Indications for adult circumcision: a contemporary analysis

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Introduction: Circumcision is the most common surgical procedure performed worldwide. However, there is a dearth of literature regarding medical indications for adult circumcisions. Here, we describe our experience with adult circumcision and contemporary demographics, indications and complications.

Materials and methods: We reviewed all circumcisions performed in our institution between July 2008 and January 2015. Patient demographics, procedure indications and postoperative complications were recorded, and patients were grouped by age as either less than 50 years old or 50 years and older.

Introduction

Circumcision is the most common elective surgery performed in the world,¹ with approximately 30% of all men over the age of 15 circumcised.² Medical indications for circumcision include phimosis, balanitis, local cancer control, and cosmesis. However, circumcision is performed far more often for cultural, social and religious reasons.

Judaism requires the circumcision of all male coreligionists. Islamic schools of thought regard circumcision as a favorable and recommended practice, although not mandatory. The practice remains prevalent among Muslim men and it is required of all men who would make the Hajj, the holy pilgrimage to Mecca.³ Circumcision also exists in many parts of the world as part of the local ethnic identity practice. Cultures with a circumcision tradition

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Address correspondence to Dr. Mohamed Keheila, 450 Lakeville Rd, Suite M41, New Hyde Park, NY 11042 USA **Results:** A total of 202 charts were reviewed. The most common indications for circumcision were phimosis (46.5%), dyspareunia (17.8%), balanitis (14.4%), and concurrent phimosis and balanitis (8.9%). Older patients were more likely to undergo circumcision for concurrent phimosis and balanitis or cancer, whereas younger patients sought circumcision for dyspareunia. The complication rate was 3.5% and there was no significant difference in complication rates between the two age groups.

Conclusion: Circumcision is performed in the adult population for a variety of reasons. Circumcision remains a safe surgical option for patient management with a low complication rate.

Key Words: circumcision, male, adult, postoperative complications, phimosis, dyspareunia

include aboriginal Australians, sub-Saharan Africans, and various Pacific Island cultures.²

In the United States (US), circumcision prevalence drastically increased in the late 19th century following the introduction of the germ theory of disease. The Victorian medical community strongly pushed for circumcision of all newborn males due to a perceived increase in cleanliness and well-being. The prepuce was viewed as a source of disease that required removal.⁴ Circumcision was also viewed as a means to discourage masturbation, which was thought to be sinful and physically harmfull.⁵ The combination of these two factors led to the normalization of circumcision in the US, where the current circumcision prevalence approaches 75% of all males aged 15 and over,² and 61% of all neonates.⁶

Despite the significant prevalence of circumcision, there is a paucity of literature regarding rates of circumcision for medical indications in the adult population. Rather, current literature focuses primarily on two topics - the role circumcision in curbing the spread of sexually transmitted infections (STIs), or the effects of circumcision on sexual function and pleasure. This narrow focus ignores a significant number of patients who undergo circumcision as a proven surgical therapy for a medical condition, such as phimosis or balanitis. In this paper, we describe our experience with adult circumcision, reviewing contemporary demographics, indications and complications.

Materials and methods

In this IRB-approved study, we retrospectively reviewed the medical records of a large, multi-specialty, academic urology practice in an urban setting. Using current procedural terminology (CPT) codes, we captured all patients 18 years and older who underwent circumcision (CPT code 54161) between July 2008 and January 2015. Patients were then grouped by age as either less than 50 years old or 50 years and older. Patient demographics, procedure indications and postoperative complications were recorded. Complications were recorded up to 30 days postoperatively and were graded using the Clavien-Dindo grading system.⁷

Patients with phimosis were offered an alternative of topical steroids before moving on to circumcision. Circumcisions were performed in the operating room under general anesthesia or monitored anesthesia care with sedation using the dorsal slit technique.⁸ Briefly, after prepping and draping, the distal foreskin was pulled over the glans. The edge of the corona was located using a probe or hemostat and a marker was used to draw a line marking the location of the circumferential incision. A dorsal incision was then made in the foreskin and carried down to Buck's fascia. Following that, the intervening foreskin was removed following the circumferential line drawn previously. Bleeding was controlled with electrocautery and circumferential absorbable sutures were placed around the incision. Postoperative dressing was left to the preferences of the operating surgeon.

