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Original Article

# Early active mobilisation versus immobilisation after extrinsic extensor tendon repair: A prospective randomised trial

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## ABSTRACT

**Background**: Whether to splint the extensor tendon repairs or to mobilise them early is debatable. Recently, mobilisation has shown favourable results in a few studies. This study was aimed to compare the two favoured protocols (immobilisation vs. early active motion) in Indian population.
**Patients and Methods:** Between June 2005 and June 2007, patients with extensor tendon injuries in zones V–VIII were randomly distributed in two groups: Group A, early active motion; and group B, immobilisation. Their results at 8 and 12 weeks and 6 months were compared. **Results:** Patients in early active motion group were found to have better total active motion and early return to work. This difference was statistically significant up to 12 weeks, but not at 6 months. **Conclusion:** Early active motion following extensor tendon repair hastens patients' recovery and helps patients to gain complete range of motion at earlier postoperative period. With improved grip strength, the early return to work is facilitated, though these advantages are not sustained statistically significantly over long term.

## KEY WORDS

Early active mobilisation following extensor tendon repair; early active mobilization; extensor tendon injuries; static splinting of extensor tendons

## INTRODUCTION

The long disputed issue of rehabilitation of extensor tendon repairs in zones V–VII has been concerned with either complete immobilisation of these repairs[1-6] or mobilisation within the constraints of splint.[7-9] In recent times, most authors have preferred some form of mobilisation. The regimens employed for the postoperative management of extensor tendon repairs, in recent times, can be grouped into the following categories: 1) Immobilisation with a static splint,[10,11] 2) early active mobilisation with a flexion blocking splint[12] and 3) dynamic splinting (active flexion and passive extension) using outriggers.[13-17] Many studies have shown good results with the early mobilisation techniques, however these studies have limitations. Most of these are retrospective observations; few have clubbed cases treated in different institutions; the number of tendons, percentage of patients returning for follow-up and the assessment criteria are all variable. Some prospective studies are without proper controls.

There are very few prospective controlled trials. In a well-

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cited study, Khandwala *et al*.[18] have prospectively compared the results of dynamic splinting and early active motion (EAM). They found the results comparable. In another trial, Mowlavi *et al*.[19] have compared the results of dynamic splinting with immobilisation. They found that while the early results were better in the dynamic group, the results evened out over 6 months. Thus, while the supporters of early mobilisation have increased over time, there is no hard evidence that one method is better than the other.

We decided to undertake this prospective randomised study to compare the results of EAM and immobilisation.

## PATIENTS AND METHODS

### Patients

This study was carried out at the Department of Plastic and Reconstructive Surgery of Medical Trust Hospital, Cochin, during the study period from June 2005 to June 2007. Sanction was obtained from the Ethics Committee of the hospital before commencing the study. All patients having simple lacerations of extrinsic extensor tendons of the hand in Verdan's zones[18] V–VII were considered for the study. All hands with complex injuries like significant skin loss, bone and/or joint injuries other than simple breaches of the dorsal capsule of the metacarpophalangeal joint (MCPJ) were excluded. Patients with associated flexor tendon injuries, partial tendon lacerations and tendon injuries at more than one level were also excluded. Index and little fingers where only one tendon was injured were also excluded.

### Randomisation

Patients being considered for inclusion were explained about the study and two protocols for postoperative rehabilitation. They were told about possible advantages and disadvantages of both treatment regimens. Patients who showed willingness to participate were placed in alternate groups as they presented. Group A patients had static splints while group B patients underwent early active mobilisation (EAM).

Preoperative workup, operative treatment, antibiotic policy, and immediate postoperative positioning were same in both the groups.

### Surgical technique

Surgical protocol consisted of debridement of all nonviable tissues, exploration, and assessment of injury. All the tendon repairs were performed with modified Kessler's method,[19] using 4'o polypropylene core suture with buried knots in the center and continuous over and over epitendinous sutures with same material. Immediately postoperatively, the repairs were splinted with volar plaster of Paris slab from proximal forearm to the fingertips. Measurements were taken for the custom-made padded aluminium splint and patients were discharged on the same day or the next day if the associated injuries allowed. Patients were called as outpatient on 3rd postoperative day for the initial wound inspection and splint application. Patients in both the groups had similar management till this point.

