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Topical Antibiotics Without Wound Dressing After Circumcision to Prevent Post-Surgical Infection: Serial Case Report

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ABSTRACT

Treatment of post-circumcision wounds usually uses tulle and gauze to prevent bleeding and infection. Treatment of advanced wounds in the form of removing the attached gauze causes a feeling of insecurity in the patient because the pain caused by the gauze becomes stuck with an injury that has not healed and often causes bleeding. Antibiotic ointments have been studied to act as a barrier instead of gauze to protect against contamination and keep moisture. It is hoped that using antibiotic ointments without gauze pads can prevent the formation of post-circumcision infection and prevent pain when removing the gauze. Observations were made on eight children aged 7 to 15 years who underwent mass circumcision at PKU Muhammadiyah Gamping Yogyakarta and wound care using only the antibiotic chloramphenicol ointment after circumcision without using gauze. Detailed wound care instructions are given to sufferers and their families at home post-surgery. Monitoring and dialogue through online media are carried out if problems arise during wound treatment. Assessments were carried out daily by sending pictures of wounds via online media until five days after circumcision. From the results of observations, one patient with surgical wound inflammation based on the ASEPSIS score was categorized as having "impaired healing," and seven other patients did not experience post-circumcision inflammation with wound treatment using only chloramphenicol antibiotic ointment. The risk aspect found in this patient as an infectious etiology is the early age, which is difficult in treating wounds coupled with the treatment of wounds carried out by non-professional personnel. Topical antibiotic chloramphenicol without wound dressings can be an option for maintaining post-circumcision wounds.

Kata kunci: Topical Antibiotic, Without Dressing, Circumcision.

INTRODUCTION

Treatment of post-circumcision wounds usually uses tulle and gauze to prevent bleeding. Treatment of advanced wounds in the form of removing the attached gauze causes a feeling of insecurity in the patient because the pain caused by the gauze becomes stuck with an injury that has not healed and often causes bleeding. Antibiotic ointments have been studied to act as a barrier instead of gauze to protect against contamination and keep moisture out (Should, n.d.).

The antibiotic ointment helps treat wounds by preventing inflammation and keeping the wound clean and moist. If the child has stitches, the doctor will tell whether they should use antibiotic ointment. The majority of wounds and scratches heal without antibiotic ointment. However, it can make treatment faster and help reduce scarring (C. F. Heal et al., 2009). Newborn toddlers should only take sponge baths until the circumcision site heals properly. Older sufferers should start bathing after 24 hours of the procedure. Regularly applying three antibiotic ointments (4-6 times/day or after each diaper change) is essential for preventing inflammation, adhesions, and crusting on bald glans in older children (Patel et al., 2021).

Chloramphenicol

Administering a single dose of topical chloramphenicol on high-risk suture wounds after minor surgery resulted in another absolute reduction in the level of inflammation that was statistically but not clinically significant (C. Heal et al., 2017).

If dressings are not instantaneous, and after making small lesions excision, Giles Bantick, a plastic surgeon at Chelsea Hospital in London, uses an antibiotic ointment. It is called chloramphenicol eye ointment. It is perfect for the eyes but also for treating skin injuries. A small amount of ointment should be applied to the wound thrice daily until the stitches are removed or the wound heals (Gottrup et al., 2005).

Aim Of Case Report

We present 8 cases of 8 children aged 7 to 15 who underwent mass circumcision at PKU Muhammadiyah Gamping Yogyakarta and treated wounds using only the antibiotic chloramphenicol ointment after circumcision without gauze. Detailed wound care instructions are given to patients and their families at home post-surgery (Vitiello et al., 2020). Monitoring and dialogue through online media are carried out if problems arise during wound treatment. Assessments were carried out daily by sending pictures of wounds via online media until five days after circumcision. It is hoped that using antibiotic ointments without gauze pads can prevent the formation of post-circumcision inflammation and prevent pain when removing the gauze (Rahman et al., 2019).

METHOD

Guidance is given to parents or people who want to care for wounds to circumcision patients. Treatment of wounds at home is as follows: The patient is assisted by a caregiver to gently sterilize the penile area and surgical wound using sterile gauze that has been moistened with NaCl solution, then dried and smeared with a thin layer of chloramphenicol ointment. Treatment of the wound is attempted every time the patient urinates or defecates. Patients are advised to maintain body hygiene by bathing regularly every day but avoid getting injured by water to avoid contamination from the water used for bathing. Patients are advised to take pain relievers daily. Patients and families must be notified via online media to researchers taking pictures of the wound every day and if there are complaints about the treatment of the patient's wound.

