

PAIN MANAGEMENT IN CIRCUMCISION: A COMPARATIVE STUDY

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Abstract

Objective: To assess the effectiveness and safety of interventions of reducing pain at neonatal circumcision.

Study Design: Quasi-experimental design

Place and Duration of Study: Departments of Pediatric Surgery and Plastic Surgery, Allied Hospital, Madina Teaching Hospital, Faisal Hospital, Abdullah Medical Complex, Jail Road, Faisalabad from June 2005 to July 2010.

Methodology: Neonates presenting for circumcision during the first month of life were included in the study. A total of 102 neonates were enrolled in this study. Plastibell was used in all cases. They were divided into two groups. Group A(n=51) received dorsal penile nerve block(DPNB)& ring block by injecting lignocaine along with sucrose solution 25%. Group B(n=51) received 20 ml of 25% sucrose solution only during procedure. The pain was assessed by measuring physiological changes e.g.pulse rate, oxygen saturation and crying time.

Results: There were significant differences among the groups A and B with respect to physiological changes associated with the pain from the procedure. The group A has marked reduction in pain as compared with group B.

Conclusion: These findings suggest that sucrose along with DPNB & ring block is an effective method for the management of pain during circumcision with plasti bell. It has marked reduction in physiological change like heart rate and crying time as compared with sucrose solution alone.

Introduction

Male circumcision is the removal of some or all of the foreskin (prepuce) from the penis. The word "circumcision" comes from Latin *circum* (meaning "around") and *cædere* (meaning "to cut")^{1,2}. Early depictions of circumcision are found in cave paintings and Ancient Egyptian tombs, though some pictures are open to interpretation^{3,4,5}. Religious male circumcision is considered a commandment from God in Judaism⁶. In Islam, though not discussed in the Qur'an, male circumcision is widely practiced and most often considered to be a

sunnah^{7,8}. It is also customary in some Christian churches in Africa⁶. According to the World Health Organization (WHO), global estimates suggest that 30% of males are circumcised, of whom 68% are Muslim^{9,10,11,12}.

Neonatal circumcision are usually performed with the aid of a clamp device without general anesthetic. The Gomco and Plastibel devices are most commonly applied in USA¹³. In Pakistan bone cutter is used for circumcision by the practitioners.

According to the American Academy of Pediatrics' 1999 Circumcision Policy Statement, "There is considerable evidence that newborns who are circumcised without analgesia experience pain and physiologic stress It therefore recommended using pain relief for circumcision. Other medical associations also cite evidence that circumcision without anesthetic is painful ¹⁴.

Methodology

The study was conducted from July 2005 to June 2010 at Paediatric Surgery and Plastic Surgery Department Allied Hospital, Madina Teaching Hospital, Faisal Hospital Peoples Colony and Abdullah Medical Complex Police Line Road Faisalabad. Neonates presenting for circumcision during the first month of life were included in the study. A total of 102 neonates were enrolled in this study. They were divided into 2 groups. Group A had 51 neonates with an average weight of 3.52 kg and Group B has 51 neonate with an average weight of 3.55 kg.

Plastibell was used in all cases. In patients of group **A** dorsal penile nerve block(DPNB) was done by injecting 1% lignocaine with 27G needle. It was inserted at 12 o clock position and 0.4 ml lignocaine was injected at 10 O'clock and 2 O'clock position¹⁵.

Then a ring block was given in all cases at the same time. Prior to DPNB all neonates were given 20 ml of concentrated solution of sucrose 25% in feeder¹⁶. After 5 minutes of injection circumcision was started. In Group **B** neonates only concentrated solution of 25% sucrose was given without DPNB and ring block¹⁷.

Pulse oxymeter was applied to all neonates during procedure. Their pulse rate, oxygen saturation and crying time were noted¹⁷.

Results

Study was carried out in Group A full term 51 male neonates with average weight 3.52 kg and in Group **B** full term 52 male neonates with average weight 3.55kg. The results are summarized in tables I & II.

There were differences among the groups with respect to physiological and behavioral changes to the pain. In the control group, the average crying time was 2.2 minutes, average heart rate was 170.45 per minutes while in the experimental group average crying time was 1.2(P<.005) per minutes, average heart rate was 150.35(P<.005) per minutes. It is therefore suggested that combination therapy is more effective in reducing pain during neonatal circumcision as compared to single pain reducing agent^{16,17,18,19}.

Table I

Group A

Total Cases 51

Avg. heart rate before Circumcision	Avg. heart rate During Circumcision	Avg. oxygen saturation during Circumcision	Avg. Crying time during Circumcision
141.35 per min	150.35 per min	99.70 %	1.2 min

Table II
Group B
Total Cases 51

Avg. heart rate before Circumcision	Avg. heart rate During Circumcision	Avg. oxygen saturation during Circumcision	Avg. Crying time during Circumcision
141.25 per min	170.45 per min	98.70 %	2.2 min

Discussion

Different techniques are used to reduce pain during circumcision in neonates. Local anesthetics used for neonatal circumcision are dorsal penile nerve block, circumferential block at the base of penis, EMLA local anesthetics and oral agents like, sucrose, Tylenol, pacifier&Manischawitz wine¹⁵. This study was aimed to find out the effectiveness of analgesia during circumcision of neonates. The combination of anesthetic agents found more effective in reducing pain during the procedure. Single analgesic agent is not very effective^{16,18}.

Stang, 1998, conducted a survey and found 45% of physicians who responding circumcise used anaesthesia most commonly a dorsal penile nerve block – for infant circumcisions. The obstetricians in the sample used anaesthesia less often (25%) than the family practitioners (56%) or pediatricians (71%)²⁰. Howard *et al.* (1998) surveyed US medical doctor residency programs and directors, and found that 26% of the programs that taught the circumcision procedure "failed to provide instruction in anesthesia/analgesia for the procedure" and recommended that "residency training in neonatal circumcision should include

instruction in pain relief techniques". A 2006 follow-up study revealed that the percentage of programs that taught circumcision and also taught administration of topical or local anesthetic had increased to 97%²¹. Lander *et al.* demonstrated that babies circumcised without anesthesia showed behavioral and physiological signs of pain and distress^{17,22}. Comparisons of the dorsal penile nerve block and EMLA (lidocaine/prilocaine) topical cream methods of pain control have revealed that while both are safe, the dorsal nerve block controls pain more effectively than topical treatments, but neither method eliminates pain completely^{18,19,23}. Razmus *et al.* reported that newborns circumcised with the dorsal block and the ring block in combination with the concentrated oral sucrose had the lowest pain scores¹⁶. This study is comparable with our study that combined intervention has better result as compared with single agent.

Conclusion

The findings in experimental Group A suggest that sucrose along with DPNB and ring block is an effective method for the management of pain

during circumcision with plastibell. It has marked reduction in physiological change like heart rate and crying time as compared with sucrose solution alone.

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