

# Adult Male Circumcision Performed with Plastic Clamp Technique in Turkey

## Results and Long-Term Effects on Sexual Function

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**Purpose:** To evaluate the long-term results of adult circumcisions performed by plastic clamp technique as well as the effects on sexual function.

**Materials and Methods:** A total of 186 adult males with the mean age of  $21.2 \pm 2.8$  years who presented to our clinic for circumcision between February 2007 and January 2010 were included in the study. Safety and acceptability of circumcision with plastic clamp technique as well as its effects on sexual functions were analyzed with a mean follow-up period of  $30.4 \pm 14.2$  months (range, 12 to 52 months).

**Results:** The mean duration of circumcision and removal of the clamp were  $3.1 \pm 1.1$  minutes and  $16 \pm 7$  seconds, respectively. The total complication rate was 2.15%. Wound dehiscence (1.07%), infection (0.54%), and bleeding (0.54%) were the encountered complications. Complete wound healing was observed at a mean of  $25.5 \pm 4.6$  days. We did not encounter any penile deformity or other long-term complications. Circumcision did not adversely affect the sexual drive or ejaculation based on the brief male sexual function inventory scores. Erectile function and overall satisfaction improved following circumcision.

**Conclusion:** Circumcision performed by plastic clamp technique in adult males had a low early complication rate with no long-term complications and caused an improvement in some of the sexual functions. We suggest the utilization of this technique as an easy and a safe way of circumcising adult males.

**Keywords:** circumcision, sexual function, male, methods, surgical instruments

## INTRODUCTION

Male circumcision is the oldest surgical procedure with a history of at least 15000 years and has been described in ancient Egyptian papyri dating 4000 BC.<sup>(1)</sup> Currently, it is estimated that one out of three males worldwide is circumcised.<sup>(2)</sup> Circumcision is mainly performed for religious reasons in our country to every Muslim male at an average age of 7 years.<sup>(3)</sup> At some rural areas of Turkey, children may not have the opportunity to get circumcised until their adulthood due to low socio-economic status as well as the lack of adequate number of health professionals. Adults are usually circumcised during the military service or local mass circumcision campaigns. In the current study, the results of male circumcision performed by a medical team utilizing plastic clamp technique in our country were analyzed, and the early and late complication rates among adults as well as the effect on sexual function were investigated.

## MATERIALS AND METHODS

### Subjects

A total of 186 adult males with the mean age of  $21.2 \pm 2.8$  years who presented to our clinic for circumcision between February 2007 and January 2010 were included in the study. Males with history of bleeding disorder, severe allergy, and genital anomalies, such as hypospadias, micropenis, significant penile curvature or Peyronie's disease were excluded. A written informed consent was obtained from each participant.

A questionnaire, including patients' characteristics, such as age, marital status, education level, and the city they live, was given to the males to assess the pre-circumcision sexual function (Table 1). Additionally, a pain scale chart and a questionnaire regarding the daily activities and satisfaction from the procedure were asked to be completed by the circumcised males. The advisability of the procedure to uncircumcised males was accepted as the main criteria for overall satisfaction from the circumcision. Males were called for weekly follow-up visits for 6 weeks postoperatively in order to observe the status of wound healing.

All of the 186 circumcised males were invited for a follow-up visit between January and March 2011 to investigate the

long-term results and assess post-circumcision sexual function. Males were examined for possible long-term complications, such as urinary fistula, meatal stenosis, concealed penis, and skin bridge between the glans and the penile shaft. Furthermore, males were asked to complete a questionnaire to assess the post-circumcision sexual function.

### Technique

All the males were circumcised with the plastic clamp technique using Alisklamp, which consists of an inner tube and an outer ring in various sizes (Figure 1). Initially, the foreskin was retracted completely to expose the glans and an appropriate size of inner plastic tube was placed. The retracted foreskin was then pulled over the inner tube and the second outer plastic ring was placed over the foreskin and locked. The foreskin which was squeezed between the inner tube and the outer plastic ring was excised (Figure 2 A to C).

The apparatus was safely removed without any complication after a mean of  $5 \pm 1.1$  days following the circumcision. The mean duration of circumcision procedure and removal of the clamp was  $3.1 \pm 1.1$  minutes and  $16 \pm 7$

**Table 1.** Background characteristics and follow-up periods of 142 men included in the late follow-up survey.

Variable	n	%
<b>Age, y</b>		
18 to 20	69	(48.6)
21 to 23	46	(32.4)
$\geq 24$	27	(19)
Mean	21.2	
<b>Education level</b>		
Primary School	28	(19.7)
High School	82	(57.8)
University	32	(22.5)
<b>Marital Status</b>		
Married	26	(18.3)
Non-married	116	(81.7)
<b>Location</b>		
Ankara	114	(80.3)
Outside the city	28	(19.7)
<b>Follow-up period, mo</b>		
1 to 24	35	(24.6)
25 to 36	47	(33.1)
37 to 48	49	(34.5)
$> 48$	11	(7.8)
Mean	30.4	

seconds, respectively.

