

# Outcomes of Circumcision with Gomco Method Versus Mogen Method

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## ABSTRACT

**Background:** Circumcision is the complete or partial excision of preputial skin of the penis in male. There are multiple methods to perform circumcision. Gomco and Mogen both methods are widely used for circumcision and both have their own advantages and disadvantages. This study was performed to explore the more suitable option for circumcision. **Objective:** To compare the outcomes of circumcision with Gomco method and Mogen method. **Study Design:** Comparative study. **Settings:** Pediatric Urology Department of Children Hospital, Faisalabad Pakistan. **Duration:** From January 2019 to October 2020. **Methods:** Three Hundred and Forty (n=340) male patients. Inclusion criteria of study was age from one month to twelve years were enrolled for study, who have normal sized penis with no hypospadias, chordee and normal bleeding and clotting profile. According to exclusion criteria the children with balanitis Xerotica Obliterans and redo circumcision were excluded from the study. **Results:** Parents of 150 patients (88.23) out of 340 of Gomco procedure while parents 110 patients (64.71%) with Mogen procedure were cosmetically well satisfied respectively. Duration of procedure was measured came out as Gomco prolonged mean time was  $13 \pm 2.1$  minutes and Mogen prolong mean time was  $10 \pm 1.7$  minutes. Complication observed in procedures are following, there were more bleeding in Gomco six patients (3.5%) while in Mogen it was one, two patients (1.18%). There was not any incidence of inclusion cyst and hematoma in both groups. In Gomco group about 20 patients (11.76%) developed penile oedema while in Mogen group 18 patients (10.58%) developed penile edema. In Gomco group only 15 patients (8.82%) had redundant skin while in Mogen group. 23 patients (13.52%) had redundant skin which is significant. **Conclusion:** Circumcisions with the Gomco and Mogen Method have their own pro and cons. Cosmetic acceptance is better in Gomco than Mogen method. Time duration and complexity was observed in Gomco while Mogen is simpler and less time consuming. While chance of bleeding is greater in Gomco than Mogen.

**Keywords:** Circumcision, Gomco method, Mogen method.

## INTRODUCTION

Circumcision is the complete or partial excision of preputial skin of the penis in male. The 'circumcision' word comes from the Latin word circumcidere (meaning 'to cut around').<sup>1</sup> History of male circumcision dates back more than 6000 years, which was found in pharaonic drawings and circumcised Egyptian mummies.<sup>2</sup> Male circumcision is mandatory in Judaism and it is required to be performed on the eighth day after birth and it is ritually indicated in Muslims as well.<sup>3</sup> Male circumcision is also mandatory, per the majority of Muslim scholars and it is preferred to be performed on the seventh day after birth.<sup>4</sup> Circumcised men have also decreased risk of genital ulcer disease (GUD), herpes simplex virus type 2

(HSV-2), trichomonas vaginalis and high-risk human papillomavirus (HR-HPV).<sup>5</sup> Due to such type of health benefits, the World Health Organization (WHO) recommends male circumcision scale-up in these countries with the high prevalence of HIV and low rates of male circumcision, and several sub-Saharan African countries are rolling out large-scale programs.<sup>6</sup> In the United States, however, recently there has been a slight downturn.<sup>15</sup> Although specialized devices are used for Neonatal Male Circumcision in well-developed hospitals to improve the safety of the procedure, none has been carefully studied in resource-limited settings. Gomco Clamp, the Mogen Clamp and the Plastibell are most common devices used for circumcision.<sup>7</sup> There are therefore several methods of circumcision and each of the

methods has its own merits and demerits.<sup>8</sup> The basic principle in the procedure of circumcision is to ensure that safety and morbidity should be kept to the barest minimum, no matter what technique is employed.<sup>9</sup> Based on the results of previous clinical studies regarding the respective ease of Kaufman et al use of the devices to evaluate, Mogen clamp and Plastibell.<sup>10</sup> A study by the GEC, approximately one half of the patients were circumcised with the Gomco and half with the Plastibell. The incidence of complications was 0.2%; most frequent were hemorrhage, infection, and trauma; there were no deaths; and no transfusions were given.<sup>11</sup>

There are multiple methods to perform circumcision. Gomco and Mogin both methods are widely used for circumcision and both have their own advantages and disadvantages. This study was performed to explore the more suitable option for circumcision.

