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A Low Cost and Non-Complicated Circumcision; When, How, Where, Who Should Be Made by?**ABSTRACT**

Objective: Circumcision, in Turkey as a Muslim country is one of the most commonly performed operation. The aim of this study is to retrospectively evaluated circumcision datas and discuss about 'a low cost and non-complicated circumcision; when, how, where, who should be made by'.

Methods: 4059 patients who were circumcised between 2011-2018 were included in the study. The age of the patient, time of operation, presence of accompanying surgical pathology (inguinal hernia, undescended testis, hydrocele, etc.) and anesthesia type (local only, sedoanalgesia and general) were evaluated.

Results: The mean age of 4059 patients was 4.1 years (\pm 3.29). The number of patients who had circumcised <2year was 1315 (32.40%), aged 2-6 who no recommended by child psychiatrists was 1154 (28.43%) and >6 year was 1590 (39.17%). 422 (10.40%) of patients who underwent circumcision had additional surgical pathology. The most common additional surgical pathologies were inguinal hernia (n=212, 50.24%), undescended testes (n=100, 23.70%) and hydrocele (n=32, 7.58%).

Conclusions: Since the circulation of complicated surgical operations is intense, especially in the 3rd level public university hospitals are more appropriate to perform circumcision in patients who require additional operation to reduce the cost and hospitalization. If additional operation is not required, circumcision should be performed by private health institutions or certified 1st level family physicians. In terms of childhood psychology, it is important to take measures to increase the level of knowledge of families at this issue, since a significant number of families still circumcised their children aged 2-6 years.

Keywords: Circumcision, Low Cost and Non-Complicated Circumcision, Appropriate Circumcision Time

Düşük Maliyetli Ve Komplikasyonsuz Bir Sünnet; Ne Zaman, Nasıl, Nerede, Kim Tarafından Yapılmalı?**ÖZET**

Amaç: Sünnet, Türkiye gibi müslüman ülkelerde en çok yapılan operasyonlardan birisidir. Bu çalışmanın amacı sünnet verilerinin geriye dönük olarak değerlendirilmesi ve 'düşük maliyetli ve komplikasyonsuz bir sünnetin; ne zaman, nasıl, nerede, kim tarafından yapılacağı' ile ilgili olarak tartışmaktır.

Gereç ve Yöntem: Bu çalışmaya Düzce Üniversitesi Tıp Fakültesi Araştırma ve Uygulama Hastanesi Çocuk Cerrahisi kliniğinde 2011-2018 yılları arasında sünnet yapılan 4059 hasta dahil edildi. Hastanın yaşı, operasyonun yapıldığı zaman, eşlik eden cerrahi patoloji varlığı (kasık fıtığı, inmemiş testis, hidrosel vb.) ve anestezi şekli not edildi.

Bulgular: Toplam 4059 hastanın ortalama yaşı 4,1 yıl (\pm 3,29) idi. <2 yaş sünneti yapılan hasta sayısı 1315 (% 32,40), çocuk psikiyatristleri tarafından önerilmeyen 2-6 yaş aralığında yapılan sünnet sayısı 1154 (% 28,43), >6 yaş sünneti yapılan hasta sayısı ise 1590 (% 39,17) idi. Sünnet yapılan hastaların 422 tanesinde (% 10,40) ek cerrahi patoloji vardı. En sık görülen ek cerrahi patolojiler sırasıyla inguinal herni (212 hasta ve % 50,24), inmemiş testis (100 hasta ve % 23,70), hidrosel (32 hasta ve % 7,58) idi.

