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Recommendation Versus Current Status: Retrospective Analysis of Age to Circumcise in a District Hospital

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ABSTRACT

Introduction: Circumcision is one of the oldest and most frequently performed surgeries worldwide. The age of circumcision varies according to the country and region. We aimed to analyze the age of circumcision in our hospital.

Methods: We evaluated the children who underwent circumcision at Istanbul Sultanbeyli State Hospital between February 2012 and February 2022. The following parameters were analyzed: age at operation, surgery date, and surgeon provider type. Children's age at operation were categorized as follows: neonatal period (<30 days), infancy (≥31 days and <1 year), early childhood (≥1 year and <5 years), late childhood (≥5 years and <13 years), and adolescence (≥13 years and ≤17 years).

Results: Seventeen thousand three hundred forty-five children were analyzed. Children's ages ranged from 0 to 209 months; the median age was 4.07 [interquartile range (IQR) 1.82-6.33] years. The percentage of the neonatal period, infancy, early childhood, late childhood, and adolescence were 1.1%, 13.6%, 46.3%, 38%, and 1%, respectively. Urology performed the most circumcisions in any age group (8374, 48.3%), followed by general surgery (4818, 27.8%) and pediatric surgery (4153, 23.9%). In all surgeon provider types, circumcision was performed primarily in early childhood.

Conclusion: Our study showed that most circumcision operations were performed in the inappropriate age range. A multidisciplinary effort is needed to implement healthcare professionals' recommendations from the neonatal period.

Keywords: Circumcision, male circumcision, age of circumcision, neonates, infant

Introduction

Male circumcision is the surgical excision of the skin covering the distal part of the penis to expose the glans penis. Circumcision, which is practiced for social, cultural, and medical reasons, is one of the oldest and most frequently performed surgeries worldwide. While almost all boys are circumcised in our country, the world health organization reports that 30% of men aged 15 and over are circumcised worldwide, predominantly Muslim men (1-4).

Studies reported that newborn circumcision heals quicker than in infancy, and fewer complications are observed when applied by an appropriate technique and specialist. There are many advantages to circumcising men at a younger age, including faster recovery, lower cost, and a lower risk of complications. While circumcision is widely practiced in the neonatal period in western societies, it is generally performed between the ages of three and six in our country. The age range of 3-6 is called the "phallic-oedipal period." Any intervention to the child's sexual organ during this period may be perceived as an attack and may adversely affect the child's spiritual development. It is recommended to avoid circumcision as much as possible during this period (1,2,4-10).

Although it is such a common procedure, the indications and timing of male circumcision are controversial (6). The American Academy of Pediatrics (AAP) states that the health benefits of newborn male circumcision, such as preventing urinary tract infections, penile cancer, and some sexually transmitted infections, outweigh its risks and that the benefits of the procedure justify access to the circumcision (2,6). Studies state that circumcision can be performed in infancy (7,8,11). Implementing these recommendations in countries like ours is even more challenging, where circumcision is practiced for religious reasons rather than medical indications (7,12).

In this article, the patients who were circumcised at our hospital were evaluated. We provided details regarding circumcisions, such as age and timing.

Methods

We performed a retrospective evaluation of the children who underwent circumcision at Istanbul Sultanbeyli State Hospital between February 2012 and February 2022. This study was approved by the Kartal Lütfi Kırdar City Hospital Clinical Research Ethics Committee (approval

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In 2022, the Istanbul Sultanbeyli State Hospital had 170 inpatient beds. The hospital's service area as a secondary care hospital covers a rural district in Istanbul, which has a population of approximately 350.000 (179.000 male, 170.000 female).

The hospital's electronic health record system was used for data acquisition. The following parameters of circumcised children were analyzed: age at operation, surgery date, and surgeon provider type.

Circumcisions performed with medical indications such as phimosis, paraphimosis, balanitis, and hypospadias; children who underwent circumcision concomitant with other surgical interventions, such as hydrocele, adenoidectomy, tonsillectomy, inguinal hernia, umbilical hernia, and patients with missing data were excluded from the analyses.

For further analysis, children's age at operation were categorized using the AAP age definitions as follows: neonatal period (<30 days), infancy (≥31 days and <1 year), early childhood (≥1 year and <5 years), late childhood (≥5 years and <13 years), and adolescence (≥13 years and ≤17 years) (6).

The primary outcome of this study was to determine the age of circumcision in our hospital and compare it with the literature.

Statistical Analysis

We performed statistical analysis using the Statistical Package for Social Sciences (version 25 for Mac, IBM Corporation). Descriptive data for continuous variables are expressed as median values and interquartile ranges (IQR). Frequency was used for categorical variables.

