

# Fingertip Injuries

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**ABSTRACT:** Sixty seven patients sustained finger tip injuries in whom forty seven patients had Zinctape dressings, the other twenty cases had paraffin gauze dressing. The purpose of this study is to compare the result of using those topical dressings. Age of the patient ranging from 11-30 years with male predominate female in the ratio of 4.1 : 1. Eighty per cent of these injuries resulted from industrial accidents. Both right and left hand were equally effected. Eighty per cent of the injuries occurred to the index and middle fingers. The healing time was 16 days in type I and Type II injuries, 24 days in type III and IV injuries. The quality of scar following Zinctape treatment is superior to that obtained from paraffin gauze dressing.

Numerous surgical procedures have been described for the treatment of fingertip injuries. These include partial or full thickness graft (Newmeyer, 1974), central V-Y advancement flap (Alasoy, 1970, Kutler repair (Kutler, 1974), distant flap (Miller, 1976), and neurovascular island flap (Moberg, 1964). All these procedures require considerable surgical skills, are time consuming and not always available in a busy general hospital.

In 1974, Holm and Zachariae showed that conservative treatment of fingertip injuries gave subjectively good results in 90 per cent of cases. Since then, a wealth of literature have appeared on the use of conservative treatment (Allen, 1980, Boer and Collinson 1981, Chow and Ho 1982, Sherman and Shakespear 1987).

Zinc oxide in various forms of preparation have been used for centuries in the topical treatment of wounds. The use of Zinctape which contains 2.3 mg of zinc per centimetre square have been well documented in burns (Hallman, 1978), arterial and venous ulcers (Stromberg, Allen 1984) and leprosy (Sodenberg 1987).

## MATERIALS AND METHODS

Between October 1986 and July 1987, all patients with fingertip injuries with skin loss, seen at the Casualty Department and Hand Clinic, University Hospital, Kuala Lumpur, were subjected to dressings with either Zinctape or paraffin gauze. Patients who underwent formal terminalization skin grafting or local flaps were excluded.

Under local anaesthetic block the wound was cleansed with saline, debrided and if bone was exposed, this was nibbled back sufficiently to allow soft tissue cover. The wound was dressed with either paraffin gauze (Jelonet, T.J. Smith & Nephew Ltd., England) or adhesive zinc tape (Me-Zinc, Molnlycke AB, Sweden) applied directly on to the wound. Patients were followed up at weekly intervals at the Hand Clinic, at which time the dressings were changed. Dressings ceased when wound has completely healed. Antibiotics were not used routinely. A final reassessment was made 6 weeks after complete wound healing.

## RESULTS

Sixty seven patients were included in this study. Forty seven patients had Zinctape dressings while twenty patients had paraffin gauze. Majority

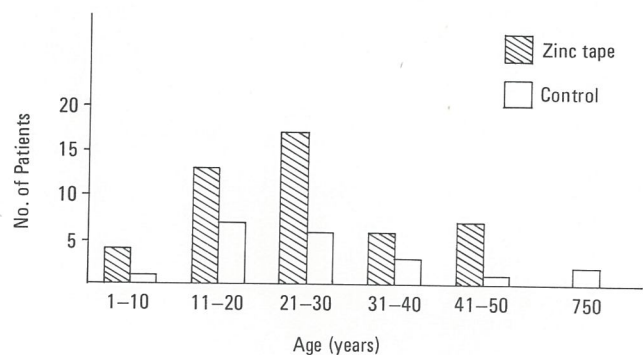


Fig. 1 Age distribution of patients.

of patients were between the age group of 11 to 30 years (Figure 1). Male predominate female in the ratio of 4.1:1. 74 per cent were right handed, yet the left hand is affected as often as the right. 84 per cent of these injuries resulted from industrial accidents. The five patients whose ages were

less than ten years old sustained their injuries at home from sharp instruments.

The severity of the injuries were graded using the classification proposed by Allen. (Allen 1980).

Type I: only the pulp involved.

Type II: loss of nail in addition to pulp.

Type III: partial loss of terminal phalanx together with nail and pulp.

Type IV: amputation at level of lunule of nail.

Injuries occurred in 81 digits in sixty seven patients. Eight patients had two digits involved and three patients had three digits involved.

There were 27 Type I injuries, 20 Type II, 26 Type III and 8 Type IV injuries.

Eighty per cent of the injuries occurred in the middle and index fingers (Table 1).

The mean time for healing was identical for the two treatment groups (Table 2).

No infection was seen in the Zinctape treated group while two patients in the control group had mild infection.

### Subjective Results

Cold intolerance did not appear to be a significant complaint in both treatment groups. 78 per cent of the paraffin grauze treated group complained of tenderness while this was only present in 30 per cent of the Zinctape treated group.