Sonuç: Özellikle komplike cerrahi operasyon sirkülasyonunun yoğun olduğu 3.basamak kamu üniversite hastanelerinde sünnetin sadece ek operasyon gerektiren hastalara yapılması, eğer ek operasyon gerekmiyorsa komplike cerrahi işlemlerin aksatılmaması için sünnetin özel sağlık kuruluşlarında ya da sertifikalı 1.basamak aile hekimleri tarafından yapılması daha uygun olacaktır. Halen 2-6 yaşlarındaki çocuklarını sünnet yaptırılıyor olması nedeniyle, ailelerin bu konudaki bilgi düzeylerini artıracak önlemlerin alınması önem arz etmektedir.

Anahtar Kelimeler: Sünnet, Düşük Maliyetli ve Komplikasyonsuz Sünnet, Uygun Sünnet Zamanı

INTRODUCTION

Circumcision, in Turkey as a Muslim country is one of the most commonly performed operation (1). In US and many western countries, there is considered to be beneficial and recommended for health (2). There are many studies showing that circumcision decreases the risk of urinary tract infection in boys and the risk of transmission of sexually transmitted diseases in adults (3). Many surgical techniques have been described for circumcision; Sleeve method (surgical circumcision), dorsal slit method, guillotine method, cautery method and methods of circumcision using apparatus (Gomko clamp, Turner clamp, Plastibell, Alisklemp etc.) (4). Since collective circumcision ceremonies are performed in a shorter time, the method of circumcision is preferred by using the apparatus known as seamless circumcision. Although it seems to be a simple procedure, circumcision has many complications. That is why circumcision should be performed in competent hands and under suitable conditions. The most common circumcision complication is bleeding (5). It is known that circumcision can be performed by all physicians within the scope of general medical practice on paragraph 3 of Law No. 1219 in Ministry of Health General Directorate of Health Services It is seen that in Circular No. 2015/10. In this context, circumcision can be performed only by the physician, since 01/01/2015, because circumcision can only be performed by the physician. Child psychiatrists do not consider suitable for circumcision between 2-6 years of age, as it corresponds to the phallic period of the child. In our clinic, we say to the parents who want to circumcise their children (aged 2-6 years) that circumcision of their children are not suitable for children's psychological development. But circumcision in Muslim countries such as our country; since it is performed because of the need to have a religious rather than a medical indication, families make their children circumcised at any time without paying attention to this age range. Families want their children to be circumcised before they start school. Families with children going to school want to be circumcised during school breaks.

Circumcision is performed in hospital conditions by being discharged after circumcision without being hospitalized as outpatient patient. In local anesthesia, dorsal penile block technique is preferred. Bupivacaine hydrochloride is preferred because it has a long duration of action as a local anesthetic and the risk of making methemoglobinemia is less. As an anesthetic method, if the child does not

have any additional surgical problem, sedoanalgesia technique is preferred with ketamine (6).

The aim of this study was to retrospectively evaluated datas such as age, type of anesthesia and accompanying operation with circumcision performed in Duzce University Faculty of Medicine, Department of Pediatric Surgery between 2011-2018. To the best of our knowledge, there is no a study in the literature about 'a low cost and non-complicated circumcision; when, how, where, who should be made by'. Therefore, current work is important.

MATERIAL AND METHODS

Informed consent was taken from all participation in the research study. In this study, 4059 patients who were circumcised between 2011-2018 in Duzce University, Faculty of Medicine, Research and Practice Hospital, Pediatric Surgery Department were included in the study. Ethical approval was obtained from the local ethics committee before starting work. Circumcision was performed by three surgeons using a dorsal slit method. Information was collected retrospectively with a file scan. The age of the patient, time of operation, presence of accompanying surgical pathology (inguinal hernia, undescended testis, hydrocele, etc.) and anesthesia type (local only, sedoanalgesia and general) were noted.

