Original Article – Pediatric Urology
Grand J Urol 2023;3(3):90-6
DOI: 10.5505/GJU.2023.40427

The Relationship of Urological and Psychological Problems with Circumcision – A Cross-sectional Study

Ürolojik ve Psikolojik Problemlerin Sünnetle İlişkisi – Kesitsel Bir Çalışma

Emre Tokuc[1], Nazim Yildiz[2], Zulfu Sertkaya[3], Emrah Ozsoy[4], Ridvan Kayar[1], Fatih Ozkaya[5]

[1]Department of Urology, Haydarpasa Numune Training and Research Hospital, Istanbul, Türkiye
[2]Department of Psychiatry, Medallion Psychiatry Clinic, Istanbul, Türkiye
[3]Department of Urology, AndroExpertise Clinic, Istanbul, Türkiye
[4]Department of Urology, Private Unye Cakirtepe Hospital, Ordu, Türkiye
[5]Department of Urology, MedicalPark Bahçelievler Hospital, Istanbul, Türkiye

Cite as: Tokuc E, Yildiz N, Sertkaya Z, Ozsoy E, Kayar R, Ozkaya F. The relationship of urological and psychological problems with circumcision – A cross-sectional study. Grand J Urol 2023;3(3):90-6

Submission date: 27 April 2023 **Acceptance date:** 18 July 2023 **Online first:** 26 July 2023 **Publication date:** 20 September 2023

Corresponding Author: Emre Tokuc / University of Health Sciences, Haydarpasa Numune Training and Research Hospital, Department of Urology, Istanbul, Türkiye
emretokuc@gmail.com / ORCID ID: 0000-0002-5885-9278

Abstract

Objective: Circumcision is one of the most common surgical procedures in the world which is performed for various reasons. The aim is to investigate whether people's satisfaction with circumcision, their perspectives on circumcision, and whether there is a connection between circumcision and psychological/urological problems.

Materials and Methods: Between 21 March 2023- 10 April 2023, 1009 men aged between 18-50 who volunteered to participate in the survey were included in the study. Demographic structures of the people (age, education, income status), age of circumcision, by whom, where and with what type of anesthesia; problems during circumcision, satisfaction with circumcision, any sexual and psychological problems and the relationship of this problem with circumcision were investigated.

Results: Mean age of 1009 participants was 32.02±9.15 and mean age of circumcision was 6.18±3.10. 269 (26.7%) men stated that they experienced circumcision complications and 145 (14.4%) stated that they were not satisfied with circumcision. 267 men (26.5%) had sexual or urological problems, and 274 (27.2%) had psychological problems, but the relationship of both problems with circumcision was not significant. Both sexual/urological problems and psychological problems were found to be significantly higher in the group satisfied with circumcision (both p:0.000, p<0.05). The relationships between the characteristics of the circumcision performed (circumcision age, anesthesia method, circumcision site and the person performing it) and urological/sexual problems were found to be significant (all p<0.05).

Conclusion: This cross-sectional study supports the hypothesis that circumcision has no relationship with urological/andrological or psychological problems. However, although circumcision is a relatively simple and frequently performed surgical procedure, characteristics such as the age at which the circumcision was performed, the type of anesthesia, the place where it was performed, and the person performing the circumcision are important in order to avoid future urological/sexual problems.

Keywords: circumcision, psychology, complication, andrology

Öz

Amaç: Sünnet, dünya üzerinde en sık yapılan cerrahi girişimlerden biridir. Dini, geleneksel ve tıbbi nedenler ile yapılmaktadır. Çalışmamızda kişilerin sünnet memnuniyeti, sünnete bakış açıları ve sünnet ile psikolojik ve ürolojik sorunların hastalara göre bağlantısı olup olmadığı araştırıldı.

Gereçler ve Yöntemler: 21 Mart 2023- 10 Nisan 2023 tarihleri arasında ankete katılmaya gönüllü olan 18-50 yaş arası 1009 erkek çalışmaya dahil edildi. Hastalara hazırlanan 15 soruluk anket doldurtuldu. Anket sorularında, kişilerin demografik yapıları (yaş, eğitim, gelir durumu), sünnet olduğu yaş, sünnetinin kim tarafından, nerede ve hangi anestezi şekliyle yapıldığı; sünnet sırasında herhangi bir problem yaşanıp yaşanmadığı, sünnetinden memnun olup olmadığı; herhangi bir cinsel ve psikolojik probleminin olup olmadığı ve bu problemin sünnet ile ilişkisi sorgulandı.