### The splint

Custom-made splint consisted of three parts as shown in Figure 1a. The assembled splint is shown in Figure 1b. During the exercise, patients were instructed to remove the splint and move the fingers through allowed range [Figures 1c and d], while the angle adjustment of the main block and the wedge was done by physiotherapist during hospital visit. Additionally, only the injured digits were immobilised in group B.

### Mobilisation

The patients in group A (immobilisation) received a static splint [Figure 1a] which was continued unchanged for 4 weeks. Patients were seen at the end of first, second and fourth postoperative weeks for regular wound care. At the end of 4 weeks, the splint was modified by adding an adjustable block (wedge) to allow 0°–45° of movement at MCPJ while the interphalangeal joints (IPJs) were left free [Figures 2a and b]. They were taught to do the mobilisation four times a day after removing the wedge and to replace it after the exercise. In the sixth week, the splint was adjusted to allow 0°–90° of MCPJ movement as many times as possible in a day [Figures 2c and d]. MCPJs were splinted in between periods of exercise from fourth to sixth weeks. Seventh week onwards, the patients were off the splint during daytime. They were allowed to do activities of daily living during day. Protective splinting was continued during night for another 2 weeks. During this period, the patients were specifically advised not to use the involved hand for heavy manual work, to avoid lifting loads and not to do any passive stretching or massaging. After 8 weeks, the splints were discarded and patients were allowed unrestricted use of their hand. Passive stretching was advised, if required, to improve the range of movements.

For patients in group B (EAM), the initial splint position was as shown in Figure 3a(i). This was the resting position