Patients were examined for another genitourinary surgery pathology (inguinal hernia, undescended testis, hydrocele, etc.) before the circumcision. Patients were generally examined by anesthesia specialist with hemogram and coagulation (Protrombin Time; PT, International Normalized Ratio; INR, Parsiyel Tromboplastin Time; aPTT) results one day before the operation and American Society of Anesthesiologists (ASA) score and anesthesia risks were determined. Patients who received anesthesia approval were brought by families with a minimum of 4 hours fasting period on the day of operation. After the vascular access was opened in the service, his mother and father were brought to the operating room to ensure that the child is not afraid. The patient was circumcised with (iv) ketamine under sedoanalgesia if without additional surgical pathology. Local anesthesia with bupivacaine hydrochloride was performed in all patients prior to circumcision by dorsal penile block technique. After a period of anesthesia by the child followed in the wake-up department followed and then he was taken to the service with his father and his mother. Oral feeding was started at 2-3 hours postoperatively and he was discharged on the same day when oral tolerance was good.

All statistical analyses were performed using IBM SPSS® Statistics for Windows®, version 23.0 (IBM Corp., Armonk, NY, USA). All data are

expressed as mean±SD, min, max and percentage unless otherwise stated.

RESULTS

The mean age of 4059 patients was 4.1 years (± 3.29) (Min. 0, Max. 16). The number of patients who had circumcised <1year was 813 (20.03%), <2year was 1315 (32.40%), aged 2 to 6 who no recommended by child psychiatrists was 1154 (28.43%) and >6 year was 1590 (39.17%).

All patients who were circumcised without sedoanalgesia by only local anesthesia were male babies <6 months. The number of children given general anesthesia was 403 (9.93%) because of the additional surgical pathology. Because of the additional surgical pathology, the majority of patients undergoing general anesthesia were <3 years of age (238 patients and 59.06%). Only circumcision, ankyloglossia and circumcision (18 patients), simple polydactyly excision and circumcision (1 patient) circumcised patients underwent sedoanalgesia. General anesthesia was performed in all patients who

underwent circumcision along with other operations. A total of 3196 (78.74%) patients who underwent only circumcision were operated with sedoanalgesia, of which 978 (30.60%) were in the age range of 2-6 with no circumcision recommended. The majority of patients who under 1-year-old circumcision were performed without sedoanalgesia by only local anesthesia (441 patients and 54.24%).

422 (10.40%) of patients who underwent circumcision had additional surgical pathology. The most common additional surgical pathologies were inguinal hernia (212 patients and 50.24%), undescended testes (100 patients and 23.70%), hydrocele (32 patients and 7.58%), and ankyloglossia (18 patients and 4.27%), respectively. More than one additional surgical pathology was present in 25 patients (5.92%) and the most frequent diagnostic laparoscopy and inguinal orchiectomy were performed (16 patients). Six of the patients (1.42%) had additional surgical pathology related to other surgical branches (adenoidectomy and nasolacrimal duct probing) (Table 1).

Table 1. Age, Operation age, Anesthesia type and Additional surgical pathology of cases

N	Age	Operation age (years)			Anesthesia type			Additional surgical pathology				
		<2	2-6	>6	Local	Sedoanalgesia	General	IH	UT	H	O	
		n	1315	1154	1590	441	3215	403	212	100	32	78
4059	4.1±3.29	%	32.40	28.43	39.17	10.86	79.21	9.93	50.24	23.70	7.58	18.48

IH: Inguinal hernia UT: Undescended Testis H: Hydrocel O: Others

Looking at the months of circumcision, it was seen that there was a concentration during the summer holidays and inter-semester holidays. Almost half of the patients (n=1897 and 46.74%) were in the third month of June, July, August. The most circumcised month was June (760 patients and 18.72%). There was also a concentration in the months of May and September, which were before and after the summer holidays, and in January and February. The least circumcised month was in December (166 patients and 4.09%).