**Operational Definition:** Circumcision is an operation when the preputial skin of the penis is excised. Gomco apparatus is in various sizes according to glans diameter to perform circumcision. Mogen is singular apparatus used in the procedure of circumcision.

## METHODS

This was a comparative study conducted at Pediatric Urology Department of Children Hospital, Faisalabad Pakistan from One year and ten months from January 2019 to October 2020.

Three Hundred and Forty (n=340) male patients were enrolled in this study by using non-probability convenient method sampling technique.

The patients of age from one month to twelve years were enrolled for study, who have normal sized penis with no hypospadias, chordee and normal bleeding and clotting profile were included in the study.

The children with balanitis Xerotica Obliterans and redo circumcision were excluded from the study.

Detailed history and examination of all children was performed. They are randomly allocated in two groups A and B. Patients of Group A were performed Gomco method of circumcision while Group B were performed Mogen Circumcision.

After the breakage of complete adhesions of prepuce from glans and removal of smegma completely, circumcisions of all selected sample were performed with Gomco method and Mogen Method alternatively. Gomco is a complex instrument with multiple sizes according to glands diameter. Glance diameter was measured and instrument was selected to perform with Gomco method and Mogin method alternatively. Instrument is tightened with screw and prepuce is excised with bipolar diathermy

and group B patients were performed circumcision with mogin method when prepuce is taken in between two prongs of mogin instrument and these two prongs are closed over the prepuce and excised with bipolar diathermy, then glans was freed from the closed skin over it.

Gomco is complex instrument and has comparatively difficulty in selection of two or three consecutive Gomco apparatus, time of application is greater, shape of the Penis is cosmetically more acceptable. There is a hole in the apparatus which may help to evacuate urine if patient voids during procedure.

Mogen is a singular apparatus easy to apply, time consuming but cosmetically less acceptable. Outcome measured in terms of time of procedure, cosmetically acceptable, parents satisfaction, infection, post-operative pain and bleeding.

After the approval of the research from the hospital ethical committee all the patients were admitted in the Department of Pediatric Urology Children Hospital Faisalabad via the out-door of the hospital and informed consent was taken for the procedure.

Total 340 patients were taken for the circumcision. All patients were randomized by dividing into two groups with computer generated random numbers. Half to the patients underwent circumcision with Gomco apparatus nominated group A and half of the patients underwent circumcision with Mogen Method nominated Group B. All circumcision done under total intravenous anesthesia and local anesthesia. All patients were assessed on the basis of duration of surgery time, post-operative bleeding, edema, cosmetic satisfaction by the guardians and documented on the Performa.

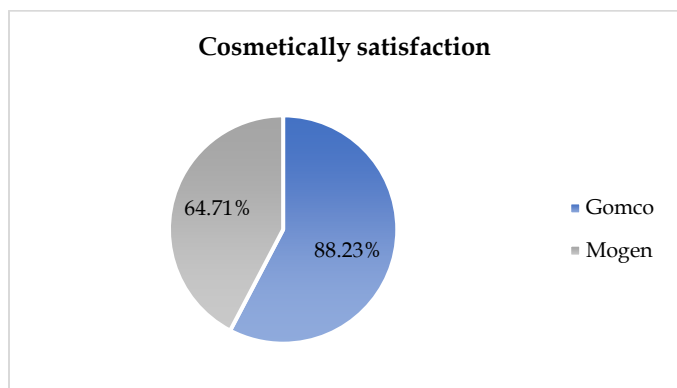
All data was entered and processed in SPSS-v-10. Numerical variables were age of patients, duration of surgery, described with mean  $\pm$  standard deviation and compared by using independent sample t-test between both groups. Nominal variables guardian's satisfaction, bleeding post-operative edema described in frequency and percentage and compared with chi-square test between both groups and P value of  $<0.05$  was taken as significant.

## RESULTS

There were total three hundred and forty (n=340) for circumcision, from January 2016 to December 2018, were eligible for study according to inclusion criteria and exclusion criteria. One hundred and seventy (n=170) patients were performed with Gomco method while one hundred and seventy (n=170) patients were performed Mogen method. Cosmesis and complication were observed immediately, after one week and after one

month, of circumcision. Parents of 150 patients (88.23) of Gomco procedure cosmetically well satisfied while parents 110 patients (64.71%) with Mogen procedure were cosmetically well satisfied.

