

Sutureless circumcision: A prospective comparative study

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Abstract

Background: Currently one-sixth of the world's male population is circumcised, mostly on religious grounds. The complication rate after circumcision is 0.2% to 6%. Alternative wound closure methods have been studied to decrease the complication rate and repair time and to improve the cosmetic outcome. By undertaking this clinical study, we thought of using cyanoacrylate glue to approximate circumcision wounds and to determine whether suture less circumcision is feasible. This prospective comparative study is done for 8 months. A total of 120 patients were divided into two groups by simple random sampling. The study group comprised of 55 patients. Their wounds were approximated with cyanoacrylate glue. The control group comprised of 65 patients. Their wounds were approximated with interrupted absorbable suture. The parameters studied were time taken for circumcision, time taken for wound approximation, duration of hospital stay, wound complication, pain and cosmesis. Based on the analysis of the data of the present study, it may be concluded that; skin approximation by cyanoacrylate tissue glue reduces duration of surgery and results in lower complications as compared to skin approximation by conventional suture method in circumcision. Circumcision wound approximation is feasible with the glue, is easier and is associated with lesser pain. The complication rates are low and the cosmesis is better. Thus it can be considered as an alternative to suture in the circumcision incision approximation.

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Received Date: 03/08/2021 Revised Date: 14/09/2021 Accepted Date: 02/10/2021

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Access this article online	
Quick Response Code:	Website: www.medpulse.in
	DOI: https://doi.org/10.26611/1062035

INTRODUCTION

The fold of skin (foreskin) covering the glans is removed during the circumcision procedure to a point near the coronal sulcus. Currently one-sixth of the world's male population is circumcised, mostly on religious grounds.¹ The incidence of circumcision in the general population is 33%.² The complication rate after circumcision is 0.2% to 6%.^{6,7} Haemorrhage and infection are the most common complications, followed by wound separation, recurrent

phimosis, preputial adhesions and unsatisfactory cosmesis due to scar formation. In the modern time with the advent of elective surgery, more energy has been directed for achieving an efficient and uncomplicated healing of the deliberately inflicted wound. The oldest problem of perfect wound closure still persists. Recently, alternative wound closure methods have been studied to decrease the complication rate and repair time and to improve the cosmetic outcome. Tissue adhesives like cyanoacrylate have recently invoked a lot of interest in the field of wound healing. There have been efforts to do sutureless circumcision by many.^{5,6,7,8,9,10} By undertaking this clinical study, we thought of using cyanoacrylate glue to approximate circumcision wounds.

MATERIALS AND METHODS

This is a prospective comparative study. The study duration was 8 months. Patients with age less than 1 year and more than 75 years; patients with bleeding tendency and patients with congenital anomalies such as hypospadias and epispadias were not included. A total of

120 patients were included in our study. The cases were divided into two groups. The study group (group A) comprised of 55 patients operated under a surgical unit. They underwent circumcision and their wounds were approximated with cyanoacrylate glue. The control group (group B) comprised of 65 patients operated under other surgical units. They underwent conventional circumcision. Their wounds were approximated with interrupted absorbable suture. The group assignment was done with simple random sampling. In group A, after the excision of the preputial skin, pulling back the skin of glans penis to expose the raw area is done. A dry gauze swab compression of the area for two to three minutes was done for haemostasis. Electrocautery is used when it seemed necessary. The cut edges approximated with forceps. The application of the glue, 2-octyl cyanoacrylate over approximated edges was done. Application of another layer of 2-octyl cyanoacrylate glue on the first layer was done. The time of starting of skin approximation and the time of finishing the skin approximation with glue is noted, using a stopwatch timer. This time allotment was done for the glue to polymerize. The time of completion of the operation is also noted. In group B, after excision of the preputial skin; the cut edges approximation is done with braided coated Polyglactin 3-0 by interrupted suture. The time of starting of skin approximation with suture and the time of completion of skin approximation was noted using a stopwatch timer. The time of completion of the operation was also noted. All patients received a 5 day course of third generation Cephalosporin and combination of Ibuprofen and Paracetamol in appropriate doses. All patients were followed up on 1st, 3rd, 5th, 7th, 10th and 15th postoperative day. Bathing on the operative site was permitted after the 3rd day. Post-operative pain was assessed on 1st, 3rd, 5th, 7th, 10th and 15th postoperative day using visual analogue score of 0 to 10; 0 being no pain and 10 being worst pain. All wounds were assessed by visual inspection at 3rd, 5th, 7th, 10th and 15th postoperative days. Wound scored by wound ASEPSIS score. The modified Hollander Cosmesis Scale (mHCS)¹¹, a validated scale, was used to evaluate: step-off borders, the edge eversion, contour irregularities, pus discharge, wound margin separation and overall appearance. This evaluation was done on 3rd, 5th, 7th, 10th and 15th postoperative day. A total cosmetic score was derived by adding the scores of variables. A score of 1 was given to each variable if present and score of 0 if absent, so a score of 6 was considered as the worst while a score of 0 as the best.