RESULTS AND DISCUSSION

Based on observations on the fifth day, there was an inflammation of the surgical wound in a 7-year-old patient who had been circumcised, and the wound was treated without using gauze, only with chloramphenicol ointment (Figure 1). One patient with surgical injury inflammation originating on the ASEPSIS score was classified as "impaired healing." The results were observed on the fifth day: serous discharge<60% (3 points), erythema<80% (4 points), use of topical antibiotics (10 points) with a total score of 17. Seven other patients did not experience inflammation of the surgical wound (Young & Khadaroo, 2014).

The type of surgical procedure is also a significant risk factor. Surgical procedures and, therefore, wounds are further classified as clean, clean-contaminated, contaminated, and dirty infected with varying degrees of inflammation from postoperative wounds. The classification is defined as follows from a 2011 report by the Canadian Agency for Drugs and Technologies in Health (CADTH) :

1. Clean—a procedure where no infection is encountered throughout the incision, approach, or the central part of the surgery, and sterility is maintained. Gastrointestinal, urogenital, and pulmonary tracts were excluded.
2. Clean-contaminated—a procedure in which the gastrointestinal, urogenital, and pulmonary tracts are entered securely, but there is no contamination.
3. Contaminated— a procedure where asepsis is not followed or an incision is made through chronically inflamed (non-purulent) tissue. Also, traumatic injury (more than 24 hours) or if there is significant discharge from the gastrointestinal, urogenital, or pulmonary tract.
4. Dirty/infected — procedures on perforated innards or incisions through chronically inflamed (purulent) tissue. Also, traumatic injuries (more than 24 hours) with necrotic tissue occur or are maintained through dirty mechanisms (contact with fecal matter).
5. Microbial contamination of surgical wounds is an early stage in the development of surgical site infection, which can originate from either endogenous or exogenous origins.

Endogenous flora includes the patient's skin, mucous membranes, and hollow viscera. The most common endogenous pathogens are S. aureus, coagulase-negative staphylococci, Enterococcus, and Escherichia coli. However, it depends on the method tried. In cardiac, breast, ocular, orthopedic, and vascular surgeries, the most common causative organisms are S. aureus and coagulase-negative staphylococci, whereas, in abdominal surgery, Gram-negative and anaerobic bacteria are more common (Owens & Stoessel, 2008).

Exogenous flora, including air, instruments, materials, and employee bodies, can originate from the theatre room. The most common exogenous organisms are staphylococci and streptococci. Also, the number and virulence of the organisms are significant risk factors. There is an increase in high-virulence organisms isolated from inflammatory injuries after surgery, such as MRSA, possibly due to the widespread use of broad-spectrum antibiotics (Kamel et al., 2013).

In a study in community hospitals in the southeastern United States, the incidence of MRSA-linked SSI increased from 12% in 2000 to 23% in 2005. In the 2010 NHSN update, the MRSA-impact SSI ratio was 43.7%.

Wound infection after surgery is a common health problem. The wound infection process is highly environmental and involves interactions between several biological routes at the molecular level. Wound infection causes significant morbidity and mortality. Current information proves that surgical site wound infection causes more than 2 million nosocomial infections in patients treated in hospitals in the United States.

Surgical injury inflammation is classified as follows by the Centers for Disease Control and Prevention (CDC):

1. Superficial incisional infection involves only parts of the skin and subcutaneous tissue from the body. One of the following criteria must be met: purulent discharge from the wound, isolated organisms, at least one sign of infection, and an assessment by the surgeon. This infection accounts for more than 50% of all surgical infections.
2. Infection of deep incisions involves deeper tissues, including muscles and fascia. One of the following criteria must be met: purulent discharge from injury, dehiscence, or a deep incision planned to be reopened by the surgeon after suspicion of inflammation, evidence of swelling, or other internal infection assessment by the surgeon.

3. Organ or space infection can affect any organ apart from the incision site but must be related to the method of operation. One of the following criteria must be filled: purulent discharge from the drainage placed in the organ, organism isolated from the organ, swelling, or other infection that connects the organ.

To be classified as a surgical site infection (SSI), the wound must:

1. Occurs within 30 days after surgery (in cases of inflammation of the organ or space with the implant in there, this is one year)
2. only involves the skin, subcutaneous tissue, deep layers or distant organs, and
3. has purulent drainage or organism isolated from the wound area.

If the surgeon opens a wound to be cleaned, it is considered an infection of the surgical wound. A wound is not considered an infection if there are only stitch abscesses. Most of the inflammation of surgical wounds is caused by endogenous flora, which is generally present in the mucous membrane, skin, or hollow viscera. Usually, when the concentration of the microbiological flora is more than 10,000 microorganisms per gram of tissue, there is a significant risk of developing wound infection.

