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# Major penile injuries as a result of cautery during newborn circumcision

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ABSTRACT

*Aim:* To report a grading system for complications of male circumcision, and to represent our experience with salvage surgery for postcircumcision electro-cautery penile ablation injuries.
*Patients and methods:* Circumcision injuries presented to our department between January 2010 and January 2015 were collected and graded into five categories according to the degree of penile injury, and the possibility for surgical reversibility.
*Results:* Salvage surgery was carried out on 5 cases of post circumcision total phallic loss (grade V injuries). One of the cases had a postoperative meatal stenosis that responded to dilation under general anesthesia. No skin graft problems were documented in the other cases. The cosmetic outlook was greatly appreciated by the family and the operating team at follow up of all cases.
*Conclusion:* Grading the post circumcision penile injuries is of paramount importance, and reconstructing the phallus using the hidden corporal bodies is considered worthwhile.



Male circumcision is by far the most common surgical procedure done in countries with Islamic and Jewish cultivation [1]. It is conventional in some African Christian churches [2]; though considered technically simple and safe, grievous outsets such as total phallic loss or even death have been reported [3–5].

Only recently did the practice of male circumcision changed from being performed by a "lay-man" to a physician. Parents now considered taken their children to a more "qualified" operator in order to expect little or no complications.

Bleeding is perhaps the most alarming early complication. Sadly, in order to reduce that, physicians use various hemostatic techniques not realizing its potential risks.

After reviewing the literature, no grading of post circumcision complications was found. Although the term *complete penile amputation* clearly meant whole penile loss in some reports [6–9]; it is not unusual for others to use the term to describe only glans amputation [10–12]. Thus, we proposed a grading system to help unify the language used for describing these mishaps, and to stratify the management options for each grade, and to inform the parents about the gravity of insult and the potentiality of salvage.

Total phallic ablation (TPA), perhaps the gravest insult to a surviving child, is likely to happen with the improper use of mono-polar electro-cautery at circumcision. We also reported salvage neophallic reconstruction that aimed at creating a functional and aesthetic phallus, with the hope of alleviating the immense psychological pressures on the child and his family.

## 1. Patients and methods

Complicated circumcision cases referred to our department in the period from Jan. 2010 to Jan. 2015 were reviewed by scaling the degree of insult and evaluating the management strategy followed (including salvage surgeries when needed) and its outcome.

The collected data comprised of five grades of circumcision injuries, based on the injured part: skin, urethra, glans, or corpora cavernosa (either been fractured or totally lost). (►Table 1), (►Fig. 1).

Six cases with total or near total phallic loss, caused by ritual male circumcision, were among those referred to the pediatric surgery unit at Cairo University Specialized Pediatric Hospital (CUSPH), during the inclusion period (Jan 2010–Jan. 2015).

Patients' history revealed that all were circumcised by inexperienced surgeons at primary care hospitals using electro-cautery for hemostasis. Although circumcision, in all cases, was undertaken during the first month of life, patients' ages at presentation ranged from 21 days to 5 years. In all cases, parents stated that shortly after having their babies circumcised, they noticed deep cyanosis of the whole penis, followed by sloughing 10–15 days afterwards.

One of the infants, aged 54 days, was presented to emergency department with septic shock and multi-organ dysfunction syndrome secondary to infective gangrene of whole external genitalia, 14 days after being circumcised by an obstetrician (►Fig. 2). The infant was admitted to ICU, but unfortunately died on day two after admission.

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**Table 1**
Grading of post-circumcision penile injuries

| | | |
|---|---|---|
| Grade I | Skin problems | • Minor: infection, stitch sinus, smegmoma<br>• Major: i.e. necessitating reconstructive surgery, e.g.: radical circumcision |
| Grade II | Isolated urethral injury | • Post-circumcision urethral fistula |
| Grade III | Glans amputation | • Partial slanting amputation (dorsally or ventrally- slanting)<br>• Total glans amputation |
| Grade IV | Corpora cavernosa insult | • Distal penile amputation<br>• Penile fracture |
| Grade V | Total phallic loss | • Gangrene (electro-cautery injuries) |

In the surviving five cases, physical examination demonstrated complete sloughing of the penis, leaving a contracted scar with a central hole just allowing micturition. One of the patients had a previous unsuccessful trial in another center, and then presented to our department at the age of 5 years with a 1.5 cm mutilated penile stump. Electro-cautery plate failure was evident on his thigh as an ugly burn scar.

Surgical reconstruction was carried out on surviving cases, after an interval of 6 months or more from the time of insult, aiming at gaining an overt penile lengthening, neo-glans creation, and appropriate skin coverage.

Elongation of the penis was achieved through full release of the entrapped anterior corporal length and division of the suspensory ligament to incorporate part of the posterior corporal length in the protuberant stump. Further caudal positioning of the penis makes the mobilized penile stump even more protrusive. W-V shaped flaps of mons pubis, and rotational flaps of scrotum were required in three cases in order to achieve caudal positioning (►Fig. 3).

Neo-glans construction was done through an incision at a proposed coronal sulcus site. The incision was then deepened down through dartos layer, Buck's fascia, and tunica albuginea. Elevation of these penile coverings from the incision site and for few millimeters distally in order to reflect towards the glans tip and to fix non-absorbable interrupted 6–0 sutures made the corona. Trimming of the dorsal aspect of the terminal end of penile stump helped to construct an acceptable glans tip.

Full-thickness elliptical skin graft taken from the upper thigh, below and parallel to the inguinal crease served as appropriate skin coverage in three cases. The donor site is primarily closed using dermal sutures. The graft is then de-fattened and partitioned into three segments to fit to the reconstructed glans penis, coronal sulcus, and penile shaft, sequentially. For the fourth case, the described skin graft was used for penile shaft coverage, meanwhile buccal mucosal graft, harvested from the lower lip, was used for neo-glans coverage, as an alternative.

The fifth case had an abundant scrotal skin that inspired the creation of a rectangular scrotal wall flap, based on the anterior scrotal vessels, to be rolled around the elongated penile shaft. A small piece of buccal mucosal graft was then used to cover the fashioned neo-glans in that case (►Fig. 4).

A self-adherent wrap (Coban) ™ was applied for 5–7 days to fix these grafts in place.

Regular follow up of the operated cases was done for at least 6 months postoperative for early picking up of grafting complications. Afterwards, the follow-up visits were scheduled yearly, till date.

## 2. Results

From Jan. 2010 to Jan. 2015, two hundred and twenty-three male children have been presented to CUSPH, being smitten with complicated circumcision. Their ages ranged between one day and six years.

Wound infection and post-circumcision bleeding were the presented mishap in the vast majority of our cases ($n = 77$ and $n = 59$). Radical circumcision (excess skin removed) was present in 27 cases. Another 24 children had an incomplete circumcision, one of them with a preputial bladder (urine being retained behind a granuloma closing, a partially amputated prepuce).

Eleven cases were with partial glans amputations; dorsally or ventrally slanting or amputated glans tip. Post-circumcision urethrocutaneous fistula was in 17 cases, with all being subcoronal minute fistulas, except one case with a partial loss (≈1 cm) of anterior penile urethra.


**Fig. 1.** Grading of post-circumcision penile injuries: GI - Skin complication; granuloma at the circumcision site hindering urination. GII - Ventrally slanting glans amputation GIII - Urethral injury GIV - Penile fracture GV - Total phallic ablation