Evaluation of Gomco clamp in neonates and early infant male circumcision in a private hospital: a series of 300 cases

Elgendy Hesham M.[a], Rateb Said A.[b], Ahmed S. Ibrahim[c], Hussein A. Afif[d]

[a]Department of General Surgery, Mansoura Faculty of Medicine, Mansoura University, Mansoura, [b]Department of Surgery, Kasr Al-Aini School of Medicine, Cairo University, Cairo, Egypt, [c]Departments of Surgical, [d]Surgery, Al Omooma Hospital, Farawania State, Kuwait

Correspondence to Hesham M. Elgendy, MD, Department of General Surgery, Mansoura Faculty of Medicine, Surgery Department, Mansoura University, Mansoura, Egypt
Tel: +201002415774, +2050345131;
E-mail: heshammelgendy@yahoo.com

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Aim

The aim of this study was to evaluate the impact and safety of neonatal circumcision under a uniform hospital policy using a Gomco clamp and its complication and parents' satisfaction.

Patients and methods

A prospective analysis of 300 consecutive cases of neonatal and infant circumcisions performed with a Gomco clamp at Al Omooma Private Hospital, Kuwait, during the period from March 2012 through March 2015, was carried out. Outcome measures for the study were the number and type of complications in terms of procedure, the adequacy of circumcision, and parents' satisfaction with the final appearance.

Results

An overall 10.6% of cases suffered from intraoperative bleeding, most of which were controlled by means of chemical hemostasis or bipolar diathermy, whereas 2.6% of cases needed vicryl plus 5/0 stitches. All of them were older than 2 weeks. Two cases (0.67%) returned on the same day of discharge with surface oozing; both cases were sutured with vicryl plus 5/0 stitches. The overall percentage of postoperative bleeding that needed sutures was 3.3% (10 cases). All cases of significant bleeding requiring stitches were older than 14 days (mean age, 38 days). Four parents (1.3%) came during the follow-up period complaining of inadequate circumcision; only one of them needed a redo after 6 months of follow-up. 0.67% of cases suffered from frenulum ulcer and only 1% of patients.

Conclusion

Circumcision with a Gomco clamp is a safe and effective technique with satisfactory cosmetic results, provided care is taken in exact marking of the site on the foreskin for excision and selecting a correct size of the clamp. Gomco clamp is a bloodless, sutureless, simple, and safe method of circumcision in the neonatal period and in early infancy. The use of the Gomco clamp for circumcision beyond early infancy (3 months of age) has substantial morbidity.

Keywords:
bloodless sutureles, Gomco clamp, male circumcision, safe circumcision

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Introduction

Male circumcision – that is, partial or complete surgical removal of the foreskin (prepuce) of the penis – is a practice known since antiquity. Ancient Egyptian paintings testify to its long existence. The word 'circumcision' comes from the Latin *circumcidere* (meaning 'to cut around') [1]. Driven by religious, cultural, social, or health-related motives, male circumcision is commonly performed during adolescence or even during infancy. According to the WHO, global estimates suggest that 30% of the male population is circumcised, of whom almost two-third are Muslims [2]. It is a religious commandment in Islam, in which male circumcision is widely practiced [3]. Moreover, it is customary in some Oriental, Orthodox, and other Christian churches of Africa and a routine procedure among the Jews [1,3].

Circumcision is one of the most frequently performed elective surgical procedure on the male population in the USA [4]. The Middle East presently has the highest proportion of circumcised population [5].

Circumcision has been suggested as an effective method of maintaining penile hygiene from the time of the Egyptian Pharaohs. From the middle of the 19th century, circumcision has been performed for medical reasons.

Male circumcision is believed by many to be a defense against a wide range of bacterial and nonbacterial pathogens; however, the precise mechanism of this effect is yet to be defined [6].

Circumcised men are at significantly lower risk for HIV, syphilis, human papillomavirus, and chancroid [7].

Potential benefits of decreased incidence of urinary tract infection and carcinoma of penis has been acknowledged by the American Academy of Pediatrics [8].

Removal of the shaft skin and inner preputial epithelium enough to uncover the glans prevents phimosis and renders the development of paraphimosis impossible.

Throughout the centuries, many methods for performing circumcision have been described.

Besides classical surgical methods, three different circumcision clamps can be used in neonates: Gomco clamp, Plastibell, and Morgen clamps [9,10]. The Gomco clamp is one of the most commonly used instruments for neonatal circumcision in the USA [11]. The procedure with this clamp is bloodless and has proven safe with excellent cosmetic results and minimal postoperative complications [11]. This study was conducted to present our initial experience with circumcision using a Gomco clamp.

