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Scissor's Skin Excision Versus Scalpel, A Time Preservation Challenge in Compound Fracture's Wounds in War Time

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ABSTRACT

Background: *Wound excision in compound fracture injury is a well-known life saving procedure, in war time it is essential however; the war has a special impact factor since there is a huge number of cases, with limited resources including time.*

Patients and method: *During the period from march 2008 to February 2012, 50 patients give up to 67 compound fractures involving different bones in different parts of their bodies, where included in this study. In which the patient's wounds divided into two groups. The first group included 37 wounds the skin was excised by using the surgical scalpel, while the second group, dissecting surgical scissors where used, in both groups the time used to excise the skin was calculated by an assistant using a stop watch.*

Results: *It showed that there was a great difference in between the means of time spend in both regular and irregular wounds by using the scalpel and the scissors, the balance was toward the scissor's procedure, with a great statistical significant difference (P <.000).*

Discussion and recommendations: *It is important to say that scissors excision was not affecting the final results science most of the wounds were left open for second look and delayed primary suturing 4 to 5 days later which usually involves refreshing the skin edges. It is highly recommended to use the scissors rather than the scalpel whenever there is high load of patients science it preserved little time which eventually and collectively considered significant to preserve more lives and limbs.*

KEYWORDS : skin excision, scalpel, scissors, debridment.

Introduction:

War injuries usually entail a large number of specific injuries which are characterized by being complex in nature, with more distraction of the tissues than what is used to be seen in civilian injuries, the fractures are usually multiple and compound in nature, With progressive understanding of bacterial contamination and cross-infection after the pioneering work of Pasteur, Kock, Lister, and Semmelweis, the use of early and effective splintage, and the application of the surgical principles of wound debridement, as advocated first by Pare and later by Larrey (Napoleon's surgeon and inventor of the ambulance), the scourge of open fracture had been greatly reduced.1

A good deal of war surgery is orthopedic surgery, (50-75%) of war injuries involve the limbs, that's because Soldier's at war use to be well protected by the armor for the chest & abdomen with a helmet for the head & part of the neck & a well protected vehicles for transport, the only expose part remain of the body are the limbs,, such patient may survive longer than patients with head, chest & abdomen injuries and may present to the hospital even days or weeks after injury with badly infected ,foul smelling wounds, Most of these wounds involve bones and/or joints ,, leading to what is known as open or a compound fracture.(2)

Open fractures imply communication between the external environment and the fracture and have been defined as a soft-tissue injury complicated by a broken bone. Complex injuries, regardless of the location and extent, are today managed by early aggressive debridement, and early definitive reconstruction can be initiated once the deliberation over whether to salvage or amputate has been resolved. This requires experience and special skills, cooperation of plastic, vascular, and orthopedic surgeons, support staff and services, and specialized equipment in modern trauma centers(3)

The combined wars in Afghanistan and Iraq represent the longest ongoing conflicts in American military history, with a combined casualty estimate of >59,000 service members. The nature of combat over the last decade has led to precipitous increases in severe orthopaedic injuries, including traumatic amputations and injuries to the spine. Nearly 75% of all injuries sustained in combat now are caused by explosive mechanisms, and fractures comprise 40% of all musculoskeletal injuries. Injuries to the axial skeleton are more frequent among personnel exposed to combat, and spinal trauma is identified in nearly 40% of those killed.(4)

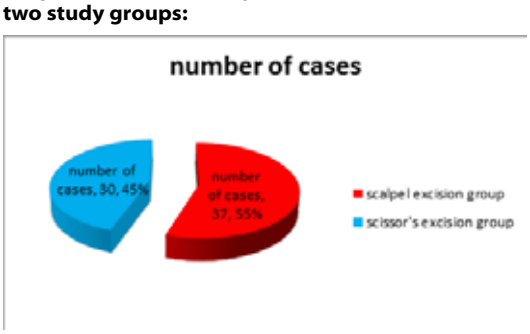
Open injuries require early aggressive debridement of the soft tissues followed by skeletal stabilization. Temporary wound dressings should remain in place until definitive soft- tissue coverage has been obtained.5)

Patients and method:

During the period from march 2008 to February 2012 50 patients give up to 67 compound fractures involving different bones in different parts of their bodies, where included in this study all patients had sign a consents including their agreement about the method which will be used by the treating surgeon. All the patients were victims of explosions all subjected to wound excision following the classical steps of wound excision operation, apart from the method which was used to excise the damaged skin, in which the patients' wounds divided into two groups. The first group included 37 wounds excised by using the surgical scalpel, while the second group, dissecting surgical scissors where used, in both groups the time used to excise the skin was calculated by an assistant using a stop watch. The statistical calculation was done using SPSS version 22.