DISCUSSION

If the patient with uncircumcised operated for any reason and his family also wants, circumcision may be performed during the operation. Since circumcision was accepted as a suitable procedure for the detection of unrecognized additional surgical diseases, thus circumcision was performed in patients in our clinic with the request of circumcision until recently. However, the purpose of detecting the presence of additional surgical pathology requiring operation in patients brought with the request to circumcise so far is not very effective (approximately 10% of patients). After the reduction of circumcision appointments, other operations performed outside the

circumcision were not decreased. The fact that only a significant portion of our patients (n=978 and 30.60%) who were circumcised, between 2-6 years (not recommended to have circumcised) and did not have additional surgical pathology. So it may be said that there is not much attention in our country for this topic. Circumcision period was the most, 3-month summer holiday period (1897 patients and 46.74%). We have seen that the age and time of circumcision in infants / children with no additional surgical pathology is performed at a time determined by the family, and families have undergone circumcision at a remarkable rate of 2-6 years, which is not recommended by child psychiatrists. This may be caused by the level of knowledge of the families is not at the desired level. Therefore, it is important to carry out additional studies to increase the knowledge level of the families on this subject.

Due to the payment method in the form of package payment by the public insurance institution; It is not appropriate to perform circumcision in 3rd level public university hospitals due to financial damage to the hospital and it also interferes with other operations appointments. Thus, we think that the circumcision of a baby/child, who has need for an additional operation, should be performed during the

additional operation. So financial burden on the hospital, time wasted by the physician and hospitalization caused by circumcision can be prevent. Therefore it would be more appropriate to perform circumcision by private health institutions or certified 1st level family physicians instead of 3rd level public university hospitals in cases who do not need additional operations other than circumcision request.

In addition, it is an appropriate method to discharge all newborn male babies by circumcision, if appropriate conditions are provided and their families are accepted as in western countries, especially in the US (7). We think that the making of circumcision procedure as soon as earlier is better because it can be done only with local anesthesia without sedoanalgesia and will be at a lower cost and faster recovery time. Since June 2016, we have been unable to continue circumcision with local anesthesia without sedoanalgesia to prevent the cost and complications of anesthesia in small infants; because the cases requiring more complicated and priority surgical procedures were could not make an appointment and the condition of circumcision could not be provided with local anesthesia outside the operating room.

The most frequent complication after the circumcision was bleeding and they were fixed with simple medical treatment without requiring rehospitalization. The pre-circumcision examinations and investigations, as in the other operations were done, we did not see serious complications due to circumcision. The problems experienced after the circumcision were mostly due to the fact that circumcision was seen as a simple procedure by the family and then they did not follow the suggestions (early removal of dressing, non-compliance with simple hygiene rules, non-administration of analgesics, traumatization due to falls etc.).

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CONCLUSION

Circumcision should be performed by qualified people, especially pediatric surgery and pediatric urology. 'Circumcision Certificate' programs will be organized under the coordination of pediatric urology, pediatric surgery and urology associations and thus circumcision by qualified people will reduce the possible complications.

In terms of location; Since the circulation of complicated surgical operations is intense, especially in the 3rd level public university hospitals it is more appropriate to perform circumcision in patients who require additional operation to reduce the cost and hospitalization. If additional operation is not required, circumcision should be performed by private health institutions or certified 1st level family physicians in order to avoid complicated surgical procedures which performed in the 3rd level public university hospitals. When evaluated in terms of time; circumcision is important in newborn and infancy, as it can be performed only by local anesthesia without sedoanalgesia because it will reduce both cost and complications of anesthesia and have fast recovery time. In terms of childhood psychology, it is important to take measures to increase the level of knowledge of families on this issue, since a significant number of families still circumcised their children aged 2 to 6 years.

Authors' contributions; Conception and design: Murat Kaya, Aybars Ozkan; acquisition of data: Murat Kaya, Aybars Ozkan, Murat Kabaklioğlu; analysis and interpretation of data: Murat Kaya; drafting of manuscript: Murat Kaya, Aybars Ozkan, Murat Kabaklioğlu; critical revision of manuscript: Murat Kaya; statistical analysis: Murat Kaya, Aybars Ozkan, Murat Kabaklioğlu