Complications of Circumcision
Our Experiences Over The Last 15 Years

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ABSTRACT

***Aim**: In this study we evaluated cases referred to our clinic with serious complications of circumcision which needed secondary surgical intervention.*

***Method**: Between 1995 and 2010, 38 complicated circumcision cases were evaluated. The circumcisions were done at various medical clinics, home or communal circumcision ceremonies held in villages. The patients in the sample ranged in age from five to 24 (average 14). Partial or total glandular amputation, urethral injury, glandular necrosis and preputio-glandular fusion were present in 9, 11, 2, and 16 cases respectively.*

***Result**: The incomplete glans was patched with buccal mucosa in all 9 of the cases with glandular amputations. Five of the cases with urethral fistula had simple fistula and these were repaired with a simple closure method. Complete open distal urethra present in the other 6 cases were covered in the duplay style and a hypospadias repair was performed on them with a tubular incised plate urethroplasty technique with buccal mucosa as a patch graft. Both cases with glandular necrosis were put under hyperbaric oxygen treatment. Adhesion freeing and revision were performed to all the cases with preputio-glandular fusion*

***Conclusion**: Circumcision is the most common surgical procedure in our country. However, since circumcisions are also commonly performed by inexperienced individuals at home, in hospitals and during communal circumcisions where high numbers of circumcisions are performed in a short period time, we frequently come across complications of circumcision.*

***Key words**: Circumcision, circumcision complications, penile amputation*

Sünnet Komplikasyonları; Son 15 yıl içinde deneyimlerimiz

Amaç: *Bu çalışmada, kliniğimize refere edilen ikincil cerrahi müdahale gerektiren ciddi sünnet komplikasyonlu olgular değerlendirildi.*
Metod: *1995-2010 yılları arasında komplikasyon gelişmiş sünnet olguları değerlendirildi. Bu olgular değişik tıp merkezlerinde, evlerde ve kırsal alanda tek tek veya toplu sünnetler sırasında gelişmişti. Olguların yaşları 5 ay ile 24 yıl (ortalama 14 yıl) arasında idi. 9 olguda parsiyel veya total glandüler amputasyon, 11 olguda üretral yaralanma, 2 olguda glandüler nekroz, 16 oguda ise preputio-glandüler füzyon mevcuttu.*
Bulgular: *Glandüler amputasyonlu 9 olguda güdük glans ağız mukozası ile yamandı. Üretral fistüllü olgulardan beşinde basit fistül vardı ve fistül onarımı yapıldı. Distal üretranın komplet açık olduğu diğer 6 olguda ise duplay tarzında kapatma, Tipu tarzında ve ağız mukozası ile patch greft tarzında hipospadias onarımı yapıldı. Glandüler nekroz gelişmiş 2 olguya hiperbarik oksijen tedavisi uygulandı. Preputio-glandüler füzyon gelişmiş olgularda revizyon uygulandı.*
Sonuç: *Ülkemizde sünnetin en yaygın uygulanan cerrahi işlemdir. Sünnetin deneyimsiz kişilerce de yapılıyor olması, hastanelerin yanısıra sıklıkla evlerde, kırsal alanlarda, okullarda toplu sünnetler şeklinde kısa sürede çok çocuğun sünnet edilmesi şeklindeki uygulamalar nedeni ile sünnet hataları ile sıklıkla karşılaşılmaktadır.*
Anahtar kelimeler: *Sünnet, komplikasyonlar, penil amputasyon*

INTRODUCTION

It is estimated that 25 % of all the men around the globe are circumcised (1). Considering this fact, it is clear that circumcision is the most common surgical operation. While most circumcisions are performed for religious reasons, few are performed for medical reasons (2). Complication rates ranging from 1 to 15 % are reported for circumcision procedures (3). Most of these complications are in the form of minor complications such as bleeding, infection and the reopening of wounds. In addition, major complications such as glandular necrosis, glans and penis amputations, urethral openings, and preputial fusion defects can also occur. Although it is a common surgical procedure in our country, only 5-10% of circumcisions are performed in hospitals. Circumcisions are more commonly performed in health centres, at home and in villages during communal circumcisions that are usually sponsored by charity organisations. During communal events, hundreds of children are circumcised in a short period of time. Circumcisions performed by unqualified individuals and at communal events can also be an open invitation to major complications. In this study, we evaluated cases of circumcision with complications that were referred to us for surgical repair.

MATERIALS AND METHODS

Thirty-eight cases of major circumcision complications were referred to our clinic between 1995 and 2010. Patients were between 5 months and 24 years of age (the average age was 14). The time between the occurrence of the complication and the admission of the patient to our clinic ranged from 2 hours to 18 years.

RESULTS

Five patients had partial glans amputation, four had total glandular amputation, five had urethral fistula, six had a total opening of the distal urethra, two had glandular necrosis, and 16 had serious preputio-glandular fusion (Table 1).

