

IS NAIL MATRIX INJURIES TREATED SUFFICIENTLY? OUR TEN YEARS RETROSPECTIVE EVALUATION RESULTS

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SUMMARY

In the last 4 years, total number of hand injuries were 3752 patients at our Hand and Microsurgery Hospital in İzmir. The incidence of finger tip injury was 9.6%. Between April of 1988-1998, we operated 377 patients with fingertip injury. Twenty eight of these patients replied our invitation form.

Distal fingertip injuries include, distal replantation, severe crush injury, distal phalanx fracture, defects in pulp and nail matrix. Various techniques can be used for repair of nail matrix and reconstruction of defect. But determination of deformity and the other problems in nails will improve the repair procedures, which were used.

The aim of this study was to evaluate the late consequences of matrix injuries.

Key words: *Nail matrix injuries.*

INTRODUCTION

The incidence of finger tip injury was %9.6 in our institution. Among these injuries, 86% of them were nail matrix injury.

Reconstruction of volar aspect of the finger is very important concerning hand function and sensitivity. We thought that, good reparation of dorsal part of the finger especially nail matrix is also as important as volar part.

In our series we evaluated the late results of nail matrix injuries and the effects in daily life.

PATIENTS AND METHOD

Dorsal facing injuries, amputation and penetrating injuries participated in nail matrix. Appropriate reconstruction technique was chosen in patients with

fingertip injury. In our series, priority was given to pulp reconstruction with local and regional flaps. After this procedure, nail matrix was repaired properly.

In our study, the mean age was 24.4 (min 1-max.67). Third finger injury was 46.5%.

All operation was carried out under pneumatic tourniquet and regional anesthesia. In patients with undamaged nail matrix, the aim was to create a surface so that nail can grow up.

In order to form a surface which nail can glide over it, either nail matrix repair with 6/0 catgut or nail matrix graft from foot can be used. Decortication of dorsal cortex of distal phalanx was performed for nail and matrix adhesion.

In the case of small sterile matrix defects, split thickness nail matrix graft, for supplying as a coverage, was elevated from adjacent healthy nail matrix. Nail trepanation after completion of matrix repair was performed. Nail was fixed over matrix with ethilon stitch for continuation of pressure.

In the case of germinative matrix loss, matrix remnant was excised. Closure of defect was carried out properly.

Dorsal splint was applied in all patients for one week duration. According to accompanying injuries splint removal time can be longer than one week. If there was only pure nail injury and tuft fracture, splint can be discontinued as soon as possible for preservation of finger movement. However, sometimes rehabilitation program may be necessary.

RESULTS

Twenty eight of 377 operated patients replied our invitation letter and came to control examination. All

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patients were evaluated in respect to cold intolerance, nail deformity, colour, progression rate and general cosmetic result.

The average time to return to work was 5.5 week. (min. 3-max. 8 week) Cold intolerance was frequently encountered in crush type injuries.

Three of these patients had pulp atrophy. An increase of nail curvature was observed in 3 patients. One patient complained of nail matrix hypertrophy and finger tip deviation. Striated nail in 5 patients, split nail in 3 patients and a hook nail in 1 patients was determined. Neither of the patients change their occupation after the treatment. None of them had complaint in their daily life.

The parameters of 28 patients concerning injury type nail deformities are shown in detail on table I.

DISCUSSION

Some nail deformity such as split or hook nail may occur after fingertip injury. (1,5,9,12) Therefore matrix repair and closure of defects procedures must be satisfactory for the prevention of this type of nail deformities. Various methods have been proposed in spectrum of xenograft to synthetic materials. (2,3,7, 8,9,12,13)

In sterile matrix defects, grafts from foot nail give satisfactory result. We did not observe any kind of recipient and donor area problems.

Thanks to anatomical study, many information about the nail structure were reported. (4, 14) The main object in matrix injury is to define which part of matrix has been destroyed. Recently, vascularized nail matrix transfer was offered by some authors in the case of germinative matrix defect. If whole germinative matrix become detached, "U" mattress stitch should be used in order to fix it to former place. Generally germinative matrix repair results in split nail deformity. In these condition nail may not adhere to matrix. Some authors suggest to use silicon sheet for prevention of onycholysis. (12)

If injury create a pulp defect which require reconstruction, local flap coverage is usually necessary. While closing defects, it is advisable to fix the flaps with pin. Sutures between the flap and nail bed are also avoided. Remnant of nail matrix should excise 2 mm shorter than distal phalanx tip for the prevention of pulp contracture.

