

## CHAPTER VII

### RESULTS OF THE STUDY

There were 29 patients enrolled in this study, 15 patients in control group and 14 patients in treatment group.

Table 7.1 General characteristics of burn patients in both groups

	Control group(n=15)	Treatment group(n=14)	P-value
Age (year)	31.87+/-13.43 (25.07-38.67)	30.93+/-15.70 (22.71-39.15)	0.864
Sex (male: female)	12:3	13:1	0.268
Percent burn (%)	36.47+/-15.97 (28.37-44.53)	34.50+/-11.43 (28.51-40.49)	0.708
Time before admission (hr.)	1.2+/-1.05 (0.67-1.73)	2.11+/-2.30 (0.91-3.31)	0.195

This table shows the mean age, percentage of burn area, time from the burn injury to the hospital and the ratio of male and female in the two groups. We also show the 95% confident interval (in the bracket) too. From the value of 95% confident interval we found that the data in both groups are not different. If we use statistical analysis by

unpaired t-test for their age, percentage of burn area and time before admission, they showed that there were not statistically significant difference ( $p$ -value  $> 0.05$ ) and by Fisher Exact test, their sex ratio were not statistically significant difference too ( $p$ -value  $> 0.05$ ).

Table 7.2 Causes of burn injury in both groups of the patients

	Control group	Treatment group	p-value
Flame burn	8/15	7/14	0.285
Flame & electrical burn	3/15	4/14	0.292
Scald burn	3/15	3/14	0.349
Contact hot object	1/15	0/14	0.517

For the causes of burn injury, most of the patients sustained the injury from flame burn, the rest were flame & electrical injury and scald burn. Only one patient sustained the injury from contact with hot object. When we compared the causes of burn that distributed in the two groups by Fisher-Exact test, both groups of the patients were not statistically significant difference (p-value > 0.05).

Table 7.3 Mortality rate and hospital stay (in days)

	Control group	Treatment group	p-value
Mortality rate	0/15	0/14	1
Hospital stay (in days)	48.73+/-46.78	27.21+/-18.49	0.708

This table shows that the mortality rate and the hospital stay (in days) in both groups were not statistically significant difference (p-value>0.05).

Table 7.4 Duration from culture to successful skin graft in both groups

	Control group	Treatment group	p-value
Duration (in days)	21.47+/-12.08	13.78+/-5.70	0.040

This table shows the duration from culture to successful skin graft, the two groups are statistically significant difference (p-value<0.05).

Table 7.5 The results of the surface swab culture and burn wound biopsy culture

		Burn wound biopsy culture		
		Positive	Negative	
Surface swab culture	positive	12	2	14
	negative	3	12	15
		15	14	29

$$\text{Sensitivity} = (12/15)(100) = 80.00 \%$$

$$\text{Specificity} = (12/14)(100) = 85.71 \%$$

$$\text{Positive predictive value} = (12/14)(100) = 85.71 \%$$

$$\text{Negative predictive value} = (12/15)(100) = 80.00 \%$$

$$\text{Post test likelihood if test negative} = (3/15)(100) = 20.00 \%$$

$$\text{Accuracy} = [(12+12)/29](100) = 82.76 \%$$

From table 6.5, the two by two table shows the results of the surface swab culture (the test to be evaluated) and the burn wound biopsy culture (gold standard). We can calculate the various results of the test as above. The overall accuracy of the surface swab culture is 82.76 % which is in the acceptable range (>80%).

Table 7.6 Microorganism in burn patients in this study

Type of microorganism	Number of positive culture
Enterobacter species	11(31.43%)
Methicillin resistant staphylococcus aureus (MRSA)	10(28.57%)
Pseudomonas aeruginosa	4(11.43%)
Non hemolytic streptococcus group D	3(8.57%)
Klebsiella pneumoniae	2(5.71%)
Staphylococcus coagulase negative	2(5.71%)
Staphylococcus coagulase positive	1(2.86%)
Beta hemolytic streptococcus not group A, B or D thio. broth	1(2.86%)
Burkholderia cepacia thio. broth	1(2.86%)

This table shows the types of microorganism in burn patients in this research. Enterobacter species is the most common microorganism found in burn wound infection (31.43%). Methicillin resistance staphylococcus aureus (MRSA) and pseudomonas aeruginosa are the second and third common microorganism respectively.

Table 7.7 Microorganism from nasal swab culture

Type of microorganism	Number of positive culture
Staphylococcus coagulase positive	7(31.82%)
Staphylococcus coagulase negative	7(31.82%)
Enterobacter species	3(13.64%)
Pseudomonas species	2(9.09%)
Acinitobacter	2(9.09%)
E. coli	1(4.54%)

This table shows the results of nasal swab culture, staphylococcus (both coagulase positive and negative) are the most common microorganism found in nasal swab culture.



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insensitive to detect the difference among the two strategies (control and treatment groups). When we excluded the patients with associated diseases and inhalation injury from the study and included only 20-70% burn patients (these groups of patients have enough normal skin for performing skin graft), there is no mortality.

We compared the burn wounds that had signs of infection and most severe for the results of primary outcome, but we also took the culture from the other sites too. For answering the secondary research question about the accuracy of surface swab culture we still used only 29 pairs of culture for the calculation. This will make each pair an independent variable.

In evaluation of surface swab culture and burn wound biopsy culture, two microbiologists did the two procedures separately so we can get rid of the bias at this point (blind evaluator).

We strictly enrolled the patients according to the inclusion and exclusion criteria and allocated the patients into two groups by blocked randomization. With this method we expected the same characteristics in both groups of the patients. From table 7.1 the results of age, sex ratio, percentage of burn and time from injury to admission can confirm that the characteristics in both groups are alike and we can conclude that no selection bias in this study. The causes of the burn are also equally distributed in both groups (table 7.2). This also may be the result of randomization.

#### Duration from culture to successful skin graft

The primary outcomes or duration from culture to successful skin graft are 21.47 +/- 12.08 in control group and 13.79 +/- 5.70 in treatment group (table 7.4). By unpaired t-test these two values are statistically significant difference. It means that the procedure in treatment group (surface swab culture plus burn wound biopsy culture) can improve the treatment of burn wound when compared with the procedure in control group (burn wound biopsy culture alone). We can explain the result by the earlier result