Descriptive statistics are reported as mean and standard deviation (SD) for continuous variables, and frequency and percent for categorical variables. The independent t-test was used for continuous variables while Fisher's exact test was used for categorical variables when comparing groups. Multivariate logistic regression was used when comparing multiple variables across a single outcome. All tests were two-tailed and a p value < 0.05 was considered statistically significant. All analysis was done using SPSS version 16 (IBM, Armonk NY, USA).

Results

A total of 262 patient charts were reviewed, of which 60 were excluded for missing data. Mean age was 43.5 years ± 20.3 years and mean body mass index (BMI) was 28.6 kg/m² ± 5.8 kg/m². The most common indication for circumcision across all ages was phimosis (46.5%). Older patients more likely to undergo circumcision for concurrent phimosis and balanitis or cancer, whereas a significant number of younger patients sought circumcision for sexual complaints. Cancer was exclusively seen in the older population consistent with the previously published demographics of that disease. Patient demographic and comorbidity data are reported in Table 1 and indications data are reported in Table 2.

There were 7 (3.5%) complications reported, Table 3, of which 6 were Clavien II. All Clavien II complications were wound infections (Clavien II) that

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Variable	All patients (n = 202)	< 50 years old (n = 136)	≥ 50 years old (n = 66)	p value	
Age (mean \pm SD), years	43.5 ± 20.3	31.2 ± 8.9	68.6 ± 12.4	< 0.001	
BMI (mean \pm SD), kg/m ²	28.5 ± 5.8	28.1 ± 6.21	29.5 ± 4.9	0.15	
Diabetes mellitus	46	17	29	< 0.001	
Hypertension	57	19	38	< 0.001	
Hyperlipidemia	54	14	40	< 0.001	
CAD	21	2	19	< 0.001	
Apnea	7	2	5	0.039	
BPH	18	0	18	< 0.001	
Cancer	11	0	11	< 0.001	
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BMI = body mass index; CAD = coronary artery disease; BPH = benign prostatic hypertrophy

TABLE 1. Patient demographics

TABLE 2. Indications for surgery									
Variable	All patients (%)	< 50 years old (%)	≥ 50 years old (%)	p value					
Phimosis	94 (46.5)	59 (42.6)	36 (54.5)	0.18					
Balanitis	29 (14.4)	21 (15.4)	8 (12.1)	0.67					
Phimosis and balanitis	18 (8.9)	8 (5.9)	10 (15.2)	0.04					
Dyspareunia	36 (17.8)	32 (23.5)	4 (6.1)	0.002					
Hygiene/cosmesis	10 (4.9)	10 (7.4)	0 (0)	0.03					
Condyloma excision	4 (2.0)	4 (2.9)	0 (0)	0.31					
Urinary issues	4 (2.0)	2 (1.5)	2 (3.0)	0.60					
Cancer excision	4 (2.0)	0 (0)	4 (6.1)	0.01					
Other*	3 (1.5)	1 (0.7)	2 (3.0)	0.25					

*other indications include conversion to Judaism, urethral stricture, and redundant prepuce with no other symptoms

TABLE 3. Complication	BLE 3. Complications						
Variable	All patients (n = 202)	< 50 years old (n = 136)	≥ 50 years old (n = 66)	p value			
Total complications	7 (3.5)	7 (5.1)	0 (0.0)	0.10			
Clavien II	6 (3.0)	6 (4.4)	0 (0.0)	0.18			
Clavien III	1 (0.5)	1 (0.7)	0 (0.0)	1.0			

were treated with topical antibiotics, as well as a week of oral antibiotics (500 mg Augmentin twice daily for 7 days). One patient returned to the operating room for persistent bleeding (Clavien IIIb). Multivariate logistic regression analysis showed no association between the incidence of complications and patient age, BMI, or comorbid conditions.