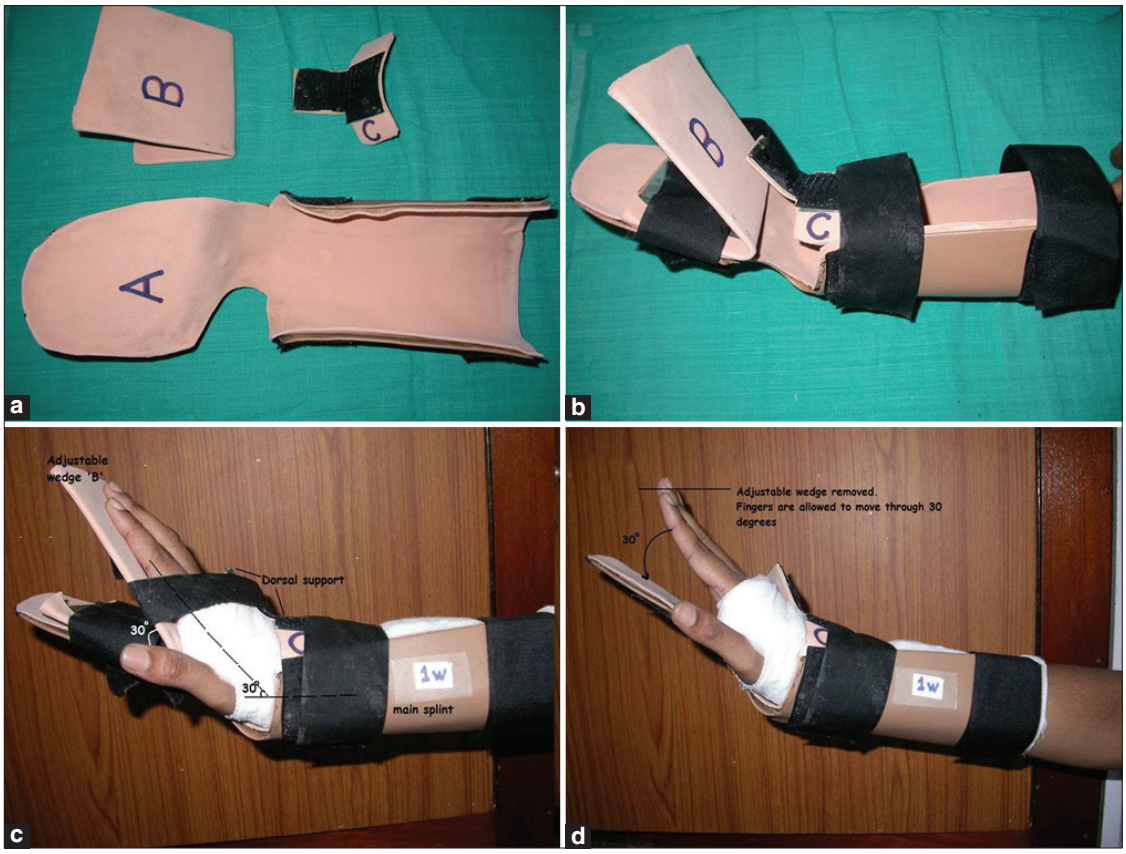


**Figure 1:** (a) Shows different parts of the splint used. Part A is the main block supporting the hand. Part B is the adjustable wedge; the angle between its limbs can be changed to desirable angle as per the patient's need. While part C is for additional dorsal support. All the three parts can be connected with Velcro strap as in (b). (c) represents position of immobilization in group A patients while it also represents resting position between two exercise sessions in group B patients. After removing the wedge, the patient is free to move the fingers up to the main block as shown in (d)

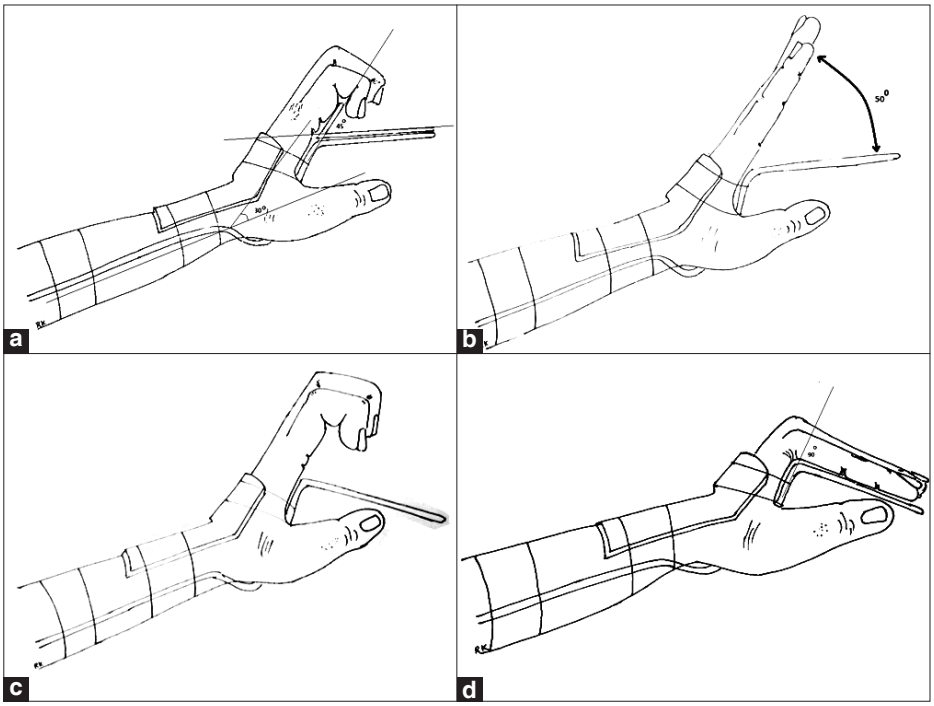


**Figure 2:** In group A patients, the resting splint is adjusted in the fifth week by the addition of a wedge as shown in (a). The angle between the blades of the wedge is 45° so that while in place, it supports fingers in position of immobilisation. After removal, it allows 45° movements as shown in (b). Resting position of the hand in the sixth week is shown in (c). with the wedge removed. The wedge has been adjusted to allow free IPJ movements. At MCP joints 0°-90° movements - is allowed after removal of wedge as shown in (d)

