

# Neonatal Circumcision with Gomco Clamp - a hospital-based Retrospective Study of 1000 Cases

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## Abstract

**Objective:** To evaluate the impact and safety of neonatal circumcision under a uniform hospital policy using Gomco Clamp (CC).

**Design/Methods:** A retrospective analysis of 1000 consecutive cases of neonatal circumcisions done with Comco clamp at the Armed Forces Hospital, Jubail, Saudi Arabia during the period January 1996 through December 1998. The outcome measures were the type and number of complications, incidence of inadequate circumcisions, redo procedures and the extent of parental satisfaction.

**Results:** There was 1.9% incidence of overall complications (n=19) with mild to moderate bleeding in 6 cases (31.6% of complications), which settled with further compressive dressing. There were 4 cases (21%) of superficial sepsis and 2 frenular ulcers (10.5%), which required topical antibiotics. Four babies (21%) had soft Preputial adhesions that were separated easily under topical anaesthesia. There were 3 cases (16%) of inadequate circumcisions; however only one required a redo operation after one year. The other two were found adequate at further follow-up for two years and final appearance was acceptable to parents; 99.7% parents were satisfied with the final cosmetic appearance.

**Conclusion:** The circumcision with Comco clamp is safe and effective technique with reproducible results provided a particular 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 (JPMA 50:224, 2000).

## Introduction

Circumcision is the earliest recorded<sup>1</sup> and still the most commonly performed surgical procedure associated with a lot of cultural festivity<sup>2</sup>. A simple ritual as it may seem, it is the only procedure shrouded in a myriad of controversies. Its very existence, the instruments, the circumcisers and the techniques are all subject to controversies<sup>4,5</sup>. Despite unresolved controversies on its justification as medically indicated procedure the circumcision practice seems to go on at least for religious reasons<sup>5</sup>. Therefore for a Muslim country like ours where this practice is an integral part of the society, it is of paramount importance to evaluate and devise ways and means to perform the procedure as humanely as possible with minimum discomfort to the baby and best cosmetic results. For the past few years we have been following a properly designed policy and a uniform technique for circumcision by using Gomco clamp at our hospital. We carried out this retrospective analysis to see the impact of this policy and technique. It was carried out for the period from January 1996 through December 1998.

## Subjects and Methods

As per our hospital policy only male babies below or around one month of age are booked as day cases for circumcision under local anaesthesia after initial screening by the neonatologist. The older babies are circumcised under general anaesthesia after one year of age. The parents are given verbal as well as written information in Arabic as well as English about the nature of the procedure, the approximate time of surgery, the post-operative monitoring in the ward and then at home, how to remove the dressing at home the following day, care of the foreskin and regular follow-up. The nurses and then the surgeon examine the baby on admission to assess fitness for the procedure. Those having severe physiological jaundice undergo serum bilirubin estimation and if it is found above 13 mg/dl the circumcision is postponed for 1-2 weeks to be rebooked after the serum bilirubin has come down. Similarly a severe pustular groin rash is considered a contraindication, which receives appropriate treatment before the procedure. Each member of the staff adopts a uniform technique and instrument (Gomco clamp, Allied I-leathcare Products, Inc., St. Louis, MO, USA) for the procedure (Figure I).