TABLE 1  
Details of Patients and Injuries Sustained.

	Zinctape	Control
Sex (M:F)	37:10	17:3
Side (R:L)	23:24	13:7
Type (Crush: Sharp: Abrasion)	27:19:1	16:2:2
Digits Involved:		
Thumb	6	1
Index	22	8
Middle	18	8
Ring	7	0
Little	4	7
Severity (Allen's):		
I	17	10
II	16	4
III	17	9
IV	7	1

TABLE 2  
Comparison of the Healing Time in the Two Groups.

	No. of visits to hospital		Days off work		Time to healing	
	Zinctape	Control	Zinctape	Control	Zinctape	Control
Type I	3	3.6	23	22	16 (7-21)	16.2 (7-24)
Type II	3.8	4.3	22	24	17.5 (12-30)	17.2 (10-27)
Type III	4.8	4.8	29	29	22.5 (12-30)	23 (13-36)
Type IV	4.8	4.5	36	44	26.5 (19-35)	26



Fig. 2 Subjective complaints.

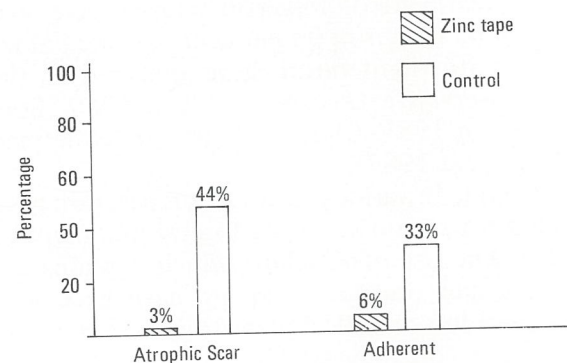


Fig. 3 Objective complaints.

All patients were asked to classify the results of their treatment into poor, acceptable and good. 22 per cent of the control group thought their results were poor while there was no poor rating in the Zinctape treated group.

### Objective Results

Pulp problems were common in the control group, 44% had an atrophic scar and in 33 per cent the scar was adherent to the underlying bone. This resulted in a very tender fingertip which required surgery.

All patients with Type III and IV injuries had distorted nail growth.

## DISCUSSION

Conservative management is now a well established and acceptable form of treatment for fingertip injuries. To be effective it should be simple to use, occlusive, non adherent, allows preservation of as much length of digit as possible, allows unrestricted movement and relatively inexpensive.

Over the years several methods have been used ranging from paraffin gauze, fucidin ointment, silver sulphadiazine cream to polyurethane foam.

Zinctape is an occlusive dressing, it is adherent to normal skin but not to the wound. This maintains a moist environment and prevents wound dehydration and has been shown to be favourable to epithelialization (Hinman and Maibach, 1963; Turner, 1979). This may be one of the factors responsible for the good quality scar with Zinctape treatment. During the first week of treatment with Zinctape excess exudate may collect beneath the dressing but this decreases with subsequent weeks. Dressing may require to be changed more often in the first week.

The moist environment beneath the dressing has been claimed to encourage colonisation by bacteria. No infection was present in our Zinctape treated group. This could be due to the antibacterial effect of the zinc oxide on *Pseudomonas aeruginosa*, *Staph. aureus* and *Strept pyogenes* (Hallmann & Elmros, 1980).

Being a non adhesive dressing, its removal during dressing changes produces no discomfort. This, however, is not true for paraffin gauze. Granulation time tends to get incorporated into the interstices of the paraffin gauze. Its removal requires

prior soaking and even then it often causes bleeding, damage to granulation tissue and significant discomfort.

When bone is exposed, most authors still favour surgical treatment. This study, encouraged by results obtained by Sodenberg (Sodenberg 1983), shows that fingertip injuries with bone exposure treated conservatively gives satisfactory results, yet preserving as much length of finger as possible. The presence of normal skin ridges distal to the original wound in Sodenberg study suggest regeneration of normal skin.

Although the time taken for healing is similar in both treatment groups, the quality of the scar produced is superior in the Zinctape treated group. There are less patients with painful, atrophic and adherent scar.

This study has demonstrated that dressing can now be done by the patient himself with minimal supervision and thus contributing to the reduction in the total cost of treatment.

## SUMMARY

1. Eighty per cent of fingertip injuries occur between the age groups of 11 to 30 years.
2. Eighty of affected patients are males.
3. The right hand is affected as often as the left.
4. Eighty per cent of injuries are industrial in origin.
5. Eighty per cent of injuries occur in the index and middle fingers.
6. There is an equal distribution of Type I, Type II and Type III injuries.
7. The time to healing:  
Type I and Type II average 16 days.  
Type III and Type IV average 24 days.
8. The quality of the scar following Zinctape treatment is superior to that obtained from paraffin gauze.

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