for injured fingers between the periods of exercise. In the first week, as shown in the figure, the angle between the two arms of adjustable block is 30°. From 3rd day onwards, patients were taught to remove the adjustable block (wedge), and try and move fingers actively at MCPJs through 0°–30° (up to the main splint), keeping the IPJs straight [Figure 3a(ii)]. Patients were asked to replace the wedge back in place in between the periods of exercise. Three exercise sessions (as advised above), of 10min each distributed evenly over daytime, were advised in the first week (10min × 3). During the second week, the splints were adjusted to increase the range of movement to 45°–50° [Figure 3a (iii and iv)]. The frequency of exercise sessions was also increased (10min × 4). In the third week, the range was increased to 70° [Figure 3b (i)], and patients were asked to do it five times a day (10min × 5). At this time, the finger supporting limb of the wedge was cut/moulded just short of proximal interphalangeal joint (PIPJ), thus allowing free unrestricted movement of IPJs at all times [Figure 3b (i and ii)]. In the fourth week, the angle was increased to 90° [Figure 3b (iii)] to allow full flexion (90°) at the MCPJs (10min × 6) and unrestricted IPJ movements [Figure 3b(iv)]. In between the periods of exercise, MCPJs were splinted as in Figure 3b (iii). During the fifth and sixth weeks, the adjustable block was removed completely during the daytime, allowing free movements within restrains of the splint (0°–90° at MCPJs). Seventh week onwards, the patients followed the same instructions as the group A patients.

Complete rehabilitation schedule used for both the groups from admission up to 12 weeks has been summarised in Table 1.

## Monitoring

Measurements were taken by an independent observer from the Department of Physiotherapy who was unaware of the patients' status (group allocation).

The following parameters were recorded:

1. The range of active motion at each joint of the injured and non-injured fingers of injured hand was measured by goniometry, weekly from fourth week onwards at each follow-up visit. This was later used to calculate the total active motion (TAM), an aggregate of active flexion range at MCPJ, PIPJ and distal interphalangeal joint (DIPJ) minus the total extension lag at these three joints. It was measured for all fingers separately (injured as well as non-injured). The TAM achieved in injured digits by patients in both the groups was compared with respect to each other at different time intervals (i.e. at 4, 6, 8 and 12 weeks and 6 months). The combined total range of movements of injured and uninjured fingers in these groups was also compared to assess overall hand function. Student's "*t*" test was applied to the average TAM achieved at different time intervals to know the significance if any.
2. Grip strength (with grip dynamometer) was measured at 8 weeks and 12 weeks in all the included patients. Student's "*t*" test was used to compare the results.
3. Flexion and extension lag at the end of 12 weeks and at 6 months.