As a consequence, Matrix repair must be done carefully. After a satisfactory surgical repair, usually there isn't any differences as cosmetic appearances. Factors,

type of injury, defect localisation and dimension affect the end result in crush type injuries. Cold intolerance and pulp atrophy may also occur frequently.

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Table-1

name	injury type	localisation	cold intolerance	deformity	colour	nail remnant	progression rate
A.D.	circular saw	3-4. prm	-	curvature	n	+	slow
U.Y.	circular saw	3-4. prm	-	shape deforme	pale	+	slow
A.İ.	pressing machine	2. prm	+	pulpa atrofisi	n	-	slow
M.Y.	pressing	2,3,4. prm	+	çizgilenme	pale	-	n
S.D.	door clamping	5. prm	-	-	n	-	n
N.Ç.	pressing machine	3. prm	+	hook nail	n	-	n
B.T.	heavy object	1. prm	-	-	n	-	n
R.A.	belt	2,3. prm	-	curvature	n	-	n
E.B.	pressing machine i	1,2,3. prm	-	pulp atrophy	n	-	slow
S.B.	pressing machine	2. prm	+	-	n	-	slow
H.B.	belt	3,4. finger	-	striated	n	-	n
K.P.	heavy object	3. finger	-	-	n	-	n
Y.İ.	circular saw	1,2. fg.	-	-	pale	-	n
İ.T.	gunshot	1,2,3. fg.	-	striated	n	-	n
S.T.	heavy object	2. fg.	-	split	n	-	slow
A.K.	heavy object	2,3. fg.	-	minimal Curvature	n	-	n
S.İ.	circular saw	1. fg.	-	matrix hypertrophy	n	-	n
R.Ç.	machine squeezing	2,3. fg.	-	striated	n	-	n
V.A.	pressing machine	3,4,5. fg.	-	split nail	n	-	n
M.E.	door clamping	1. fg.	-	-	n	-	n
M.D.	pressing machine	3,4. fg.	+	shape deformity	pale	-	slow
İ.H.	pressing machine	2,3,4. fg.	-	-	n	-	n
R.Y.	machine squeezing	2. fg.	-	-	n	-	n
E.Ö.	pressing machine	2. fg.	-	split nail	n	-	slow
M.E.	door clamping	1. fg.	-	-	n	-	n
D.B.	door clamping	3,4 fg.	-	striated	n	-	n
O.A.	circular saw	2,3,4,5. fg.	-	shape deformity	n	-	slow
N.V.	machine squeezing	2. fg.	-	-	n	-	n