Only three of the patients referred to our clinic had been circumcised in hospitals. Two of these patients had developed glandular necrosis and one had developed preputial fusion. The two patients with glandular necrosis were treated with 8 to 12 sessions of hyperbaric oxygen treatment. Since the patients with partial or total glans amputations were admitted to our clinic late and since glandular anastomosis was not possible for these patients, a cosmetic improvement was achieved by covering the glans with the buccal mucosa. Urethral integrity was achieved for patients with urethral fistulae with a simple fistula repair. Patients with open distal urethras through the meatus resembling hypospadias were repaired with a duplay style method, Mathieu procedure, and a patch graft of buccal mucosa. For patients with preputio-glandular fusions, a revision was performed after the glandular adhesion was removed (Table 2).

DISCUSSION

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It had been reported that circumcision lowers the risk of urinary system infections in children and penis cancer in adults and acts as an important barrier against sexually transmitted diseases (STDs) including human immunodeficiency virus (HIV) infections (4). According to its published report, the American Academy of Pediatrics accepts that circumcision, especially when performed under the age of one, lowers the risk of urinary system infection and future penis cancer development (5). While it has been reported that the data are insufficient to argue for the routine application of circumcision on newborns, Wiswell and colleagues defend routine circumcision for all newborns based on results showing that the risk of urinary system infections was 11 times greater in uncircumcised children (6). Supporting this view, Fussel and colleagues reported that the foreskin leads to bacterial colonisation (7). Yet another report states that circumcision does not aid in the prevention of the STDs transmitted through the urethral route and can only provide protection against diseases associated with genital ulcers (8).

Although there are contradictory views about the routine application of circumcision, Islamic and Semitic societies routinely apply this procedure for religious reasons. For this same reason, hundreds of thousands of children in our country are being circumcised each year, especially in the summer months. In our country, the age for circumcision is usually between 2 and 11 (Average 7) years. It has been estimated that the number of circumcisions performed for medical reasons is less then 10 % of all the circumcisions performed. While a very small percentage of circumcisions are performed in hospitals, most are performed at homes, health centres, schools, and open areas. In towns, most of these circumcisions are performed by experienced doctors, health workers or technicians. In rural areas however, most are performed by unqualified individuals, usually without any anaesthesia. According to our review of the circumcisions, a clamping method was most frequently used and on rare occasions, a Gomco or classical surgical method. We also observed that more than 95 % of the circumcisions are performed under local anaesthesia. The most widely used anaesthetic substance was 4 mg/kg lidocaine without adrenaline and less frequently 2 ml of 20mg/ml lidocaine and 0.125 % epinephrine, di-

Table 1*. Complications of circumcision*

Cases	*n*
Partial glandular amputation	*5*
Total glandular amputation	*4*
Urethral fistula	*5*
Distal urethral opening	*6*
Glandular necrosis	*2*
Preputio-glandular fusion	*16*
Total	*38*

Table 2*. Treatment of the complications*

Cases	*Treatment*	*n*
Partial and total glans amputation	*Repair with buccal mucosa*	*9*
Urethral fistula	*Simple fistula repair*	*5*
Distal urethral opening		
Subcoronal hypospadias	*Mathieu style repair*	*2*
Coronal hypospadias	*Duplay style repair*	*2*
Previous unsuccessful fistula repair	*Buccal mucosa patch graft*	*2*
Glandular necrosis	*Hyperbaric oxygen treatment*	*2*
Preputio-glandular fusion	*Fusion freeing and revision*	*16*
Total		*38*

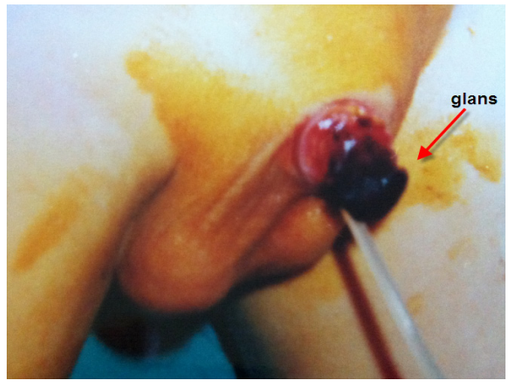

***Figure 1**. Glandular necrosis.*

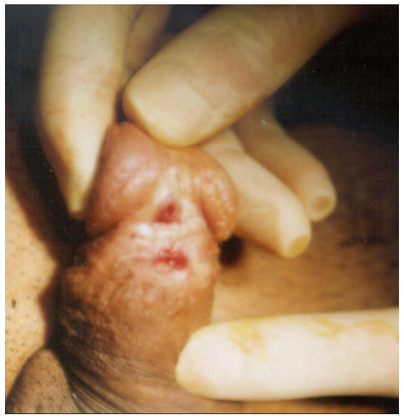

***Figure 2**. Two distal urethral fistulas*

luted 1:2 in serum physiological solution. In our country, communal circumcisions sponsored by charity organisations, local administrations or by political parties hoping for political support are quite common. As a result, circumcisions are often performed in great numbers in a short period of time, usually allowing less than 10 minutes for each child. This is an invitation for various complications. Although the British Medical Association argues that circumcisions should only be performed in cases where it is medically necessary, many voluntary circumcisions are still performed in England (9).