Bulgular: 1009 katılımcıda ortalama yaş 32.02±9.15 ve ortalama sünnet yaşı 6.18±3.10 idi. Katılımcıların 269 tanesi (%26.7) sünnet komplikasyonu yaşadığını ve 145 tanesi (%14.4) sünnetten memnun olmadığını belirtti. Katılımcıların 267 tanesinde (%26.5) cinsel veya ürolojik problem, 274 tanesinde (%27.2) psikolojik problem olduğu tespit edildi ancak iki problemin de sünnetle ilişkisi anlamlılık göstermemekteydi. Sünnetten memnun olan grupta hem cinsel/ürolojik problemler, hem de psikolojik problemler anlamlı oranda daha yüksek bulundu (her iki p:0.000, p<0.05). Yapılan sünnetin özellikleri ile (sünnet yaşı, anestezi metodu, sünnet yeri ve yapan kişi) ürolojik/cinsel problemler arasındaki ilişkiler anlamlı olarak tespit edildi (tüm p<0.05).

Sonuç: Bu kesitsel çalışma, sünnetin, ürolojik/androlojik veya psikolojik problemlerle bir ilgisinin olmadığı savını desteklemektedir. Ancak sünnet, her ne kadar görece basit ve çokça yapılan bir cerrahi prosedür olsa da, sünnetin yapıldığı yaş, anestezi tipi, yapıldığı yer ve yapan kişi gibi özellikleri, ileride yaşabilecek ürolojik/cinsel problemlerle karşılaşmamak açısından önem göstermektedir.

Anahtar kelimeler: sünnet, psikoloji, komplikasyon, androloji

ORCID ID:	**N. Yildiz**	0000-0003-3129-0963	**E. Ozsoy**	0000-0001-7899-5202	**F. Ozkaya**	0000-0001-6414-2794
	Z. Sertkaya	0000-0002-6501-5962	**R. Kayar**	0000-0002-1765-919X		

Introduction

Circumcision is the most common surgical procedure in the world, which has been practiced since ancient times, both traditionally and religiously in various societies, and also has medical indications [1]. The World Health Organization (WHO) reported that 30% of men worldwide are circumcised [2]. The positive and negative psychological effects of such a frequently performed surgical procedure on patients and some urological complications have been the subject of discussion in the literature for many years.

Psychologically, the social anxiety of being uncircumcised in a mostly circumcised society can affect men. In this respect, circumcision can be seen as a procedure that can provide positive psychological contributions such as reinforcing the feeling of "being a man", improving body image, and being accepted in society [3,4]. On the other hand, the fact that this age group's ability to decide on its own body is debatable, as it is a procedure that is mostly applied in infancy and childhood, and that parents are often decisive instead of the child, increases the ethical debates about circumcision [5,6].

On the urological aspect, it is an undeniable fact that the circumcision procedure reduces the frequency of urinary tract infections and sexually transmitted infections. In addition, it reduces the risk of cervical cancer in partner women by reducing the incidence of penile human papillomavirus (HPV) [7,8]. In addition, it significantly reduces the risk of penile cancer and eliminates preputial pathologies such as phimosis [9]. However, the sexual effects of circumcision are a popular topic of discussion in the literature.

The aim of this study is to evaluate people's perspectives on their circumcision, to measure their satisfaction, and to investigate whether there is a connection with circumcision if they have psychological and/or urological problems.

Materials and Methods

This observational cross-sectional survey study was approved by the Haydarpasa Numune Training and Research Hospital Clinical Research Ethics Committee on 20.03.2023 with the decision number HNEAH-KAEK 2023/40. Between 21 March 2023 and 10 April 2023, 1009 men between the ages of 18-50 who volunteered to participate in the survey were included in the study. A non-validated, semi-structured questionnaire of 15 questions prepared for the patients was filled out (**Figure 1**). In the survey questions, demographic structures of the people (age, education, income status), age at which circumcision was performed, by whom, where and with what type of anesthesia; whether there were any problems during circumcision, whether he was satisfied with his circumcision; whether he had any sexual

Figure 1. Questionnaire of 15 questions prepared for the patients

1) **Age?**

2) **Income Status?**
   a. Below 2000TL
   b. 2001-5000TL
   c. 5001-10000TL
   d. 10001TL and above

