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Original Research Article

Outcome of harmonic scalpel circumcision in children with hemophilia

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ABSTRACT

Background: There are many techniques described to decrease the risk of bleeding after circumcision in patients with bleeding diathesis such as monopolar diathermy, bipolar scissors and fibrin glue. Up to our knowledge, no previous study described the use of the harmonic scalpel in patients with bleeding diathesis. Our aim was to evaluate postoperative outcome after harmonic scalpel circumcision in boys with hemophilia.
Methods: This was a prospective observational study carried out in Sohag University Hospitals, Sohag, Egypt. The patients were recruited from Outpatient pediatric hematology clinic from January 2014 till January 2017. All procedures were done under general anesthesia. After strict sterilization, the dorsal aspect of the prepuce was incised using harmonic scalpel up to the coronal sulcus, then the whole prepuce was cut circumferentially using the harmonic scalpel. It is a sutureless technique.
Results: 26 boys with hemophilia A and 5 with hemophilia B were included. Their median age was 5 and 8 years respectively. The most common indication for circumcision was religious (20/31), the intraoperative blood loss ranged between 0-5 ml, operative time ranged between 3-5 minutes, there was no intraoperative complication, one case of rebleeding managed conservatively by factor administration, two cases of wound infection responded to antibiotic therapy, hospital stay ranged between 1-3 days. It was a sutureless technique.
Conclusions: Harmonic scalpel circumcision is a safe technique in children with hemophilia, it decreased the risk of rebleeding, decreased operative time and it is also a sutureless technique and may decrease the cost by reducing the amount of factor replacement.

Keywords: Circumcision, Sutureless-harmonic-hemophilia

INTRODUCTION

Male circumcision is one of the oldest and most commonly performed surgical procedures in the world.[1] It is performed as a religious rite in certain societies like Muslim and Jewish societies, as a tradition in some of them and due to medical reasons in the others.[2,3] Hemophilia is an x-linked hereditary bleeding disorder affecting approximately one in 10,000 males.[4] Hemophilia A (factor VIII deficiency) accounts for 80% of cases and hemophilia B (factor IX deficiency) accounts for nearly 20% of cases.[5] Children with bleeding tendencies including hemophilia are at risk of severe bleeding after surgical interventions including circumcisions. The risk of bleeding after circumcision in a patient with bleeding diathesis can reach up to 35%.[6]

In societies where male circumcision is a routine, as in Egypt, bleeding following male circumcision is the most common presenting symptoms of children with hemophilia.[7] Bleeding in hemophiliacs can lead to death especially in developing countries where coagulation factor replacement therapy is poorly developed or not available.[8]

There are many techniques described to decrease the risk of bleeding after circumcision in patients with bleeding diathesis such as monopolar diathermy, bipolar scissors and fibrin glue.[9-11] Up to our knowledge, no previous study described the use of the harmonic scalpel in patients with bleeding diathesis, also few studies are available in the literature about circumcision in patients with bleeding disorders.[6,9,11,12] Our aim was to evaluate postoperative outcome after harmonic scalpel circumcision in boys with hemophilia.

METHODS

This was a prospective observational study carried out in Sohag University Hospitals, Sohag, Egypt. The patients were recruited from outpatient pediatric hematology clinic at Sohag University Hospital in the period from January 2014 till January 2017. Children diagnosed with hemophilia and requested circumcision were invited to the study. Patients were diagnosed with hemophilia A (factor VIII) or hemophilia B (factor VIII) when the measured activity of factor VIII or factor IX is 30% or less. The severity of hemophilia is classified as mild if factor activity = 6-30%, moderate if factor activity = 1-5% and severe if factor activity is less than 1% of normal.

Table 1: Protocol of factor administration for hemophilic children before minor surgery.

	Hemophilia A	Hemophilia B
Preoperative	20-30 IU/kg	40-60 IU/kg
Postoperative	20-30 IU/kg every day for 1 week	40-60 IU/kg every other day for 1 week

After written informed consent was obtained from parents, the children were admitted to the Pediatric department and the children were subjected to thorough clinical history, full clinical examination and laboratory investigations including complete blood count, (CBC), partial thromboplastin time (PTT), prothrombin time (PT) and INR. The children were prepared for circumcision according to the protocol of factor replacement for minor surgery (Table 1). After receiving the preoperative dose of factor replacement, children were referred to Surgery Department for circumcision. The study protocol was approved by research ethics committee board at Sohag faculty of medicine.