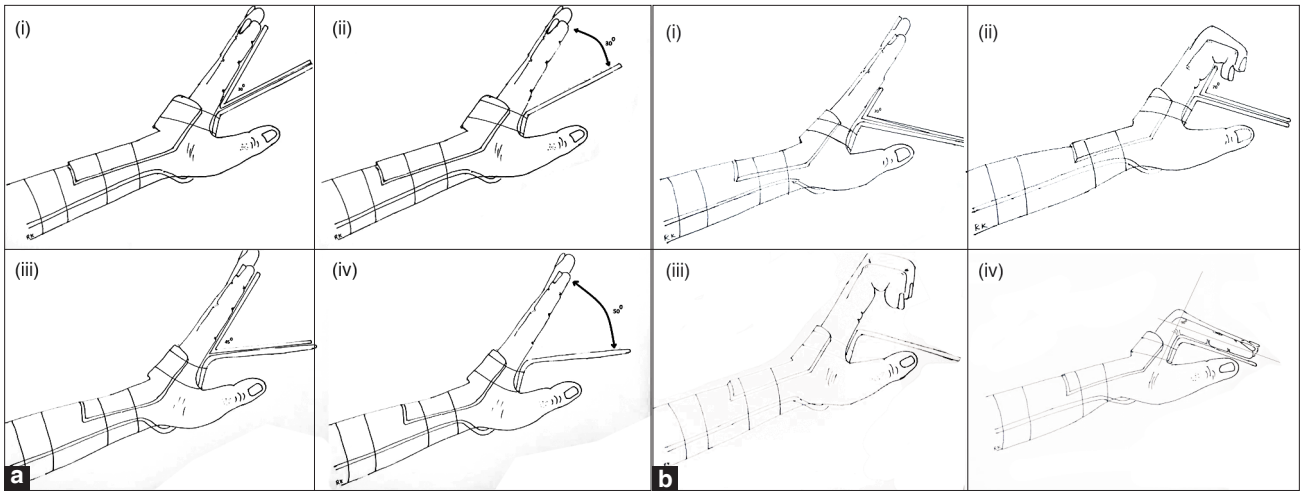


**Figure 3:** (a) (i) Shows the resting position of fingers in the first week. The angle between the blades of the wedge is 30° so that while in place, it supports fingers in position of rest. After removal, it allows 30° movements as shown in (ii). Resting position of the hand in the second week is shown in (iii). The wedge has been adjusted to 50° to allow 0°–50° movements at MCPJs as shown in (iv). (b) (i) shows the resting position of fingers in third week, while the MCPJ are immobilized at a position of full extension (0 degrees); IPJs are left free all the time (ii). During exercise the wegde is removed to allow 70 degree movements at MCPJ. Resting position of hand in fourth week (without wedge) is shown in (iii), IPJs are free to be moved all the time. During exercise 0-90 degrees movements is allowed at MCP joints as shown in figure (iv).

**Table 1: Rehabilitation programme in both the groups from day 0 upto 12 weeks.**

| *Day* | *Rehabilitation programme* | |
|---|---|---|
| Day 0 | Extensor tendon repair, plaster slab application (Position: wrist 300 dorsiflexion, MCP and IP joints in 00) | |
| Day 1 or 2 | Dressing change,<br>Measurements taken for custom made splint,<br>Position: wrist 300 dorsiflexion, MCP and IP joints in 00 (splint includes only involved fingers for group A, all fingers for group B)<br>Discharge if possible | |
| Day 3/4 | Group A | Group B |
| | Custom made splint application | Custom made splint application |
| | Active mobilization started: Allowing 0-300 movements<br>at MCP joints 10X3. (Three times a day for ten minutes each) | |
| Day 7 | Splint adjustment: Allowing 0-500 of MCP joint flexion,<br>IP Joints free to move during exercise. 10X4 | Dressing change |
| Day 14 | Splint adjustment: Allowing 0-700 MCP joint flexion.<br>IP joints left free to move all the time. 10X5 | Dressing change,<br>Splint continued |
| Day 21 | Splint adjustment: Allowing 0-900 MCP joint flexion.<br>IP joints left free to move all the time. 10X6 | |
| Day 28 | Splint adjustment: MCP and IP joints left free to move during day.<br>Night splinting continued (resting position as on day 3) | Dressing change<br>Day: 28-35: MCP joints allowed motion from 0-450. IP joints left free.<br>Day: 35-42:MCP joints allowed motion from 0-900. IP joints left free. |
| Day 42 | Splint discontinued during daytime.<br>Avoid heavy work, light ADL allowed | Splint discontinued during daytime.<br>Avoid heavy work, light ADL allowed |
| Day 56 | Off splint<br>Active flexion extension against resistance<br>Assisted Passive flexion, extension<br>Wrist mobilization | |
| 12 weeks | Assessment of range of flexion achieved, flexion/extension lag, total active movement, grip strength Strengthening exercises as needed | |
| 6 months | Assessment of range of flexion achieved, flexion/extension lag, total active movement, grip strength Patient satisfaction, return to work. | |

4. Postoperative pain and oedema (subjective analysis by the patient and the observing therapist scored on a scale "0": no oedema or pain to "10": severe pain and swelling with inability to move fingers).
5. Need for any revision surgery.
6. Time taken for return to work.

## RESULTS

### Demographic data

During the study period (i.e. June 2005–June 2007), 108 patients with injury to extrinsic extensor tendon to fingers were treated in our department. Sixty-three patients were excluded for various reasons mentioned above. After exclusions, 45 patients with 45 injured hands (119 tendon injuries) were enrolled for the study and were randomised. Twenty-two patients with 58 injured tendons were included in group A (static splinting), while 23 patients with 61 injured tendons were included in group B (EAM). All the study patients completed 12 weeks of mandatory follow-up and none of them were excluded. However, three patients could not be traced for follow-up at 6 months. Details are as represented in consort diagram [Chart 1].