3) **Educational Status?**
   a. Illiterate
   b. Literate
   c. Primary School
   d. Middle School
   e. High School
   f. University/College

4) **How old were you circumcised?**

5) **Who performed the circumcision?**
   a. Traditional circumciser/Health worker
   b. General practitioner
   c. Specialist

6) **Was any type of anesthesia done during circumcision?**
   a. Local anesthesia
   b. General anesthesia

7) **Where was the circumcision done?**
   a. House
   b. Health center
   c. Hospital
   d. Mass circumcision events

8) **Have you encountered any kind of problem during or after circumcision?**
   a. No
   b. Bleeding
   c. Infection
   d. Recircumcision

9) **Are you satisfied with your circumcision?**
   a. Yes
   b. No

10) **Do you have any sexual / urological problems?**
   a. No
   b. Erectile Dysfunction
   c. Premature Ejaculation
   d. Penile Curvature
   e. Difficulty in voiding / Stricture at meatus
   f. Other (specify…….)

11) **Do you think that this problem is related to circumcision?**
   a. Yes
   b. No

12) **Do you have any psychological problems?**
   a. No
   b. Mild depression
   c. Difficulty in communication
   d. Low self-esteem
   e. Aggressive behaviors
   f. Anxiety
   g. Other (specify…….)

13) **Do you think that this problem is related to circumcision?**
   a. Yes
   b. No

14) **Who would you like your child to be circumcised by?**
   a. Traditional circumciser
   b. General practitioner
   c. Specialist

15) **Where would you like your child to be circumcised by?**
   a. House
   b. Health center
   c. Hospital
   d. Mass circumcision events

Table 1. Demographic data of the participants

	Mean ± SD	N (%)
Age (y)	32.02±9.153	
Age of circumcision (y)	6.18±3.109	
<7		555 (55)
7-12		436 (43.2)
>12		18 (1.8)
Income status (TL)		
<2000		253 (25.1)
2001-5000		395 (39.1)
5001-10000		285 (28.2)
>10001		76 (7.5)
Educational level		
Illiterate		60 (5.9)
Literate		88 (8.7)
Elementary school		134 (13.3)
Middle school		172 (17)
High school		325 (32.2)
University or above		230 (22.8)
Person performing circumcision		
Traditional circumciser / health worker		614 (60,9)
General practitioner		143 (14,2)
Specialist		252 (25)
Anesthesia		
None		329 (32,6)
Local		539 (53,4)
General		141 (14)
Place of circumcision		
House		528 (52.3)
General health center		107 (10.6)
Hospital		270 (26.8)
Mass circumcision events		104 (10.3)
Total		**1009 (100)**

SD: standard deviation; y: years; TL: Turkish Lira; N: number

and psychological problems and the relationship of this problem with circumcision were questioned. The study was carried out in accordance with the principles of the Declaration of Helsinki, no personal information was included in the questionnaire and the data was collected completely anonymously.

Statistical Analysis

After the data in the questionnaires were collected, the results were reported as mean, standard deviation and percentage (%). Distribution normality was evaluated with the Shapiro-Wilks test. Chi-Square, Mann-Whitney U or Kruskal-Wallis tests were used to determine statistical differences according to the type and distribution of variables. Bonferroni-corrected Dunn's test was used as a post-hoc analysis to determine which group was significant in multiple groups that were significant. Statistical significance was taken as $p<0.05$.

Results

The mean age of 1009 participants were 32.02±9.15 and the mean age of circumcision was 6.18±3.10. Demographic information of the participants is given in **Table 1**.

