

Comparative study of post operative wound infection following emergency lower segment caesarean section with and without the topical use of fusidic acid

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ABSTRACT

The study was undertaken to see the infection rate of wound following emergency caesarean section with and without the use of topical fusidic acid. The study was carried out at Himal Hospital from April 2006 to Jan. 2008. A total of 70 child bearing patients who underwent emergency caesarean sections were included. All of the patients were given absorbable subcuticular stitches. Out of the 70 patients, 35 patients had topical fusidic acid immediately after subcuticular stitches followed by dry dressing. The other 35 patients had simple dressing with povidone-iodine. Six patients (17.1%) out of the 35 patients who had dressing with povidone-iodine developed wound infection at the surgical site and only 1 patient (2.8%) out of the 35 patients with fusidic acid developed wound infection. The use of fusidic acid reduced the infection rate by six times. The relation of fusidic acid to wound infection was statistically significant ($p=0.0460$).

Keywords: Fusidic acid; wound infection, emergency caesarean section, Nepal.

INTRODUCTION

Wound infection has probably been a major complication of surgery and trauma. It has been demonstrated for at least 4000-5000 years.¹ The Egyptian had some notions about infection as they were certainly able to prevent putrefaction, as testified by their skills of mummification. Patients undergoing major surgery are almost by definition immunosuppressed. Postoperative wound infection results from bacterial contamination during or after a surgical procedure.² Infection is usually confined to the subcutaneous tissues. Despite every effort to maintain asepsis, most surgical wounds are contaminated to some extent. Even in the ancient times, the use of salves and antiseptics to prevent wound infection were widely used. The Hippocratic teachings described clearly the use of antimicrobials such as wine and vinegar to irrigate open infected wounds before secondary closure at a later date.¹

PATIENTS AND METHODS

This was a prospective study carried out at Himal Hospital from April 2006 to January 2008. A total of 70 child bearing female patients who underwent emergency caesarean sections were included. All the patients were operated under full aseptic measures and all of them were given 5 days course of antibiotics. In addition, all the Pfannenstien incision and were given absorbable subcuticular stitches as a

standard. Out of the 70 patients, 35 (50.0%) patients

had simple cleaning with povidone-iodine followed by dry dressing. The other 35 patients had topical fusidic acid immediately after subcuticular stitches followed by dressing. The dressings of all the patients were opened up on the third and fifth post operative days and regularly followed up for the next few weeks for any wound infection. Any surgical site infection within the five days following surgery were included in our study.

Our study included mothers with previous caesarean sections as well as Primi gravidas. The age of the patients ranged between 16 to 40 years. The mean (\pm)SD age for the group with topical fusidic acid 28.07 ± 5.19 and for the group without fusidic acid was 26.64 ± 5.21 .

RESULTS

Out of the total 70 female child bearing patients, 35 patients had topical fusidic acid after absorbable subcuticular stitches and the other 35 had povidone-iodine dressing. The age distribution showed that 49 patients (70.0%) of the patient were in the age group 21-30 years (Table-1). The relation, however, of age with wound infection with or without fusidic acid was not significant ($p=0.460$). Our data showed that without fusidic acid 6 patients (17.1%) had wound infection and the infection rate was higher with growing age (Table-2). Four patients (11.4%) had wound infection in the age group 31-40 years. The relation of age in wound infection however was not significant ($p=0.237$). On the other hand, only one patient (2.8%) had wound infection

Table-1: Age distribution of patients using and not using topical fusidic acid

Age (years)	With fusidic acid n=35		With fusidic acid n=35		Total n=70	
	n.	(%)	n.	(%)	n.	(%)
11-20	3	(8.6)	1	(2.8)	4	(5.7)
21-30	25	(71.4)	24	(68.6)	49	(70.0)
31-40	7	(20.0)	10	(28.6)	17	(24.3)

$\chi^2 = 1.5498$, $df = 2$, $P = 0.460$ (not significant)

with topical fusidic acid as prophylaxis. However, the relation of age with the application of topical fusidic acid is not significant ($p=0.1764$) (Table-3).

Nevertheless, our data showed that wound infection (surgical site infection) was definitely much lower with the application of topical fusidic acid. The relation of wound infection with topical fusidic acid was significant ($p=0.0460$) (Table-4). The pus culture of all infected wounds showed *Staphylococcus*.