### Analysis

The analysis of the early complications, such as bleeding, wound infection, and wound dehiscence was performed on 186 males. Of the 186 circumcised males, 142 (76.3%) came to the late follow-up visit in 2011, and the remaining 44 were excluded from the long-term analysis. Therefore, the analysis of late complications and assessment of post-circumcision sexual function were performed on 142 males. A brief male sexual function inventory (BMSFI) was utilized in assessment of sexual functions.<sup>(4)</sup> The BMSFI scores obtained before and after circumcision were compared by paired t test and the significance level was accepted as  $P < .05$ .

### RESULTS

The total complication rate was 2.15%. Wound dehiscence, defined as separation of wound edges more than 2 mm, was the most common complication, which occurred in two (1.07%) males. Bleeding was encountered in one (0.54%) and wound infection in one (0.54%) male. Complete wound healing, which was defined as disappearance of the crusts and total appearance of the incision line, was achieved at a mean of  $25.5 \pm 4.6$  days (Figure 3).

Of the 186 males, 86% reported little or no disruption of sleep at the night of circumcision. After 7 days following circumcision, there was no disruption of the sleep reported by any of the males, and normal daily activities with no disruption was achieved at a rate of 99.5%. Of the 186 males, 181 (97.63%) stated that they would recommend plastic clamp method to the uncircumcised males.

The mean follow-up period was 30.4 months (range, 12 to 52 months) for the 142 men who came to the visit in January 2011 (Table 1). During the follow-up period, there was

a slight difference in the marital status. Of the 142 men, 14 (18.3%) were married at the time of circumcision. During the the follow-up period, 3 were divorced and 15 got married. The number of married men was 26 (24.6%) at the end of the study (Table 1).

Among the 142 males, we did not encounter any penile deformity or any long-term complications, such as urinary fistula, meatal stenosis, concealed penis, and skin bridge. Circumcision was observed not to affect the sexual drive and ejaculatory functions adversely. It was observed that long-term post-circumcision BMSFI scores for erection, problem assessment, and overall satisfaction rates were significantly higher (Table 2).

### DISCUSSION

The popularity of adult male circumcision has remarkably increased following a study conducted in Africa, which reported that male circumcision significantly reduced the risk of human immunodeficiency virus (HIV) acquisition.<sup>(5)</sup> Following this report, various studies mainly held in Africa were conducted to assess the safety of adult male circumcision.

Complication rates as high as 35.2% was reported in a study where circumcisions were performed by traditional practitioners utilizing the conventional dissecting technique.<sup>(6)</sup> In another study performed in Africa where all circumcisions were performed by general practitioners at their surgical office, complication rates of 3.6% and 8.2% were reported among HIV-negative and HIV-positive males.<sup>(7)</sup> In our previously reported study, we have also obtained a complication rate of 10.4% in those who were circumcised by conventional dorsal slit technique.<sup>(3)</sup> These data show that the conventional surgical technique carries high risk of complications, even when performed by the experienced practitioners.

Results of the current study shows that the overall complication rate is reduced to 2.15% when a plastic clamp technique is utilized. Furthermore, we did not encounter any penile deformity or any long-term complications with this technique. Plastic clamp method is shown to simplify the circumcision, shorten its duration, and reduce the complication rate by eliminating the need for suturing and dress-

**Table 2.** Brief male sexual function inventory scores of 142 males before and after circumcision.

Parameters	Before	After	<i>p</i>
Sexual drive	$7.2 \pm 0.8$	$7.4 \pm 0.6$	.2
Erection	$9.5 \pm 0.7$	$10.3 \pm 0.4$	.01
Ejaculation	$6.9 \pm 0.8$	$7.1 \pm 0.5$	.45
Problem assessment	$10.1 \pm 0.4$	$11.5 \pm 0.8$	.02
Overall satisfaction	$3.1 \pm 0.2$	$3.9 \pm 0.6$	.01

ing. Easy application and short duration are very important advantages, especially if large number of males are planned to be circumcised.

Bleeding and infection were considered as uncommon complications of the plastic clamp technique while they are significant after conventional surgical circumcision reaching to a rate of 5%.<sup>(3)</sup> In the current study, bleeding occurred in one man within 24 hours following the removal of the clamp, which was conservatively managed. Infection after circumcision is an important concern, especially if performed outside the hospital, reaching to a rate of 10%.<sup>(8)</sup> Infection rate was found to be 2.7% in a study where 700 males were circumcised during a 5-day period by a medical team utilizing conventional method.<sup>(9)</sup> In our study, the infection rate was 0.54%, which is remarkably lower than the previously reported rates. The low bleeding and infection rates observed after plastic clamp technique make this technique a safe procedure for circumcising large number of adult males.