Table 2. General satisfaction and problems encountered concerning circumcision

Complication of circumcision	**n (%)**	**Circumcision satisfaction**	**n (%)**	
No	740 (73.3)	Satisfied	864 (85.6)	
Bleeding	145 (14.4)	Not Satisfied	145 (14.4)	
Infection	69 (6.8)			
Recircumcision	55 (5.5)			
Sexual / Urological problems	→	**Is it related to circumcision?**		**p**
No	742 (73.5)	Yes	101 (10)	0,376
Erectile dysfunction	59 (5.8)	No	166 (16.5)	
Premature ejaculation	69 (6.8)	Unanswered	742 (73.5)	
Penile curvature	76 (7.5)			
Lower urinary tract symptoms	53 (5.3)			
Other	10 (1)			
Psychological problems	→	**Is it related to circumcision?**		**p**
No	735 (72.8)	Yes	117 (11.6)	0,983
Mild depression	73 (7.2)	No	157 (15.6)	
Communication difficulties	55 (5.5)	Unanswered	735 (72.8)	
Low self-esteem	64 (6.3)			
Aggressive behaviours	46 (4.6)			
Anxiety	26 (2.6)			
Other	10 (1)			
To whom do you want your child to be circumsized?		**Where?**		
Traditional circumsizer	194 (19.2)	House	158 (15.7)	
General practitioaner	84 (8.3)	General health center	93 (9.2)	
Specialist	731 (72.4)	Hospital	667 (66.1)	
		Mass circumcision events	91 (9)	
Total	**1009 (100)**		**1009 (100)**	

Chi-Square test; Bold*: indicating statistical significance; N: number

Of the participants, 269 (26.7%) stated that they experienced circumcision complications and 145 (14.4%) stated that they were not satisfied with circumcision. 267 of the participants (26.5%) declared that they had sexual or urological problems and 274 (27.2%) of them had psychological problems, but the relationship of both problems with circumcision was not significant (p=0.376 and 0.983, respectively). Data on general circumcision satisfaction, problems experienced and their relationship with circumcision are given in **Table 2**.

Considering the participants who had sexual/urological or psychological problems, those who were satisfied with circumcision were statistically significantly higher than those who were not (p=0.000 and p=0.000). There was no significant difference between sexual, urological or psychological problem subtypes in terms of circumcision satisfaction. Data on the relationship between circumcision satisfaction and problems are given in **Table 3**.

When the relationship between the characteristics of circumcision performed on the participants and urological problems was examined, it was seen that circumcision age (p=0.000), anesthesia type (p=0.000), circumcision site (p=0.000) and circumcised person (p=0.001) were statistically significant in the occurrence of urological problems. Circumcision age >12, circumcision under general anesthesia, mass circumcision ceremonies or circumcision performed by general practitioners in the health center and circumcision performed by general practitioners have been found to be stastistically significantly related with urological problems. The relationship between circumcision features and urological problems is summarized in **Table 4**.

Discussion

Circumcision, which is a surgical procedure applied to almost every man, especially in Muslim and Jewish societies, is also on the agenda in other societies, both for medical indications and for its protection from possible medical consequences. The

Table 3. The relationship between satisfaction with circumcision and sexual/ urological and psychological problems

			Satisfied with circumcision? Yes	No	p
Sexual / urological problemls	Erectile dysfunction	n	42	17	0,064
		%	71,2%	28,8%	
	Premature ejaculation	n	41	28	
		%	59,4%	40,6%	
	Penile curvature	n	40	36	
		%	52,6%	47,4%	
	Lower urinary tract symptoms	n	38	15	
		%	71,7%	28,3%	
Total		n	161	96	
		%	62,6%	37,4%	
			p: **0,000***		

Yes No			Satisfied with Circumcision?		p
Psychological problems	Mild depression	n	47	26	0.823
		%	64,4%	35,6%	
	Communication difficulties	n	37	18	
		%	67,3%	32,7%	
	Low self-esteem	n	44	20	
		%	68,8%	31,3%	
	Aggressive behaviours	n	27	19	
		%	58,7%	41,3%	
	Anxiety	n	18	8	
		%	69,2%	30,8%	
Total		n	173	91	
		%	65,5%	34,5%	
b			p: **0,000***		

Chi-Square and Mann-Whityney U test; Bold*: indicates statistical significance

Table 4. The relationship between circumcision features and urological problems

			Urological Problem		p
			Yes	No	
Age of circumcision	<7	n	435	120	**0.000***
		%	78,4%	21,6%	
	7-12	n	298	138	
		%	68,3%	31,7%	
	>12	n	9	9	
		%	50,0%	50,0%	
Anesthesia	None	n	277	52	**0.000***
		%	84,2%	15,8%	
	Local	n	383	156	
		%	71,1%	28,9%	
	General	n	82	59	
		%	58,2%	41,8%	
Location	House	n	424	104	**0.000***
		%	80,3%	19,7%	
	General health center	n	64	43	
		%	59,8%	40,2%	
	Hospital	n	199	71	
		%	73,7%	26,3%	
	Mass circumcision events	n	55	49	
		%	52,9%	47,1%	
Person Performing Circumcision	Traditional circumciser	n	471	143	**0.001***
		%	76,7%	23,3%	
	General practitioner	n	88	55	
		%	61,5%	38,5%	
	Specialist	n	183	69	
		%	72,6%	27,4%	

Kruskal Wallis test; Bold*: indicates statistical significance

fact that it is such a frequently performed surgery has led to the fact that the psychological and urological/andrological effects of circumcision are frequently the subject of research in the literature [6,10].