(4.5%) and infected surgery (9.5%).⁶

Fusidic acid is an antimicrobial that was isolated by Godtfredsen *et al*, in Europe from the fermentation of *Fusidium Coccineum*. It was introduced into clinical practice in 1926, as an oral drug. About 20 years later, it was introduced in Canada as a topical drug. Therefore we have used topical fusidic acid as a prophylaxis to decrease the rate of wound infection in emergency caesarean sections. It is also safe and effective first line

Table-2: The infection rates of different age groups without fusidic acid

Age (years)	Infection		No infection		Total n=35	
	n.	(%)	n.	(%)	n.	(%)
11-20	0	(0)	1	(2.8)	1	(2.8)
21-30	2	(5.7)	22	(68.8)	24	(68.6)
31-40	4	(11.4)	6	(17.1)	10	(28.6)
Total	6	(17.1)	29	(82.8)	35	(100.0)

$\chi^2 = 2.8764$, $df = 2$, $P = 0.237$ (not significant)

DISCUSSION

Wound infection has always been a challenge to surgeons. It is always a major complication of surgery and trauma.¹ Infection is usually confined to the subcutaneous tissues.² Even in ancient times people have used antiseptics to prevent wound infections.

Wound infection is dependent on many factors. Surgical techniques and the Surgeon is also a crucial factor of wound infection. The wound infection varied from 0 to 27.0% (mean 10.0%) among surgeons.³

A study in Australia shows that the overall infection rate after caesarean section in a teaching hospital was 9.4%. Elective operations resulted in a lower rate of wound infection (7.9%) than emergency operations (12.3%).⁴

Our study included only emergency caesarean sections and the infection rates were (17.1%) for patients without the use of topical fusidic acid and (2.8%) for patients with the use of topical fusidic acid. The surgical site infection in some centres (teaching hospitals) in Iran was (8.4%).⁵ Another study from Australia shows that the overall infection rate for clean general surgery was

Table-3: The infection rates of different age groups with fusidic acid

Age (years)	Infection		No infection		Total n=35	
	n.	(%)	n.	(%)	n.	(%)
11-20	0	(0)	3	(8.6)	3	(8.6)
21-30	0	(0)	25	(71.4)	25	(71.4)
31-40	1	(2.8)	6	(17.1)	7	(20.0)
Total	1	(2.8)	34	(97.1)	35	(100.0)

$\chi^2 = 3.47$, $df = 2$, $P = 0.1764$ (not significant)

Table-4: The rates of infection of patients with and without fusidic acid

Age (years)	Infection		No infection		Total n=70
	n.	(%)	n.	(%)	n.
With fusidic acid	1	(2.8)	34	(97.1)	35
Without fusidic acid	6	(17.1)	29	(82.8)	35
Total	7	(10.0)	63	(90.0)	70

$\chi^2 = 3.967$, $df = 2$, $P = 0.0460$ (significant)

therapy for impetigo, providing rapid clinical and bacteriologic resolution.⁷ Topical fusidic acid may be more effective than oral antibiotics for limited non bullous impetigo and staphylococcal infections.⁸⁻¹⁰

Fusidic acid is an antibiotic that belongs to a group of its own the fusidanes. The molecule has a steroid-like structure but does not possess any steroid like activity. The antimicrobial activity of fusidic acid is specially aimed at the most common skin pathogens including staphylococcus aureus towards which it is one of the most potent antibiotics. Fusidic acid is effective in the treatment of mild to moderate skin and soft tissue infections.¹¹

Fusidic acid and mupirocin have been recommended for the treatment of acute staphylococcal skin lesions¹² but long term use of more than 10 days may develop resistance.¹³ Another study shows that mupirocin and fusidic acid gave good results in treating primary and secondary skin infections.¹⁴

Our study showed that with the use of topical fusidic acid over the wound in absorbable stitches, the infection rate was almost 6 times lower as compared to standard povidone-iodine dressing. The majority of wound infection occurred with growing age and in repeated caesarean sections. Therefore the use of topical fusidic acid can be safely recommended for the prevention of wound infection.(surgical site infection)

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