STATISTICAL ANALYSIS

The data was entered into Microsoft Excel data sheet and analyzed using SPSS 22 version software. Categorical data

was represented in the form of frequencies and proportions. Chi-square test or Fischer's exact test (for 2x2 tables only) was used as test of significance for qualitative data. The continuous data was represented as mean and standard deviation. Independent t test was used as test of significance, to identify the mean difference between two quantitative variables. MS Excel and MS word was used to obtain various types of graphs. P value (the probability that the result is true) of <0.05 was considered as statistically significant after assuming all the rules of statistical tests. MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) was used to analyse data.

RESULTS

The commonest age group was 1-10 years. Thirty (54.55%) patients in group A and 22 (33.85%) patients in group B belonged to this age group. The mean age of study population was 14.31±16.88 years in group A and 23.41±19.96 years in group B. This difference was statistically significant (p=0.009). Difficulty in urination was the major presenting complaint in both groups. Twenty-four (43.64%) patients in group A and 34 (52.50%) patients in group B had difficulty in urination. Poor stream was the major presenting complaint in both groups. Twenty-seven (49.10%) patients in group A and 36 (55.38%) patients in group B had poor stream. The most of the patients in both groups had phimosis. Fifty (90.90%) patients in group A and 59 (90.76%) patients in group B had phimosis. The mean time taken for circumcision was 55.9091 minutes (SD 15.15631) in group A and 66.3076 minutes (SD 14.8238) in group B. This difference was statistically significant (p=0.001). The mean time taken for wound approximation was 92.1818 seconds (SD 83.201) in group A and 112.6153 seconds (SD 21.7425) in group B. This difference was statistically significant (p value<0.001). The mean duration of hospital stay was 1.8 days in group A as compared 2.4 days in B group. This difference was not significant statistically (p=0.130). Wound complications were more in group A as compared to that in group B. In group A, 10.09% of patients had complications as compared to 18.50% of patients in group B. This difference was not significant statistically (p=0.251). The most common complication after circumcision was seroma in both groups. Three patients in group A and 5 patients in group B developed seroma. This difference was not significant statistically (p=0.146). The assessment on 1st and 3rd postoperative day show more pain in group B as compared to that in group A. This difference was statistically significant (p value is <0.001). Pain assessment on 5th, 7th and 10th postoperative day revealed no pain in either group. Wound cosmesis assessment, done on postoperative day 3 revealed good cosmesis in both groups. Wound cosmesis

assessment done on postoperative day 5, day 7 and day 10 revealed less good cosmesis in group B as compared to group A. This difference was not significant statistically ($p>0.05$).

CONCLUSION

Based on the analysis of the data of the present study, it may be concluded that; skin approximation by cyanoacrylate tissue glue reduces duration of surgery and results in lower complications as compared to skin approximation by conventional suture method in circumcision. Circumcision wound approximation is feasible with the glue, is easier and is associated with lesser pain. The complication rates are low and the cosmesis is better. Thus it can be considered as an alternative to suture in the circumcision incision approximation.

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Source of Support: None Declared
Conflict of Interest: None Declared