When the answers given by the participants in our study are examined, it is seen that the rate of participants who are not satisfied with circumcision in general is 14%. When the literature is examined, although there is no long-term feedback study on individuals' own circumcision, it was seen in the study conducted by Özen and Eroğlu in 2019 that parents were not satisfied with the circumcision of their children at a rate of 41.2% [11]. In this study, although the parents' satisfaction with circumcision changes significantly with age, it was observed that the lowest dissatisfaction rate (2.1%) was observed in the first month of neonatal period. Although the overall dissatisfaction rate was 14% in our study, this rate reached 37.4% in those with urological or sexual problems and 34.5% in those with psychological problems. This relationship with circumcision is statistically insignificant; possibly due to the vast majority of participants leaving this question unanswered. In addition, when only the respondents were considered, 38-42% reported that these problems could be related to circumcision.

In European and American communities where circumcision is not common, the psychological effects of circumcision, especially on children, have been discussed for years. It has been suggested that the feeling of "difference" caused by circumcision in a mostly uncircumcised society and the trauma to the body and "masculinity" perception caused by the intervention to the male genital organ during circumcision may cause psychosomatic symptoms of future depression, anxiety, and posttraumatic stress disorder [12,13]. On the contrary, it is obvious that being uncircumcised can lead to feelings of exclusion, not being accepted in society, shame and similar feelings in generally circumcised societies. However, the psychological effects of a surgical procedure performed on the genital area in childhood are important, and therefore, providing effective analgesia and anesthesia during the circumcision procedure is extremely important in order to avoid possible psychological effects [14,15]. However, in general terms, it is very unlikely that psychological problems in adulthood, which may be highly multifactorial, are attributed to circumcision performed in childhood.

In our study, it was seen that urological problems increase significantly as the age of circumcision increases. In published guidelines and studies, it is shown that circumcision performed especially in the neonatal period has a more effective and faster recovery period compared to other age groups and can be performed with fewer complications [16,17]. In addition, the sense of awareness that develops with advancing age increases the risk of complications, especially in circumcision procedures performed without anesthesia or with local anesthesia [18]. Although there is no data with a high level of evidence, most experts do not recommend circumcision in the age range of 3-6 years, which is called the "phallic" period, when children gain their sexual identity, for fear of sterilization and to avoid psychosexual effects that may occur in the future [19]. In their 2013 publication, Armağan et al. argue that circumcisions performed during the phallic period do not actually cause any sexual or depressive side effects, and that this is nothing more than an anecdote [20].

Unexpectedly, it was found to be significantly higher in the general anesthesia group when the relationship between the type of anesthesia and the urological problem was investigated. There are reports in the literature such as methemoglobinemia due to local anesthetic agents, necrosis of the glans or penis due to vasoconstriction [21-23]. However, there is no study in the literature comparing short or long-term urological complications after circumcision according to anesthesia type, and this study is the first data in the literature on this subject. However, a cause-effect relationship could not be established within the framework of logic on this subject, and it is obvious that there is a need for comprehensive studies on this subject.

In our study, it was observed that the circumcision site and the person performing the circumcision had a significant effect on urological problems. It has been observed that circumcisions

performed in places such as general health centers or mass circumcision ceremonies are more open to the risk of urological complications, and circumcisions performed by general practitioners have a higher rate of urological problems. Although circumcision is often seen as a minor surgery, it is a surgery after all and the importance of care and experience cannot be denied. These results are in line with the data found in studies conducted in Nigeria and Turkey comparing medical and non-medical circumcised individuals [24,25]. In addition, it was shown in Özdemir's study that the complication risk rate is higher in mass circumcision ceremonies [26].