Surgical technique

All procedures were done under general anesthesia. After strict sterilization, the dorsal aspect of the prepuce was incised using harmonic scalpel up to the coronal sulcus, then the whole prepuce was cut circumferentially using the harmonic scalpel. It is a sutureless technique. Patients age, type of bleeding tendency and indications of circumcision were recorded. All patients were followed for twelve hours and then discharged from the hospital. All of them followed in the surgical outpatient clinic one week after surgery.

Primary outcome measure: bleeding after surgery.

Secondary outcome measure: operative time, wound infection, injury to urethra or the glans.

RESULTS

The study included 26 boys with hemophilia A (factor VIII deficiency) and 5 with hemophilia B (factor IX deficiency).

Table 2: Patients characteristics and severity of hemophilia.

	Deficient factor	Number of patients	Median age	Severity of hemophilia
Hemophilia A	VIII	26	5 Years	Mild (n = 6) Moderate (n = 7) Severe (n = 13)
Hemophilia B	IX	5	8 Years	Severe (n = 5)

Table 3: Indication for circumcision.

Indications	Number
Religious	20
Phimosis	5
Urinary tract infection	6

Patients characteristics and severity of hemophilia are shown in Table 2.

Table 4: Operative and postoperative outcomes.

Intraoperative blood loss	Range between 0-5 ml
Intraoperative complications	No
Operative time	Range between 3-8 minutes
Bleeding	1/31
Wound dehiscence	0/31
Infection	2/31
Hospital stay	Range 1-3 days

Indications for circumcision were presented in Table 3. The operative and postoperative outcome presented in Table 4.

DISCUSSION

Male circumcision has been performed for centuries in many societies due to religious and social reasons. It is considered one of the most frequent surgical procedures performed in general population and in young boys with hemophilia.[6] It is estimated that about 25-33% of males are circumcised worldwide.[12-15]

In Egypt, as in other Muslim countries, circumcision is a very important ritual for haemophiliacs and their families and an important step to be integrated in the society.[6,16] In Turkey, uncircumcision causes shame and being defective in children with hemophilia and their families.[17]

Boys with hemophilia are at risk of excessive bleeding during and after circumcision.[18] However, although many parents know this risk, they insist on circumcision due to religious and cultural reasons.[9,11]

The modern hemophilia treatment aims to achieve a full social and cultural integration of the hemophilic child with the society .Factor replacement therapy is used to perform circumcision in hemophiliacs with minimal bleeding , however the high cost of factor replacement bring a serious economic burden. It will be more appropriate to perform circumcision to prevent these children from feeling excluded from the society and with lower complication rates and costs.[6] So it is a priority to choose the surgical method that cause less bleeding as much as possible.[9]

The risk of bleeding after circumcision in normal healthy person without bleeding disorder range between 0.1-35%.[3]

Few publications are available in the literature about circumcision in patient with hemophilia.[3,9,11,12,19,20] The are several techniques described to induce hemostasis during circumcision in a patient with hemophilia such as fibrin glue and fibrin glue combined with the infusion of the deficient factor.[11,21] Up to our knowledge, no study described the use of the harmonic scalpel in circumcision and this will be the first report.

With the advent of technology new vessel sealing device can achieve better hemostasis such as harmonic scalpel (Johnson and Johnson, Ethicon Endo-surgery, Cincinnati, OH, USA) and Liga Sure (Covidien, Boulder, CO, USA) and no study reported the use of harmonic scalpel in circumcision of patient with hemophilia.[22]

The harmonic scalpel is one of devices used for surgical cutting and coagulation of tissue and obtaining hemostasis by direct application of ultrasound and with minimal damage to the surrounding structures.[23]

In this study, harmonic scalpel circumcision decreased the risk of intraoperative blood loss, postoperative bleeding and wound dehiscence. The use of the harmonic scalpel in the patient with hemophilia was associated with decrease the overall cost and the risk of infection.

However, we had a very little information about the use of the harmonic scalpel in circumcision in general and in a special situation such as a patient with hemophilia. we need to conduct a large multi-center randomized controlled studies to justify its result.

CONCLUSION

Harmonic scalpel circumcision is a safe technique in children with hemophilia, it decreased the risk of re-bleeding, decreased operative time and it is also a sutureless technique and may decrease the cost by reducing the amount of factor replacement.

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