Objective

The aim of this study was to evaluate the impact and safety of neonatal circumcision under a uniform hospital policy using a Gomco clamp (C) (Allied Healthcare Products Inc., St Louis, Missouri, USA).

Study design

A prospective analysis of 300 consecutive cases of neonatal and infant circumcisions performed with a Gomco clamp at Al Omooma Private Hospital, Kuwait, during the period from March 2012 through March 2015, was carried out. Outcome measures for the study were as follows:

(a) The number and the type of complication in terms of procedure;
(b) The adequacy of circumcision; and
(c) The parents' satisfaction with the final appearance.

Patients and methods

The procedure started after informed consent was obtained from the parents and the infant was properly examined. Clotting time (CT) and bleeding time (BT) were routinely evaluated for all cases.

After the infant is restrained, the penis, scrotum, and groin area are cleaned with a disinfecting solution and are inspected for anatomic abnormalities. The Gomco clamp is checked to make sure the bell is the right size for the clamp and that there are no defects. A dorsal penile nerve block is administered (1 ml of 1% lignocaine with an insulin needle) at the 2 o'clock and 10 o'clock positions at the base of the penis.

The foreskin is grasped on either side with two hemostats, taking care to avoid the urethral meatus, and a third hemostat is carefully inserted into the preputial ring down to the level of the corona. The instrument should be used to tent the foreskin away from the glans to avoid the urethral meatus. The hemostat is swept around the glans on both the right and left sides, avoiding the ventral frenulum. This separates most of the adhesions between the inner mucosal layer and the glans.

The foreskin is then retracted proximally, exposing the glans. Any remaining adhesions are bluntly divided using a blunt probe or a gauze until the entire coronal sulcus is visible and completely cleared from smegma. The foreskin is then drawn over the glans, and the bell of the Gomco clamp is inserted over the glans. Two mosquito forceps are used to pull the foreskin through the hole of the base plate around the bell. The stem of the bell is then maneuvered through the hole along with the foreskin after the amount of foreskin to be removed has been determined. The amount of remaining shaft skin is evaluated and may be adjusted for length and symmetry.

The top plate of the Gomco clamp is then attached and brought around into the notch of the base plate. The arms of the bell are settled into the yoke, and the nut is tightened, crushing the foreskin between the bell and the base plate. It is kept for 7–10 min (according to BT and CT).

A scalpel is then used to excise the foreskin at the level of the base plate. The nut is then loosened, and the top plate and the base plate are removed from the bell.

The penis should be inspected following the procedure for signs of bleeding, with special attention to the ventral frenulum region. A dressing of antibiotic-soaked gauze should be gently applied over the Surgicel (Surgicel, Absorbable Hemostat, Johnson & Johnson Medical, Inc., USA). The baby should be checked for bleeding after 30 min before the baby is discharged. The parents should be counseled about the healing process.

Exclusion criteria

(1) Infants older than 4 months.
(2) Presence of hypospadias, epispadias, or any congenital anomalies of the urethra or penis.
(3) Short penile shaft.

(4) Abnormally prolonged CT or BT, or high bilirubin level.
(5) Ill or premature baby.

Results

Of the 300 babies (32) (10.6%) who suffered from intraoperative bleeding, 24 were controlled with silver nitrate stick (chemical hemostasis) or bipolar diathermy and eight cases (2.6%) required vicryl plus 5/0 stitches; all of them were older than 2 weeks.

Two cases (0.67%) returned on the same day of discharge with surface oozing; both cases were sutured with vicryl plus 5/0 stitches. The overall percentage of postoperative bleeding that needed sutures was 3.3% (10 cases).

All cases of significant bleeding needing stitches were older than 14 days (mean age, 38 days).

Four parents (1.3%) came during the follow-up period complaining of inadequate circumcision; only one of them needed a redo after 6-month follow-up. Three parents were unsatisfied with the cosmetic result (prolonged edema or crustation). Two cases (0.67%) suffered from frenulum ulcer, which was managed conservatively. Only three patients reported superficial infection, which was treated with local antibiotics (Table 1).

Discussion

In this study, there was an overall incidence of 14% (42 cases) for postoperative bleeding and only (10 cases) 3.3% needed suture, whereas 32 cases (10.6%) were treated conservatively either with chemical, electrocautery, or just compression, to stop oozing or minor bleeding. Only two cases (0.67%) needed to be taken to the operation theater again after discharge. All cases that needed suturing were older than 14 days.