Most of the major complications of circumcision in our patients were mechanical. Only two patients had developed glandular necrosis associated with anaesthesia (Figure 1). In developed countries, glandular necrosis is usually associated with the cautery used. Although very rare, circumcisions performed in operating theatre settings where bleeding control is achieved with diathermy can lead to such complications. It had been reported that the probability of arterial injuries would be lessened with the use of a bipolar cautery for this purpose (10).

We cannot neglect the fact that every year in our country hundreds of thousands of children are circumcised for religious reasons. Due to practical and economical reasons, as high as 95% of circumcisions are performed under local anaesthesia outside of hospitals. In Western countries on the other hand, circumcisions are usually performed voluntarily and in hospitals. In the USA, the cost of circumcision performed under general anaesthesia had been reported to be $1,805 compared with the cost of $196 for circumcisions performed under local anesthesia11. Therefore, circumcisions performed under local anaesthesia are clearly much more cost effective. The cost of circumcision as determined by the Turkish Physicians Association is around $80. However, in practice it is usually below $50.

Since bleeding control is achieved by diathermy for circumcisions performed in operating rooms, local anaesthetics containing adrenaline are not recommended. Instead, 4.5 mg/kg of lidocaine without adrenaline is recommended for this purpose (11). In circumcisions performed outside of hospital settings, local anaesthetics containing adrenaline are used to decrease bleeding. In our review of more than 3000 circumcisions performed under local anaesthesia using of 2 ml of 20 mg/ml lidocaine and 0.125 % epinephrine diluted 1 in 2, we did not come across any complications. We believe that the age of the child, the amount of the local anaesthetic applied, injection of the anaesthetic to the wrong area, undiluted application of the local anaesthetic with adrenaline, and tight wrapping of the penis after the circumcision can be factors leading to glandular necrosis.

Most of the circumcision complications in our series were related to the mechanics of the procedure. The most common problems are related to surgical technique and the inexperience of the person performing

the circumcision. Glandular and urethral injury risks are low in circumcision methods using the classical excision technique. However, since the application of this method requires more time and is more difficult to learn, circumcisions are more frequently performed by clamping and guillotine like incisions which is easier to learn and can be done on many children in a short time during communal circumcisions. Provided that it is performed by experienced hands, this is an extremely simple and quick technique in which total peeling of the preputium off the glans, correct placement of the clamp in a way to keep the glans away, and maintaining an angle of 45o between the blade and the clamp during the incisions to be made on the penis side of the clamp are important. Application of this technique by unauthorised people who learned the technique by mere observation can lead to glandular, urethral, and corporal injuries. In cases of corporal amputations where the child is older and the incision is suitable, such incisions are reported to be treated by successful anastomosis in clinics with highly improved facilities (12, 13). However, this is not possible especially for glandular amputations. We obtained highly satisfactory results in such cases with a surgical revision in which the buccal mucosa was spread over the glans. Distal urethral opening usually develops during circumcisions performed by clamping (Figure 2) as well. For these patients, we applied the same techniques used in distal hypospadias repair methods, depending on the type and age of the case, the admission time, and the condition of the local penile skin. We performed patch graft urethroplasty with buccal mucosa for two cases who previously had unsuccessful primary repairs. In one case it was not possible to explain how a midpenile urethral fistula developed during circumcision. We obtained successful results in these patients by fistula repair. Especially for the adult age group, fistula repair was performed without catheter under local anaesthesia. Preputio-glandular fusions are usually the results of incompletely peeled off preputial skin from the glans, incomplete excision, and insufficient post-circumcision care. Lee Polinsky and colleagues divided such adhesions into 4 groups: Grade 0 means no adhesion; Grade 1 means the preputium is connected to the corona by a thin film; Grade 2 means adhesion covers less than 50 % of the glans; Grade 3 means adhesion covers 50 % or more of the glans (14). Grade 1 adhesions usually develop in cases where the preputium is not pulled back post-circumcision or is incompletely excised. Grade 2 and 3 adhesions develop when the preputium is not peeled off the glans or the preputium is incompletely excised during the circumcision. In the cases we reviewed, 8 patients had grade 2 and 8 patients had grade 3 adhesions. In these patients, the place where the preputium adhered to the glans was excised and the resulting opening on the glans was sutured with 5.0 chromic catgut. The excess preputial tissues were then excised.

Due to religious reasons, we expect circumcisions will continue to be performed at the same pace in Islamic countries like Turkey. We strongly believe that in order to prevent major complications, circumcisions performed by people other than authorised health workers, and communal circumcisions should be prevented or at least be performed under supervision. We also assert that aseptic and antiseptic rules are easily broken during communal circumcisions increasing the risk of wound infection and transmission of blood born diseases, such as hepatitis B virus (HBV) infection. We believe that educating communities about this matter is important and would be more effective than legal legislation.

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