The heterogeneous nature of these infections complicates the infection etiology of postoperative wounds. They vary by geographic area, surgical subspecialty, and the various methods attempted.

The risk aspect can be broken down into patient aspects and procedural aspects.

The patient's risk factors for wound infections include advancing age, malnutrition, hypovolemia, obesity, steroid use, diabetes, immunosuppressive agents, smoking, and inflammation coexisting at a distant site.

Method-related risk factors include hematoma formation, use of foreign materials such as drains, leaving dead space, prior infection, extended surgical scrubbing, pre-surgery shaving, poor skin planning, prolonged surgery, poor operating methods, hypothermia, and contamination from the operating room and extended perioperative stay in the hospital.

There is no validated system specifically designed to assist in evaluating and managing surgical wounds. The most commonly used, the CDC definition, uses a strict standard to classify infection. There are several other injury evaluation systems, and the two best are ASEPSIS (Figure 4) and the Southampton Wound Assessment Scale. This system allows the treatment of surgical wounds to be assessed on a specific basis, usually providing a numerical value and a more equitable wound assessment.

Observations on the fifth day found infection of the surgical wound after circumcision. Found serous exudate and erythema with topical application of chloramphenicol antibiotics since the end of surgery and maintenance of open wounds without gauze in a 7-year-old patient. In managing the maintenance of the patient's injury, several obstacles were encountered, including, at the age of 7, the child had difficulty cooperating when the wound was cleaned. The person who helped heal the wound described the difficulty of cleaning the remaining ointment and the dirt that had stuck to the patient's wound. Infection signs appeared on the fifth day. The risk factors found in this patient as an infectious etiology are the early age, which is difficult in treating wounds, coupled with the maintenance of wounds carried out by non-professionals.

Monitoring patients who are older and in a close age range needs to be tried to provide more comparable data regarding topical antibiotics without covering the wound using gauze after circumcision. However, treating wounds after circumcision using chloramphenicol ointment without covering the wound with gauze can be an option considering the number of patients who are free of

infection from the observation; patients also do not experience pain when the gauze is obtained if the wound is treated by covering it with gauze.

Figures and Tables

Figure 1
Infected wound after circumcision after five days of wound care using topical antibiotics.

Figure 2
After circumcision without wound infection after five days of wound care using topical antibiotics

Observations of surgical wound infection on the fifth postoperative day				
NO	Respondent/Age (years old)	Surgical wound infection (+/-)	Description	Wound Care
1.	R1/10 y.o	-		Topical Chloramphenicol
2.	R2/8 y.o	-	-	Topical Chloramphenicol
3.	R3/11 y.o			Topical Chloramphenicol
4.	R4/7 y.o	+	serous discharge <60% erythema <80%	Topical Chloramphenicol
5.	R5/12 y.o			Topical Chloramphenicol
6.	R6/15 y.o			Topical Chloramphenicol
7.	R7/8 y.o	+		Topical Chloramphenicol
8.	R8/11 y.o			Topical Chloramphenicol

Figure 3
Observation of surgical wound infection on the fifth day after surgery

	Proportion of wound affected					
Wound characteristic	0	<20	20-39	40-59	60-79	>80
Serous exudate	0	1	2	3	4	5
Erythema	0	1	2	3	4	5
Purulent exudate	0	2	4	6	8	10
Separation of deep tissues	0	2	4	6	8	10

Points are scored for daily wound inspection.

Criterion	Points
Additional treatment:	
Antibiotics	10
Drainage of pus under local anaesthesia	5
Debridement of wound (general anaesthesia)	10
Serous discharge*	daily 0-5
Erythema*	daily 0-5
Purulent exudate*	daily 0-10
Separation of deep tissues*	daily 0-10
Isolation of bacteria	10
Stay as inpatient prolonged over 14 days	5

* Given score only on five of seven days. Highest weekly score used

Category of infection: total score 0-10 = satisfactory healing; 11-20 = disturbance of healing; 20-30 = minor wound infection; 31-40 = moderate wound infection; >40 = severe wound infection.

Figure 4
Asepsis Score

CONCLUSION

The use of topical antibiotics chloramphenicol without bandages can be an alternative in post-circumcision wound care. Of the eight patients observed, seven patients did not experience wound inflammation, while one patient had healing disorders associated with the factor of young age and wound care performed by non-professional personnel. This method has the potential to reduce the risk of post-circumcision infections as well as relieve the pain that usually occurs when removing bandages. However, more research with more diverse age groups is needed to ensure the effectiveness and safety of this method in post-circumcision wound care.

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