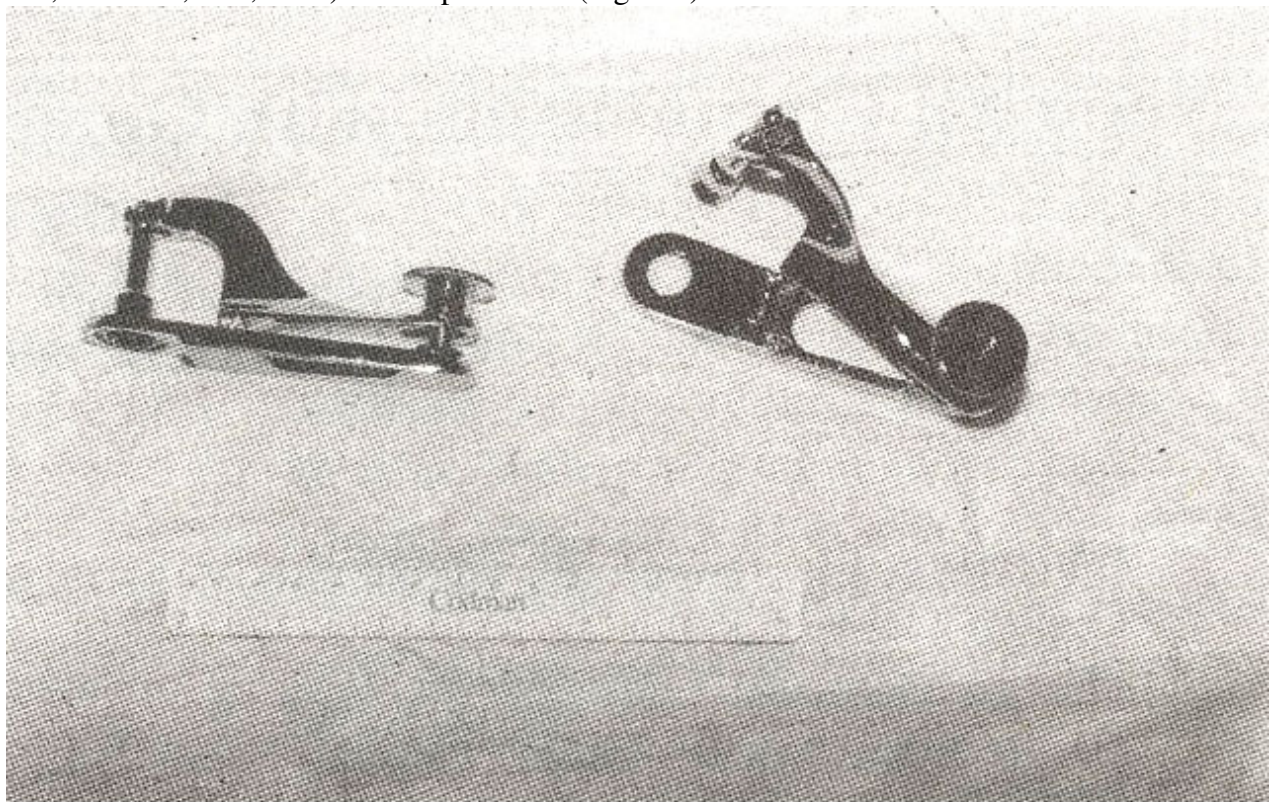


Figure. The Gomco Clamp

Based on this policy 1015 babies were circumcised during the period from January 1996 through December 1998 (three years). Fifteen cases, who could not be followed or their records were incomplete, were excluded. Finally 1000 cases were available for this retrospective analysis. The outcome measures for the study were (1) number and the type of complications in terms of procedure, (2) the adequacy of circumcision and (3) the parents' satisfaction or otherwise with the final appearance. All these cases had a mean follow-up of 2 years (range 10 months to 2 3/4 years).

#### **Operative Technique**

All male babies are booked for circumcision after initial neonatal screening by the neonatologist. The baby is fastened on a custom-made well-padded wooden restraint and is held by a nurse. The