When our data were examined, it was seen that the majority of circumcised men were circumcised by a traditional circumciser, the majority of them were circumcised without anesthesia or with local anesthesia, and again, the majority of them were circumcised under household conditions. However, when these participants were questioned about where and by whom they wanted their children to be circumcised; most of them stated that they wanted the procedure to be performed by a specialist doctor and most of them in the hospital. It can be thought that this finding is a useful increase in awareness in order to reduce the urological and psychological complications that circumcision may bring in a constantly developing and changing world. In order to reduce the urological and psychological complications of circumcision, it is of great importance that it is performed preferably in the neonatal period or in infancy, accompanied by any anesthesia and in experienced health institutions.

As being an observational cross-sectional study, a definite judgment from the results obtained is difficult to sustain a causal inference and the association is difficult to interpret. Also, these kinds of studies are known to be susceptible to nonresponse and recall biases. Even though the study is done with a high number of participants, short-time interval and unanswered questions detract the scientific effect of this study. The questionnaire being a semi-structured, non-validated survey also contributes to the limitations of this study. All in all, as defining the key role important factors and features of circumcision that tend to effect possible urological/psychological complications, we believe that this study can shed light on new validation studies of the current questionnaire and also bring new horizons with multicenter collaborative studies with larger sample sizes.

Conclusion

Our study supports the argument that circumcision is not associated with urological/andrological or psychological problems in adulthood. However, although circumcision is a relatively simple and frequently performed surgical procedure, features such as the age at which the circumcision was performed, the type of anesthesia, the place where it was performed, and the person performing the circumcision may be deemed important in order to avoid future urological/sexual problems.

Ethics Committee Approval: The study protocol was approved by the University of Health Sciences, Haydarpasa Numune Training and Research Hospital Clinical Research Ethics Committee on 20.03.2023 with the decision number HNEAH-KAEK 2023/40.
Informed Consent: An informed consent was obtained from all the patients.
Publication: The results of the study were not published in full or in part in form of abstracts.
Peer-review: Externally and internally peer-reviewed.
Authorship Contributions: Any contribution was not made by any individual not listed as an author. Concept – E.T., N.Y.; Design – E.T., N.Y.; Supervision – E.T., N.Y., F.O; Resources – E.O., R.K.; Materials – E.O., R.K.; Data Collection and/or Processing – E.O., R.K.; Analysis and/or Interpretation – E.T., N.Y.; Literature Search – E.O., R.K.; Writing Manuscript – E.T., N.Y.; Critical Review – E.T., F.O.
Conflict of Interest: The authors declare that they have no conflicts of interest.
Financial Disclosure: The authors state that they have not received any funding.

References

[1] Alanis MC, Lucidi RS. Neonatal circumcision: a review of the world's oldest and most controversial operation. Obstet Gynecol Surv 2004;59:379-95. https://doi.org/10.1097/00006254-200405000-00026

[2] World Health Organization and UNAIDS. Male circumcision: global trends and determinants of prevalence, safety and acceptability. Geneva: World Health Organization; 2008. https://apps.who.int/iris/handle/10665/43749

[3] Sari N, Buyukunal SN, Zulfikar B. Circumcision ceremonies at the Ottoman palace. J Pediatr Surg 1996;31:920-4. https://doi.org/10.1016/s0022-3468(96)90411-x

[4] Goldman R. The psychological impact of circumcision. BJU Int 1999;83Suppl1:93-102. https://doi.org/10.1046/j.1464-410x.1999.0830s1093.x

[5] Tye MC, Sardi LM. Psychological, psychosocial, and psychosexual aspects of penile circumcision. Int J Impot Res 2022;35:242-8. https://doi.org/10.1038/s41443-022-00553-9

[6] Morris BJ, Moreton S, Bailis SA, Cox G, Krieger JN. Critical evaluation of contrasting evidence on whether male circumcision has adverse psychological effects: A systematic review. J Evid Based Med 2022;15:123-35. https://doi.org/10.1111/jebm.12482

[7] Auvert B, Taljaard D, Lagarde E, Sobngwi-Tambekou J, Sitta R, Puren A. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial. PLoS Med 2005;2:e298. https://doi.org/10.1371/journal.pmed.0020298

[8] Hayashi Y, Kohri K. Circumcision related to urinary tract infections, sexually transmitted infections, human immunodeficiency virus infections, and penile and cervical cancer. Int J Urol 2013;20:769-75. https://doi.org/10.1111/iju.12154