Discussion

Elective circumcision is practiced worldwide for a variety of religious, cultural and ethnic reasons, most commonly in the prepuberal male.² Outside of cultural indications, recent literature has focused on the utility of circumcision in curbing STI transmission in at-risk populations.⁹⁻¹⁴ Strategies for HIV prevention through circumcision are mostly applicable to sub-Saharan Africa where the prevalence is very high.¹⁵ However in regions with lower HIV rates, risk reduction is less dramatic and circumcision is unlikely to be widely adopted for prophylactic purposes. The remaining contemporary literature focuses on the positive, negative or equivocal effects of circumcision on sexual functioning and sensation.¹⁶⁻¹⁸ However, the

most common indications for adult circumcision in developed nations are for medical indications including phimosis and balanitis, amongst others. We sought to examine the modern indications for circumcision in a developed nation.

Phimosis is the most common indication for medical circumcisions, much like in our own cohort, followed by balanitis/balanoposthitis.¹⁹ Dyspareunia is not commonly discussed as a common indication, but the majority of literature discussing indications focused on the pediatric population. Though circumcision was once considered the standard surgical treatment for phimosis, medical management²⁰⁻²² and newer surgical techniques^{23,24} have become first-line care for this disease.

Topical steroid therapy has reported success rates varying from 65.8%²¹ to 87%,²² with success defined as avoiding circumcision. Though these studies were in the pediatric population, their findings can be extrapolated to the adult population in a limited capacity. Foreskin sparing techniques have been described with good success in adults. Preputioplasty has reported success rates of 90%²³ and frenuloplasty has reported success rates ranging from 89%²⁵ to 92%,²⁶ though the populations in these studies were far younger than our

own, with median ages ranging from 27 to 29 years old. There remains a dearth of literature comparing topical therapy, foreskin-sparing techniques, and circumcision in an older patient population.

We found dyspareunia was a more common indication for circumcision in the young adult cohort when compared to their older counterparts, as were concerns over hygiene and cosmesis. Circumcision has long been known to be useful in cases of male dyspareunia caused by a tethered frenulum,²⁷ and has been found to increase sexual satisfaction amongst patients with a foreskin pathology such as phimosis.¹⁶ In patients without foreskin pathology, circumcision has not been found to cause any sexual dysfunction¹⁷ and thus is a safe option in treating sexual dysfunction, if requested by the patient.

There are several other less common indications for circumcision, some of which are unique to the adult. Lichen sclerosus, commonly grouped with balanitis xerotica obliterans, is most often seen in adults,²⁸ though new evidence shows that it may be more common in children than previously believed.²⁹ Condyloma accuminata are more common in adults than children,³⁰ and circumcision can serve both as a surgical excision of the lesion,³¹ as well as a prophylactic measure to reduce transmission of the human papilloma virus (HPV) infection.¹⁰

Cancers of the penis and foreskin are also far more common in the adult population, with a peak incidence in the 6th decade of life, though the overall incidence of the disease remains extremely low.^{32,33} Distal lesions may be excised with circumcision, if adequate margins are achievable, with good cosmetic results and local control.³⁴ However, the rate of local recurrence is higher than that of amputation.³⁵

Though there is contention regarding necessity of adult circumcision, it remains a safe surgery with a low complication rate. A study of adult elective circumcision patients in Kenya found a complication rate of 2.0% one week after surgery.³⁶ A study out of Great Britain found a similar complication rate of 2.1% in pediatric patients who underwent circumcision for medical indications.³⁷ A large trial from South Africa demonstrated a complication rate of 3.6% among HIV-seronegative men and 8.2% among HIV-seropositive men.³⁸ Our complication rate parallels that of the above studies, with no significant difference in complications between age groups.

Conclusions

Circumcision is performed in the adult population for a variety of medical, sexual, religious or preferential reasons. In our population, phimosis, dyspareunia and balanitis were the most common indications. Complication rates are low, and significant complications are very rare. The practice of elective circumcision remains hotly debated for both pediatric and adult patients, but is a safe and extremely common procedure worldwide.

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