procedure is done under local anaesthesia in the form of dorsal penile nerve block (DPNB) using 1 ml of 1% Lignocain with a 30-guage needle. The mucosal aspect of the prepuce and the glans are well lubricated with 4% Lignocain gel. The prepuce is gently separated from the glans up to corona, the size of the glans assessed for the correct size of the clamp and then redrawn over the glans. The prepuce is marked with a skin marker at the coronal circle obvious through the skin. A dorsal slit is made for the easier insertion of the clamp. The appropriate size clamp is introduced and the preputial skin is brought through the outer plate placed over the margin of the clamp up to the marked circle and the plate is tightened over the clamp bell with the near screw. It is kept for 7-10 minutes. After this period the skin is excised over the marked site at the margin of the bell on the plate. The clamp is opened and the coronal margin now cleared off prepuce is checked for bleeding. A surgicel® (Eth icon Ltd., UK) dressing is applied at the circumcised margin and a tulle grass is placed over the surgicel® as a further covering. The baby is observed in the recovery room for 30 minutes to monitor bleeding and then sent to the ward for further observation. It is usual to send the baby home after he has passed urine. The parents are given written as well as verbal instructions for post-operative care of the baby to monitor bleeding at the site, removal of the dressing next morning after giving warm bath to the baby and later to keep the area clean. The baby is rebooked for follow-up at 2 weeks, 2 months and 1 year to notice any immediate or late complications and the final cosmetic appearance.

## Results

The mean age of babies was range 1-40 days). Majority i.e., 540 under tO days, 310 (31%) between between 21-30 and 25 (2.5%) cases days.

Table. Distribution of complications of Gomco Clamp circumcisions (19 cases).

None of the babies had any serious complications. The overall incidence of complications was 1.9% (N=19). There was no complication from local anaesthesia. Haemorrhage was seen in 6 cases (31.6%) of complications. Five babies had more than normal ooze after removal of clamp which required further moderate pressure with surgical R and gauze. One baby was brought the following day to Emergency Room due to excessive ooze after removal of haemostatic dressing (Table).

**Table. Distribution of complications of Gomco Clamp circumcisions (19 cases).**

Complication	No.	%
Bleeding	6	31.6
Superficial sepsis	4	21
Frenular ulcers	2	10.5
Preputial adhesions	4	21
Inadequate	3	16

He had another compressive dressing for 24 hours and settled without any sequelae. None of the babies required suture ligation to control haemorrhage.

Four babies (2.1%) had mild superficial sepsis in the first 5-7 days of circumcision, which settled with topical antibiotics. There were 2 cases of frenular ulcers (10.5%), which took 7 and 10 days respectively to heal.

There were 4 cases of preputial adhesions (21%) at the corona, which were easily separated using 4% Lignocain gel without recurrence. At three occasions the parents were not satisfied and complained of inadequate circumcision. In one baby both the clinician and the parents agreed on the findings and a redo was planned at one year of age. In the remaining two cases the clinician demonstrated to the parents that these were buried penises, which appeared to be inadequately circumcised. A regular follow-up was planned. After two years the circumcision appeared adequate and cosmetically acceptable to the parents in both cases without any intervention. There was no incidence of glanular injury and no symptomatic meatal ulcer was reported.

## Discussion

Despite controversies for its very justification on medical grounds the practice of circumcision is likely to stay in the human population at least on religious grounds<sup>5</sup>. The instruments, techniques and the operators differ from region to region and often within the same community<sup>6</sup>. Most of the complications are operator-and-technique dependent<sup>7</sup>. There is no conclusive evidence to suggest one best instrument or technique as each of these has been associated with complications. In a hospital setting Plastibell<sup>7</sup>, Gomco<sup>8</sup> or Mogen<sup>9</sup> clamps are being used frequently. Various studies have described the advantages and disadvantages of each of these techniques and instruments<sup>8,10</sup>.

