve technique, the mean VAS score was 2.39, which was statistically significant ($p < 0.05^*$). Healing time was disappearance of all stitches with no ulcer at local site. For dorsal slit technique, the mean of healing time was 16.22 days and for sleeve technique, the mean of healing time was 15.38 days (table 2).

Post-operatively, after 24-hour duration, 9 patients of dorsal slit technique had edema at local site and 6 patients of sleeve technique had edema at local site. Edema was found at suture site and proximal shaft region in both groups. No other early complications like bleeding, urinary retention and late complications like wound dehiscence, infection was identified. At the follow up, no complication was observed at 1st, 2nd and 6th week observation. Precision was better in sleeve technique as compared to dorsal slit technique.

DISCUSSION

In this study, operative time was measured between time from painting and draping to application of dressing. For Dorsal slit technique, the mean of operative time was 24.47 minutes and for sleeve technique, the mean of operative time was 25.60 minutes. These showed a no clinical significance with $p > 0.05$. Thus, both the surgical techniques took almost similar operative time as per this study. In Buwembo et al study⁸ found that the adjusted mean operative duration for dorsal slit technique was significantly shorter than that for the sleeve technique method (Δ -2.7 min, $p=0.01$).

This study demonstrated that the sleeve technique, which preserved the frenular artery, caused less bleeding, reduced electrocautery use and less ischemia than the dorsal slit technique. Various study done by Miao et al⁹, Huo et al¹⁰, Li et al¹¹ & Wang et al¹² found intraoperative blood loss in sleeve technique group was significantly lower than in dorsal slit technique group, which was consisted with our results. Thus, our study shows significant haemostasis achieved intraoperatively in sleeve technique of circumcision.

In this study, postoperative operative pain was assessed by VAS score. Post-operative analgesia is given same in both groups. In the sleeve technique, the skin and mucosa are incised separately; during this incision, the frenular artery is spared by an incision approximately 0.5 cm away from the frenulum, which reduces ischemic pain. Which was consisted with our results by Karakoyunlu et al¹³ and Jin et al¹⁴.

In this study, for the measurement of postoperative pain, dorsal slit technique has mean VAS score 2.86 and sleeve technique has mean VAS score 2.39, which shows a clinically significant

difference with the p value of 0.04. ($p < 0.05$). According to Li et al¹¹ found postoperative pain score was remarkably higher in sleeve technique than in dorsal slit technique. Because sleeve technique was effectively reduces early postoperative pain after circumcision, provided that adequate postoperative analgesia has been achieved.

In the measurement of postoperative complications, dorsal slit technique has 9 patients having edema and sleeve technique has 6 patients having oedema, which shows no clinically significant difference with the $p > 0.05$. According to Çelikkaya et al¹⁵ found early complications like bleeding was seen in one patient (0.6%) in sleeve technique of circumcision group. They believed that the bleeding was due to lack of attention provided at home rather than the circumcision technique.

According to Miao et al⁹ there was no significant differences between dorsal slit and sleeve technique in postoperative complications ($p > 0.05$).

Another study done by Jin et al¹⁴ postoperative complications like bleeding, severe oedema, wound dehiscence, infection.

In dorsal slit technique, the healing time was 16.22 days. In sleeve technique, the mean healing time was 15.38 days. These showed a no clinical significance with $p > 0.05$. Thus, both the surgical techniques took almost similar healing time as per this study. According to various authors such as Jin et al¹⁴, Huo et al¹⁰ and Li et al¹¹ found healing time was more in dorsal slit technique as compared to sleeve technique. Thus, in this study, sleeve technique of circumcision had a significant advantage of less bleeding and less postoperative pain in compared to dorsal slit technique of circumcision. Sleeve technique had shown better postoperative outcome with less complication than dorsal slit technique.

CONCLUSION

We concluded that the sleeve technique provides lower pain scores, more precision for suture side and a reduced incidence of agitation after elective MC.

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