### Total active motion

The average TAM achieved at intervals of 4, 6, 8 and 12 weeks from the date of injury (and at 6 months for those who returned) in both the groups for injured fingers and for injured and uninjured fingers combined is presented in Table 2. There was significant difference between group A and group B with respect to TAM of at 4, 6, 8 and 12 weeks ($P < 0.01$), indicating that patients with early motion had superior results. This advantage was, however, not maintained at 6 months [Table 2]. Overall hand function of patients in group B undergoing early motion up to 12 weeks was significantly better when compared to that in patients of group A ($P < 0.01$). This advantage again was not maintained over long term, and at 6 months, the results were comparable [Table 3].

### Grip strength

Grip strength in patients of group A was significantly less as compared to that of patients in study group B at 8 and 12 weeks [Table 4].

**Table 2: Comparision between TAM achieved in injured fingers in study groups**

| *Time* | *Group A* | *Group B* | *t - value* | *P - value* |
|---|---|---|---|---|
| | *Mean ± SD (n=22)* | *Mean ± SD (n=23)* | | |
| 4 Wks. | 142 ± 16 | 200 ± 26 | 8.89 | <0.0001 |
| 6 Wks. | 186 ± 24 | 224 ± 23 | 5.26 | <0.0001 |
| 8 Wks. | 212 ± 22 | 246 ± 25 | 4.83 | 0.0001 |
| 12 Wks. | 233 ± 20 | 264 ± 24 | 4.61 | 0.0003 |
| 6 Mths. | 264 ± 13 | 269 ± 53 | 0.43 | 0.67 |

**Table 3: comparision between TAM achieved in injured and uninjured fingers in study groups**

| *Time* | *Group B* | *Group A* | *t - value* | *P - value* |
|---|---|---|---|---|
| | *Mean ± SD (n=23)* | *Mean ± SD (n=22)* | | |
| 4 Wks. | 204 ± 19 | 175 ± 20 | 4.87 | 0.0001 |
| 6 Wks. | 228 ± 13 | 202 ± 16 | 5.8 | <0.0001 |
| 8 Wks. | 251 ± 13 | 214 ± 20 | 7.04 | <0.0001 |
| 12 Wks. | 270 ± 11 | 250 ± 23 | 3.57 | 0.0007 |
| 6 Mths. | 274 ± 6 | 265 ± 12 | 0.93 | 0.48 |

**Table 4: comparision between grip strengths achieved in study groups**

| *Time* | *Group A* | *Group B* | *t - value* | *P - value* |
|---|---|---|---|---|
| | *Mean ± SD (n=28)* | *Mean ± SD (n=27)* | | |
| 8 Wks. | 58 ± 6 | 51 ± 9 | 3.29 | <0.01 |
| 12 wks. | 77 ± 8 | 66 ± 12 | 3.61 | <0.01 |

There was no *extension lag* in any of the patients from either group.

Patients in group A complained about *pain* during the first week that required pain medications. For the next three weeks, they did not have much pain except for some discomfort during dressing change. From the fifth week onwards, however, many of them had severe pain that required pain medicines. Many of them complained of not being able to do mobilisation for the scheduled time (10min). Most of these patients had pain up to 12 weeks (regular follow-up) and it gradually settled when they started working. Patients in group B complained about pain up to 2 weeks and most of them required analgesics before or after the exercise. After the initial 2 weeks, they had minimal discomfort during the exercise. From the fourth week onwards, they had significantly less pain. *Oedema* in group A patients persisted for about 10 weeks, while in group B patients, it settled much earlier (average 3–4 weeks) (subjective analysis by patient and therapist).

None of the patients had any rupture. No reexplorations were required.

### Long term results

Most of our patients reported for long-term follow-up (6 months) [40 patients returned (88.8%), 2 patients returned the questionnaire (4.4%), while 3 patients were lost to long-term follow-up (7.5%)].

Most (42 of 45) of the patients in both the groups were successfully rehabilitated to their pre-injury occupations. The patients in group A, however, returned to full work after an average of 77.47 days (SD = 14.79), while those in group B needed an average of 70.58 days (SD = 11.51). Patients in group A had weakness and difficulty in using the hand for longer period of time, and took longer to get readjusted to their routine work. Patients in group B had comparatively better grip strengths (at 8 and 12 weeks) and did not complain of as many problems. Though patients in group B returned to work earlier, the difference was not statistically significant ($P = 0.1135$).