In a review of 100,157 cases of neonatal circumcisions, Thomas et al<sup>11</sup> reported an overall incidence of 0.19% complications in US army hospitals during the period 1980-85. The highest incidence was of haemorrhage (44% of all complications) followed by infections (32.6%), surgical trauma in 1.3% and bacteraemia and urinary tract infection. In developing countries the rate of complications is likely to be more, especially as it is done more often by the non-medical people than by the doctors<sup>12</sup>. In Turkey 85% of the complications were reported following circumcisions by the barbers as compared to 15% in the hospitals<sup>13</sup>. In Saudi Arabia most of the circumcisions are done by surgically qualified staff as the law prohibits circumcision by non-qualified people. We had 1.9% incidence of complications in our series. Bleeding is the main risk during and after neonatal circumcision<sup>8</sup>. The clamps like Gomco and Mogen aim to prevent it through crushing effect on the circumcised edge of skin and mucosa or with suture compression over a plastibell. Neonatal screening should rule out any bleeding tendency and if so the procedure should be done electively using special precautionary measures<sup>14</sup>. Now-a-days bleeding cases are brought to the hospital after the procedure has been done outside by non-professional people<sup>13</sup>. We encountered only six cases (3.16%) of mild haemorrhage that settled with further compressive dressing and none required suture ligation of the frenular artery. This low incidence could be due to relatively longer duration of clamp application in our cases. Preputial bridging is a frequent complaint after circumcision by all techniques but especially Gomco clamp<sup>15</sup>. This problem is more likely to occur in babies with buried penises. We encountered only 4 cases (21%) of such adhesions, which were easily separated under topical anaesthesia without any recurrence. Instructions are given to all the parents to keep retracting the prepuce at the corona in the healing period to avoid any adhesions leading to bridging.

Meatal ulcers and stenoses are variably reported in literature in circumcised boys on long-term followup<sup>16,17</sup>. It is independent of technique or instruments. We encountered no case of meatal stenosis in our babies. There were only two cases of frenular ulcers in the immediate post-operative period, which settled with topical antibiotic treatment.

There has been no reported incidence of glanular injury following circumcision by GC. It is due to peculiar shape of the bell, which keeps the glans away from the harm's way. The injury to glans has been occasionally reported with N'Logen clamp<sup>18</sup>. Plastibell device is very safe; however, occasional cases of slipping of the bell, oedema of glans and even gangrene have been reported following its application<sup>7,19</sup>.

Besides never-ending controversies about various aspects of circumcision one such controversy is now coming to a consensus i.e., the procedure is painful for the neonate and must be done using anaesthesia<sup>10,20,21</sup>. The notion that the neonatal pain sensation is not as fully developed as in later life has been proved wrong<sup>22</sup>. On the contrary the neonatal pain and stress response has been shown to be far stronger than the adults<sup>23</sup>. We always use local anaesthesia in the form of dorsal penile nerve block or ring block. As supported from numerous studies it is very safe<sup>20,24</sup> and we encountered no complications from anaesthesia. Recently a pacifier dipped in 24% sucrose solution has been found to be a good adjunct to penile block in minimizing distress during and after the procedure for a longer time<sup>25</sup>.

Cosmetic appearance after circumcision is the major concern of the parents as well as the circumcisers<sup>6,13</sup>. The adequacy of circumcision has different meanings to different people and it is of paramount importance to keep in view the wishes and whims of parents to avoid unnecessary arguments, counter-arguments and hence redo procedures. In our setting the parents would make sure that the corona is free from any overlap of foreskin to judge the adequacy of the procedure. We make sure to use the correct size of the clamp. A smaller-size bell to glans may leave redundant mucosa while an over-sized bell may lead to excessive separation of penile skin from the shaft which may in part contribute to buried penis and an apparently inadequate circumcision<sup>8</sup>. We always use a skin marker to exactly mark the circumference for adequate excision of the foreskin. Therefore, we were able to achieve reasonably good cosmetic appearance and satisfaction of 99.7% of the parents.

## **Conclusion**

Circumcision with Gomco clamp is a very safe and effective procedure provided particular care is taken in choosing the correct size of clamp and exact marking of the site of foreskin excision. Each hospital should have its own set guidelines and uniform procedure to achieve best possible cosmetic results without complications and unnecessary redo procedures. We stress use of anaesthesia as essential part of circumcision.

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