[9] Larke NL, Thomas SL, dos Santos Silva I, Weiss HA. Male circumcision and penile cancer: a systematic review and meta-analysis. Cancer Causes Control 2011;22:1097-110. https://doi.org/10.1007/s10552-011-9785-9

[10] Weiss HA, Larke N, Halperin D, Schenker I. Complications of circumcision in male neonates, infants and children: a systematic review. BMC Urol 2010;10:2. https://doi.org/10.1186/1471-2490-10-2

[11] Özen MA, Eroğlu E. Evaluation of circumcision in terms of parental feedback and medical outcomes. Turkish Journal of Pediatric Surgery 2019;33:65-71. https://doi.org/10.5222/JTAPS.2019.65982

[12] Miani A, Di Bernardo GA, Højgaard AD, Earp BD, Zak PJ, Landau AM, et al. Neonatal male circumcision is associated with altered adult socio-affective processing. Heliyon 2020;6:e05566. https://doi.org/10.1016/j.heliyon.2020.e05566

[13] Boyle GJ, Goldman R, Svoboda JS, Fernandez E. Male circumcision: pain, trauma and psychosexual sequelae. J Health Psychol 2002;7:329-43. https://doi.org/10.1177/135910530200700310

[14] Altas C, Kucukosman G, Yurtlu BS, Okyay RD, Aydin BG, Piskin O, et al. Anesthesia methods used by anesthetic specialists for circumcision cases. National survey study for Turkey. Saudi Med J 2017;38:75-81. https://doi.org/10.15537/smj.2017.1.15632

[15] Rosen M. Anesthesia for ritual circumcision in neonates. Paediatr Anaesth 2010;20:1124-7. https://doi.org/10.1111/j.1460-9592.2010.03445.x

[16] Siroosbakht S, Rezakhaniha B. A comprehensive comparison of the early and late complications of surgical circumcision in neonates and children: A cohort study. Health Sci Rep 2022;5:e939. https://doi.org/10.1002/hsr2.939

[17] Iacob SI, Feinn RS, Sardi L. Systematic review of complications arising from male circumcision. BJUI Compass 2022;3:99-123. https://doi.org/10.1002/bco2.123

[18] Bellieni CV, Alagna MG, Buonocore G. Analgesia for infants' circumcision. Ital J Pediatr 2013;39:38. https://doi.org/10.1186/1824-7288-39-38

[19] Yilmaz E, Batislam E, Basar MM, Basar H. Psychological trauma of circumcision in the phallic period could be avoided by using topical steroids. Int J Urol 2003;10:651-6. https://doi.org/10.1046/j.1442-2042.2003.00722.x

[20] Armagan A, Silay MS, Karatag T, Akman T, Tepeler A, Ersoz C, et al. Circumcision during the phallic period: does it affect the psychosexual functions in adulthood? Andrologia 2014;46:254-7. https://doi.org/10.1111/and.12071

[21] Pepe P, Pietropaolo F, Candiano G, Pennisi M. Ischemia of the glans penis following circumcision: case report and revision of the literature. Arch Ital Urol Androl 2015;87:93-4. https://doi.org/10.4081/aiua.2015.1.93

[22] Tasci AI, Danacioglu YO, Arikan Y, Colakoglu Y, Yapar B, Buyuk Y. Management of post-circumcision necrosis of the penis: the medicolegal aspect. Pediatr Surg Int 2020;36:523-8. https://doi.org/10.1007/s00383-020-04630-2

[23] Boran P, Tokuc G, Yegin Z. Methemoglobinemia due to application of prilocaine during circumcision and the effect of ascorbic acid. J Pediatr Urol 2008;4:475-6. https://doi.org/10.1016/j.jpurol.2008.04.004

[24] Atikeler MK, Gecit I, Yuzgec V, Yalcin O. Complications of circumcision performed within and outside the hospital. Int Urol Nephrol 2005;37:97-9. https://doi.org/10.1007/s11255-004-6077-2

[25] Musa AA, Ogun SA, Agboola AO, Shonubi AM, Banjo AA, Akindipe JA. Surgical complications from local herbal practitioners: report of five cases. East Afr Med J 2007;84:240-5. https://doi.org/10.4314/eamj.v84i5.9532

[26] Ozdemir E. Significantly increased complication risks with mass circumcisions. Br J Urol 1997;80:136-9. https://doi.org/10.1046/j.1464-410x.1997.00218.x