Results:

Graph 1 the number of patients and their distribution to two study groups:



wound site		
Wound sites	Frequency	Percent
femur	21	31.3
foot	6	9.0
hand	4	6.0
humerus	9	13.4
radius	6	9.0
radius&ulna	6	9.0
tibia	9	13.4
ulna	6	9.0
Total	67	100.0

Table 1 the distribution of cases according to wound site.

	N	Minimum	Maximum	Mean	Std. Deviation
wound length	67	4.00	35.00	11.88	8.08763
scalpel excision time in seconds	37	6.00	75.00	24.91	16.99572
scissors excision time in seconds	30	5.00	50.00	18.60	12.84819
Valid N (listwise)					

Table 2 descriptive statistics: wound length, scalpel excision time in seconds, scissors excision time in seconds.

One-Sample Test						
	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
scalpel excision time in seconds	8.918	36	.000	24.91892	19.2523	30.5856
scissors excision time in seconds	7.929	29	.000	18.60000	13.8024	23.3976

Table 3 the statistical difference between the means of the scalpel excision procedure and scissors excision one (P<.000).

Mean scalpel excision time in seconds for regular wounds was 24.2667 while for irregular wounds was 25.363636.

Mean scissors excision time in seconds for regular wounds was 24.5384; however it was only 21.705882 for the irregular type.

Taking in consideration that the wound length statistical analysis in comparison to the regularity was as shown in the table below:

wound length			
regular	N	Valid	28
		Missing	0
	Mean		11.2143
	Std. Deviation		7.80957
irregular	N	Valid	78
		Missing	0
	Mean		12.3590
	Std. Deviation		8.29485

Table 4 the mean wound length in the two study groups.

	Scalpel excision	Scissor's excision	Total
Regular wounds	17	13	30
Irregular wounds	22	15	37
Total	39	28	67

Table 5 distribution of wounds regularity used in the two procedure

Discussion:

In war time the medical and surgical care has special entity, the patients introduced to the hospital in large; if not to say huge numbers, and the resources usually limited, the surgeon should deal with all the cases trying to save lives and physical integrity of the patients. According to the above facts we studied the time factor in the present study, cause time is equal to saving in such particular situation. This was agreed by Henry Grey[6]

Two groups of wounds secondary to compound fractures were studied. The study focused on the time spend in doing the skin excision by scalpel once (37 cases(55%)) and by the scissors in the other(30 cases(45%)) as show in graph (1)). The wounds are distributed in different areas of the body as shown in table (1), all the wounds were associated with compound fractures, and sometimes they were multiple.

The mean time for scalpel excision was 24.91; while the mean time for scissor's excision was only 18.60 as shown in table (2), with statistical significant difference between the two means (P value < 0.05) as shown in table (3).

It had shown that the wound length means of the two groups were more or less comparable to each other as shown in table (4). Where the regularity of the wounds are also taken in consideration and it showed that there is great difference in between the means of time spend in both regular and irregular wounds by using the scalpel and the scissors, with the balance is toward the scissors procedure, with statistical significant difference as shown in table (5)

It is important to say that scissors excision was not affecting the final results science most of the wounds were left open for second look and delayed primary suturing 4 to 5 days later which usually involves refreshing the skin edges, which also agreed by Roben M. Cambland who stress on leaving the war wound open for 4 to 5 days[7] . This sharp surgical technique is highly recommended by David Leaper and others.[8,9,10]

The scissors are more easily manipulated in irregular wound edges preserving more time than when using the scalpel, and this impact of the saved operating time during war on patients safety and death, as agreed by Remick KN1, etal[11].

Recommendation and conclusion:

It is highly recommended to use the scissors rather than the scalpel whenever there is high load of patients science it preserved little time which eventually and collectively considered significant to preserve more lives and limbs.

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