Table 1 Postcircumsicion complications: types, number, and percentage

Complication	*n* (%)
Bleeding	42 (14)
Intraoperative (conservative)	32 (10.6)
Intraoperative (with suture)	8 (2.6)
Postoperative (after discharge)	2 (0.67)
Total number with considerable bleeding	10 (3.3)
Parents unsatisfied (too much/little skin removed)	4 (1.3)
Redo	1 (0.3)
Parents unsatisfied (cosmetic)	3 (1)
Frenulum ulcer	2 (0.67)
Infection	3 (1)

Amir *et al*. [12] reported an overall incidence of 1.9% for complications, with mild-to-moderate bleeding in 31.6% of cases, which settled with further compressive dressing. An overall 21% of complicated cases had superficial sepsis, whereas 10.5% had frenular ulcers that required topical antibiotics. An overall 16% of cases had inadequate circumcisions, whereas only one required a redo operation after 1-year follow-up. Parents were satisfied with the final cosmetic appearance in 99.7% of cases.

Bhat *et al*. [13] reported that 1% of cases required immediate suturing on table after the Gomco clamp was removed, 2.5% were shifted back from the recovery room to minor operation theater for suture repair, and 4% required reinforcement of primary dressing to control the minor ooze. There was no other complication. Cosmesis was satisfactory to both the surgeon as well as the parents.

Horowitz and Gershbein [14] reported that 30% of cases had postoperative bleeding requiring suture repair. All of them were more than 4 weeks of age in agreement with this study.

Although the literature provides a great deal of data on surgical outcome after circumcision, very little is known about parents' satisfaction following the procedure. Clinical experience suggests that the rate of parental dissatisfaction is higher than the rate of reported complication, but the actual rate has not been precisely measured [15].

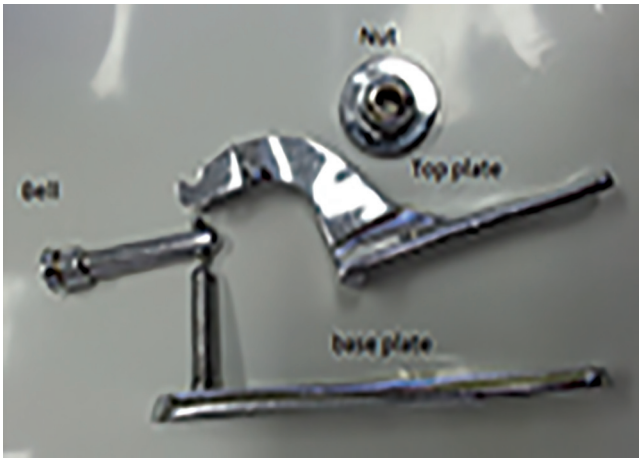
Rate of parents' dissatisfaction was 1.3% in this study; this is in agreement with that reported in the study by Jennifer *et al*. [16], who reported an unsatisfactory rate of 1.5%.

Conclusion

Circumcision with a Gomco clamp is a safe and effective technique with reproducible results, provided care is taken in exact marking of the site on foreskin for excision and selecting a correct size of the clamp. Each hospital needs to develop its own policy, keeping in view the population for best cosmetic results from circumcision to avoid disappointments and redo operations.

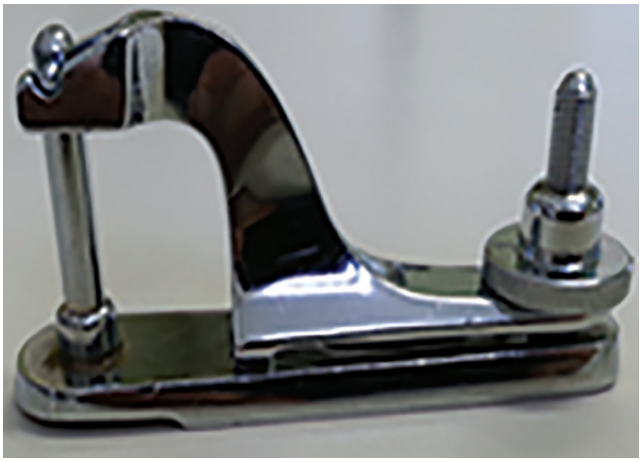
Gomco clamp is a bloodless, sutureless, simple, and safe method of circumcision in the neonatal period and in early infancy. The use of a Gomco clamp for circumcision beyond early infancy (3 months of age) has substantial morbidity. It is cost-effective and can be performed under local anesthesia with excellent cosmetic results (Figs. 1 and 2).

Figure 1



Gomco clamp.

Figure 2



Parts of a Gomco clamp.

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Conflicts of interest
There are no conflicts of interest.

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