Plastic clamp technique appears to have remarkably lower complication rates compared to other minimally invasive circumcision devices. Among the similar devices, commonly used plastibell apparatus is not removed and is let to fall off spontaneously. The mean fall-off duration is 8.7 days among infants whereas after 12 months age, the fall-off period goes up to 13.4 days.<sup>(10)</sup> Due to this reason, plastibell is generally not recommended above the age of one.

The most commonly observed complication with the plastic clamp technique observed in our study was wound dehiscence

which occurred at a rate of 1.07%. However, this is remarkably less than the reported rate of wound dehiscence, which was 3% among the 534 adult males circumcised by using another minimally invasive device consisting of two concentric plastic rings.<sup>(11)</sup> In the current study, the distance of wound edges was less than 4 mm and no bleeding was observed among the males who experienced this complication. The lower incidence of wound dehiscence observed in our study can be contributed to the anatomically adjusted design of the clamp. The inner plastic tube is well-adjusted to the curve of penile glans; thus, leaving more skin and mucosa on the ventral part, which reduced the tension on the skin during erection. A similar minimally invasive circumcision apparatus consisting of an inner tube and an outer ring has also been reported to enable circumcisions safely and easily.<sup>(12)</sup> However, high risk of adverse events related to use of this apparatus have been reported, and a strong caution against the use of this method on young adults has been suggested.<sup>(13)</sup>

In our study, normal daily activities were achieved at a rate of 89% even on the 1st post-circumcision day. Our data show that the Alisklamp technique seems to be a safe alternative to other current minimally invasive circumcision devices.

Results of our study showed that circumcision did not adversely affect any of the sexual functions, rather it resulted in improvement in erection, problem assessment, and overall satisfaction. In a study which investigated the effect of circumcision on sexual functions, a questionnaire was mailed to 123 males and responses were received from only 43.<sup>(14)</sup> The authors concluded that adult circumcision caused a significant decrease in erectile function and penile sensitivity. On the other hand, a prospective study comparing BMSFI scores before and after circumcision concluded that circumcision did not adversely affect the male sexual function.<sup>(15)</sup> In a recent study that assessed the pudendal evoked potentials in adults before and at least 12 weeks after the circumcision, it was concluded that the circumcision contributed to sexual satisfaction by prolonging pudendal evoked potentials latency.<sup>(16)</sup> The ejaculatory latency time was found to increase significantly following circumcision in a study performed on 42 adults.<sup>(17)</sup> In our previous study



**Figure 1.** Alisklamp consists of an inner tube which is placed over the glans penis and an outer ring placed over the tube. Depending on circumference of the glans, clamp sizes vary between 20 to 34.



**Figure 2.** **A)** Foreskin is retracted completely to expose the glans, and an appropriate size of inner plastic tube is placed. Following the placement of the inner tube, retracted foreskin is pulled over the inner tube; **B)** A second outer plastic ring is placed over the foreskin and locked; **C)** Adequate amount of the foreskin is squeezed between the inner tube and the outer ring, then excised with a surgical blade.

in which 125 adult males were questioned for the existence and quality of erection as well as status of libido, erectile function was intact in all adults following circumcision.<sup>(18)</sup> The mean follow-up period was short (10 days) and none of the patients initiated intercourse within this period.

In this study, pre- and post-circumcision sexual functions were assessed separately in a prospective design. Furthermore, current study included larger number of males and considerably longer follow-up period compared to our previous study. Although we did not observe a significant improvement in any of the post-circumcision sexual scores in the previous study, there was significant increase in scores regarding erection, problem assessment, and overall satisfaction in the current study.

The lower socio-cultural level of the males which caused difficulty in understanding the items in the questionnaire as well as in expressing their exact opinions, and a 23.7% loss from follow-up could be limitations of our study. Nevertheless, our study still seems to bear one of the largest sample size among studies investigating the long-term effects of circumcision on sexual function.

## CONCLUSION

Circumcision with plastic clamp technique did not adversely affect the sexual functions, rather it caused a significant improvement in erectile function and overall satisfaction. The ease of application, low early complication rates, absence of long-term complications, and high satisfaction



**Figure 3.** Complete wound healing is defined as disappearance of the crusts and total appearance of the incision line.

ratio make the Alisklamp technique an acceptable, safe, and important alternative for adult male circumcision, especially for the regions where large number of males are planned to be circumcised.

## CONFLICT OF INTEREST

None declared.

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