Results

In the decade between February 2012 and February 2022, circumcision was performed on 18,125 patients at Istanbul Sultanbeyli State Hospital. Seven hundred eighty patients were excluded from the analysis (Circumcisions performed with medical indications and circumcision concomitant with other surgical interventions: 702; over 18 years old: 78).

After the exclusion criteria were applied, 17,345 children were analyzed. Children's ages ranged from 0 to 209 months, and the median age was 49 (IQR: 22-76) months (Table 1).

Children were divided into age groups according to the AAP age definitions. The percentage of the neonatal period, infancy, early childhood, late childhood, and adolescence were 1.1%, 13.6%, 46.3%, 38%, and 1%, respectively (Table 2).

Although the number of surgeons operating in our hospital during the study duration changed, urology performed the most circumcisions in any age group (8374, 48.3%), followed by general surgery (4818, 27.8%) and pediatric surgery (4153, 23.9%) (Table 2). In all surgeon provider types, circumcision was performed primarily in early childhood (Figure 1).

The frequency of children circumcised by month was analyzed. We found that more circumcisions was performed in the summer, and the number of circumcisions due to Coronavirus disease-2019 (COVID-19) has decreased in the last two years (Figure 2). Although the number of

Table 1. Children's demographics of those who underwent circumcision surgery

Parameters		Children, (n=17345)
Age (years)	Median (interquartile range)	4.07 (1.82-6.33)
	Minimum-maximum	0-17
Age (months)	Median (interquartile range)	49 (22-76)
	Minimum-maximum	0-209

Table 2. Children's age classification according to surgical service

Parameters			Surgical service			Total
			Pediatric surgery	General surgery	Urology	
American Academy of Pediatrics age classification	Adolescence (≥13 and ≤17 years)	n	7	42	121	170
		% of total	0.0%	0.2%	0.7%	1.0%
	Early childhood (≥1 and <5 years)	n	2356	1923	3760	8039
		% of total	13.6%	11.1%	21.7%	46.3%
	Infants (≥30 days and <1 year)	n	71	1061	1226	2358
		% of total	0.4%	6.1%	7.1%	13.6%
	Late childhood (≥5 and <13 years)	n	1717	1701	3171	6589
		% of total	9.9%	9.8%	18.3%	38.0%
	Neonates (<30 days)	n	2	91	96	189
		% of total	0.0%	0.5%	0.6%	1.1%
Total		n	4153	4818	8374	17345
		% of total	23.9%	27.8%	48.3%	100%

circumcisions performed between February 2012 and February 2020 was 16357, the number of circumcisions conducted between March 2020 and February 2022 was 988.

Discussion

One of the oldest known surgical procedures is male circumcision. It is conventionally performed as a sign of cultural identity or religious significance or for sensed health benefits such as enhanced penile hygiene or decreased risk of infection. Worldwide, Muslims are the most significant religious group to practice circumcision, and an estimated 68% of circumcised men are Muslims. Circumcision will always be an issue to be researched in our country, where most of them are Muslims, and 99% of the male population is circumcised (4,13,14). Circumcision may be performed for medical indications or concomitant to other surgical procedures. The most common medical cause of circumcision is phimosis (4). These groups, who were circumcised except for religious reasons, constituted a small portion of 3.9 percent of our study population.

According to the data compiled by the *Republic of Turkey Ministry of Health,* General Directorate of Health Services, the number of circumcisions performed in health institutions has been increasing over the years. It was observed that 346,519 circumcision procedures were performed in 2013, 407,960 in 2015, and 418,283 circumcision procedures in 2017. According to the Turkish Statistical Institute data, there were 1,291,055 live births in Turkey in 2017. It is known that 51.3% of these births, in other words, 662,311 live births are male. It is hypothetically expected to have at least 650,000 circumcisions per year (15).