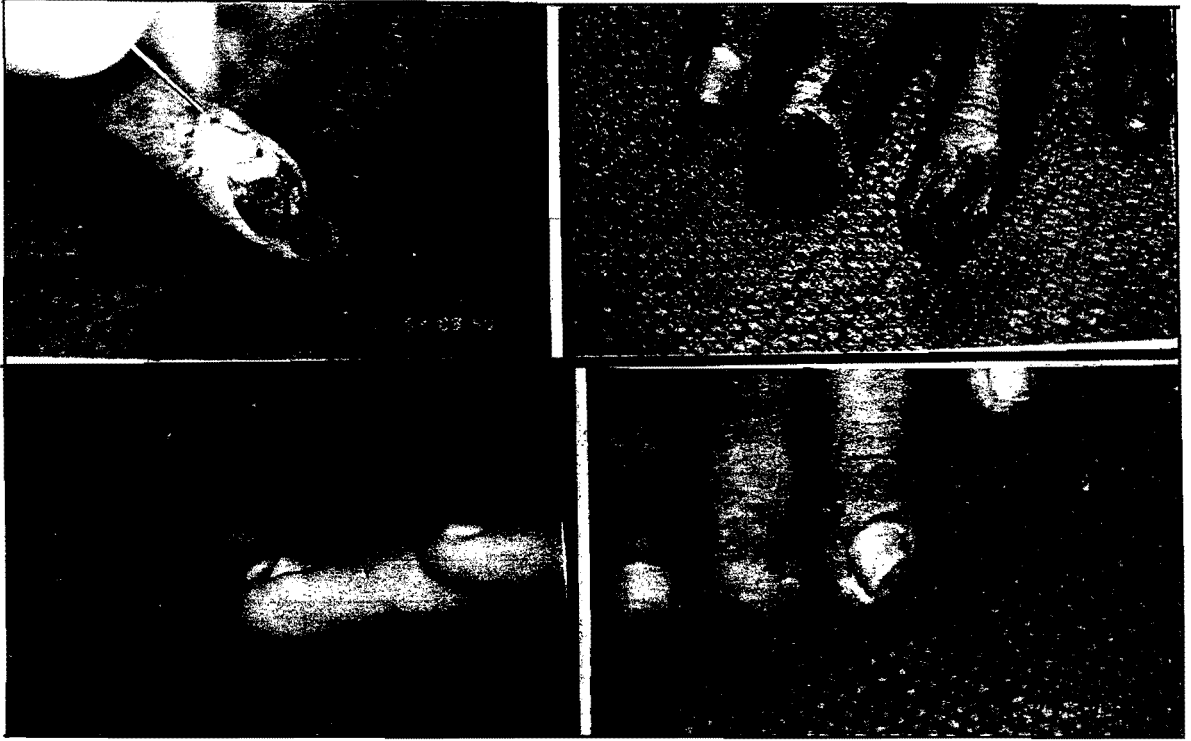


Figure 1: 16 years old male had curcular injury on his left 3,4 fingers, Preoperative and 4 years later postoperative photographs are shown. We used volar skin for closing nail matrix defects. He had matrix hypertrophy, curvature

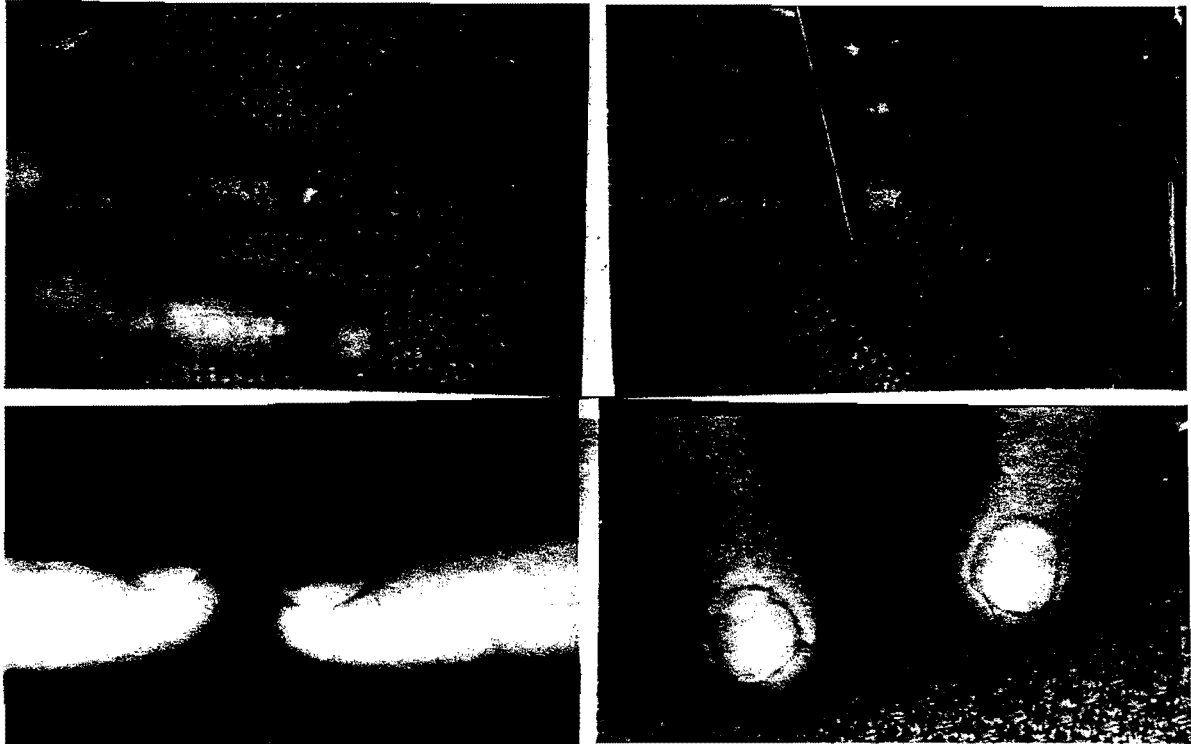


Figure 2: 14 years old male had crush type pressing machine injury on his right second finger. We performed steril matrix repair. After two years steril matrix repair, he hadn't any complaint.