Figure 1: Cosmetically satisfaction

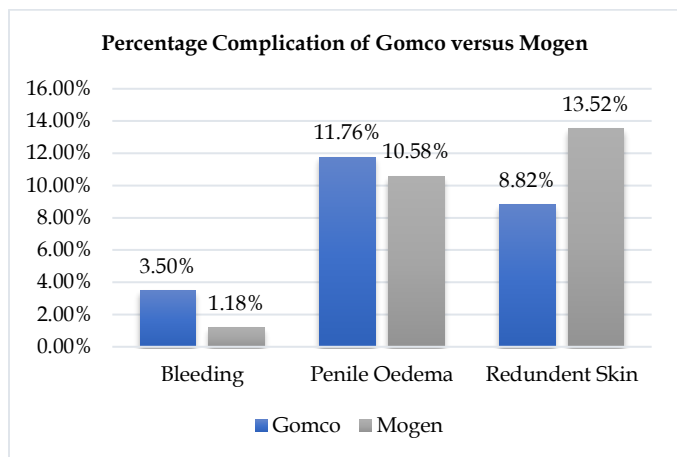


Duration of procedure was measured where Gomco prolonged mean time 13 ± 2.1 minutes and Mogen prolong mean time 10 ± 1.7 minutes. Complication observed in Gomco procedure and procedures are following, there were more bleeding in Gomco six patients (3.5%) while in Mogen it was one, two patients (1.18%). There was not any incidence of inclusion cyst and hematoma in both groups. In Gomco group about 20 patients (11.76%) developed penile oedema while in Mogen group 18 patients (10.58%) developed penile edema. In Gomco group only 15 patients (8.82%) had redundant skin while in Mogen group 23 patients (13.52%) had redundant skin which is significant.

Table 1: Percentage Complication of Gomco versus Mogen

	Bleeding	Penile Oedema	Redundant Skin
Gomco	3.50%	11.76%	8.82%
Mogen	1.18%	10.58%	13.52%

Figure 2: Percentage Complication of Gomco versus Mogen



DISCUSSION

Most common surgery in children is Circumcision. Circumcision is being performed routinely and safely.<sup>12</sup> The main complications due to procedure of circumcision are wound dehiscence, postoperative bleeding, urinary retention, infection.<sup>13</sup> Bleeding is the most common complication of circumcision, with an incidence of 1% in a large retrospective review. In a review of 100,157 cases of neonatal circumcisions, Thomas et al<sup>16</sup> reported an overall incidence of 0.19% complications in US army hospitals during the period 1980-85. The highest incidence was of hemorrhage (44% of all complications) followed by infections (32.6%), surgical trauma in 1.3% and bacteremia and urinary tract infection. In developing countries, the rate of complications is more, especially as it is done more often by the non-medical people than by the doctors.<sup>17</sup> Kurtis<sup>7</sup> studied the comparison of Gomco and Mogen where he compared the time and Gomco procedure was proceeded in 208.9 ± 60.9 seconds while Mogen procedure was proceeded 81.1 ± 19.3 seconds he claimed that in spite of difference in the time duration neither SaO<sub>2</sub> changes due to type of clamp nor salivary cortisol changes. This study didn't compare the cosmetic acceptance by parents which in our study Duration of procedure was measured where Gomco prolonged mean time 13 ± 2.1 minutes and Mogen prolong mean time 10 ± 1.7 minutes. Due to the superb dual blood supply of the penis, wound infection occurs infrequently. In a series of 5,521 circumcisions comparing the Plastibell technique to the Gomco clamp, Gee and Ansell reported only 23 (0.4%) infections. Of those, the Plastibell group had significantly more infections, 19 versus four (P < 0.005).<sup>11</sup> Chan<sup>14</sup> studied the difference of Gomco and Mogen, where in his study surgical revision with Gomco was 0.27% and 0.80% by physicians and by residents and surgical revision with Mogen was 0.71% and 0.0% by Physicians and residents and they researched equal complication rate in both groups.

CONCLUSION

Circumcisions with the Gomco and Mogen Method have their own pros and cons. Cosmetic acceptance is better in Gomco then Mogen method. Time duration and complexity was observed in Gomco while Mogen is simpler and less time consuming. While chance of bleeding is greater in Gomco than Mogen.

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