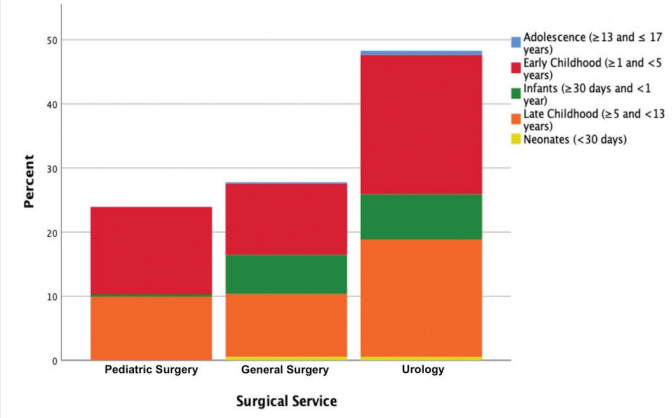

Figure 1. Percentage of circumcision age by surgical service

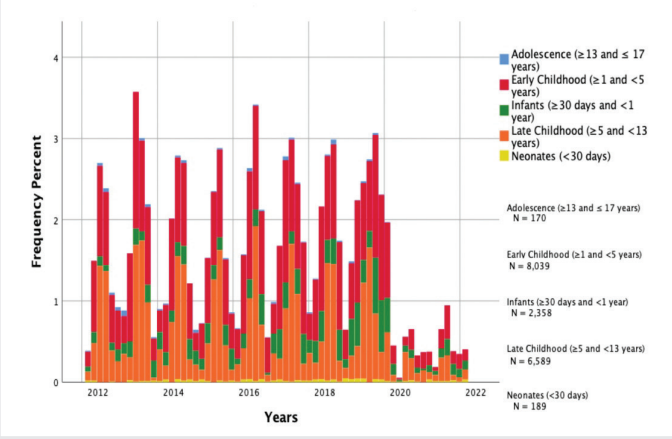

Figure 2. Frequency of circumcised children by months

In a study performed in Turkey in 2011, the mean age of circumcision was reported to be six years and over, in line with the results of previous studies (13,16-18). National studies published in the last decade showed variation in the age of circumcision. In a study in which 4059 circumcised boys were evaluated, the mean age was found to be 4.1 (±3.29), while in a study completed on 1669 boys, it was found to be 3.7±2.5 (19,20). In studies with the number of circumcised boys ranging between approximately 100 and 400, the mean age of circumcision was found to be 3.9±3.8 years, 7.2 (0-16) years, and 5.4±3.2 years, respectively (21-23).

The median age of 17,345 boys in our study was 4.07 (IQR: 1.82-6.33) years. Our large patient cohort result is consistent with the studies published in the last decade. However, it showed that many children are circumcised during the not recommended period.

Research from a country that does not support neonatal circumcision, such as Germany, revealed no increasing trend toward neonatal circumcision. In this study, circumcision in Germany was mainly associated with being descended from Turkish families and revealed that most of the circumcisions were performed between the ages of 1-4 (24). In the meta-analysis of 351 studies with 4,042,988 participants, the age of circumcision was defined as infants (under two years old) and children (2-18 years old), and complications were examined. This study showed that the overall risk of complications requiring treatment was 3.84%, and complications were higher in childhood than in infants (25).

Much of the discussion on the optimal age for male circumcision focuses on the following age groups: newborn and infancy, phallic stage (3-4 years), and school age (8). When we review the recommendations of the institutions in our country for the age of circumcision, The Pediatric Urology Bulletin of the Turkish Association of Urology recommends performing circumcision before the age of 2 or above the age of 6 or performing it under general anesthesia if circumcision cannot be avoided in the phallic period (9). Turkish Archives of Pediatrics, the official journal of the Turkish Pediatric Association: There is no definite age recommended for the age of circumcision. However, circumcision between 1.5 and 4 years of age is inconvenient for the child's psychological development. Neonatal circumcision, which has become widespread in our country recently, has some advantages (26). The turkish Pediatric Surgery Association with the Society for Pediatric Urology recommends following the American Academy of Pediatrics Male Circumcision report (2). In our study, the percentage of age groups did not differ between departments. During the study, all surgical specialties performed circumcision in early childhood. Our study results imply that a multidisciplinary effort is needed if efforts are made to bring circumcision age within the appropriate age range.

Our study showed that circumcision operations were mainly performed in the summer months, which is consistent with other studies (13). As with other surgical procedures, circumcisions were postponed entirely at the beginning of the COVID-19 pandemic (27,28). With the decrease in the effect of the pandemic, circumcision operations have been applied

again. However, a decrease of approximately 75 percent was observed in the number of circumcisions compared with the average of previous years.

Study Limitations

Our study had certain limitations. This is a retrospective, single-center study. The factors affecting the age of circumcision, such as parents' wishes and other medical conditions, were unavailable. We could not compare the complication rate and other perioperative parameters. Our hospital may not reflect national trends in circumcision as a secondary care center.

Circumcision operations are performed by many specialties in different levels of healthcare institutions. A national study to be conducted with more circumcised children from different levels of health institutions will more accurately reflect the age of circumcision in Turkey.

Conclusion

Our study showed that most circumcision operations are performed in the inappropriate age range. Although healthcare professionals' recommendations of the best age to circumcise are compatible with the literature, a multidisciplinary effort is needed to implement these recommendations during the neonatal period.

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Ethics Committee Approval: This study was approved by the Kartal Lütfi Kırdar City Hospital Clinical Research Ethics Committee (approval number: 2022/514/222/13, date: 30.03.2022).

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