## DISCUSSION

After extensor tendon repair, a period of immobilisation would logically lead to the formation of a strong fibrous union at the repair site, which has less chance of breakage. This approach has the potential disadvantage of causing adhesions around the repair site, leading to limitation of flexion. On the other hand, early mobilisation can potentially result in less adhesions and better range of flexion, but with the risk of weakening the tendon repair leading to possible rupture or scar stretch and extension lag. There have been case series using either of these techniques in the past,[8-17] but very few randomised

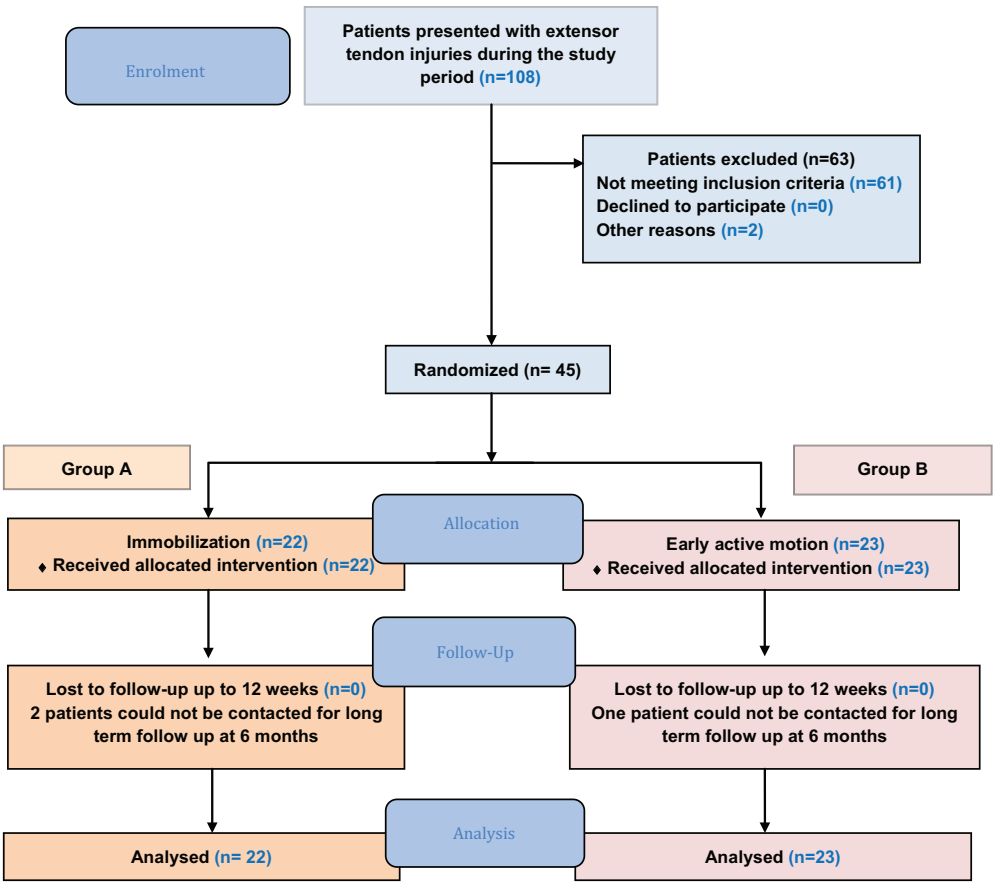


**Chart 1:** Flow diagram representing the patients assessed, included and their distribution

controlled trials[18,19] have been reported.

Many recent authors have demonstrated the usefulness of early motion of some form following extensor tendon repairs in zones V–VI.[11-16] Prominent studies using early active mobilisation protocols have advocated active flexion and active extension of only IPJs with MCPJs immobilised in neutral position or in slight flexion.[8,18] Only recently, authors have proposed regimes where controlled active MCPJ extension was allowed[12,18,20] for zone V and VI injures. Of these three studies, Evans and Sylaidis have used active flexion and extension of all three finger joints, but when the MCPJs were being flexed, the IPJs were held in extension and vice versa. In the most well-cited study among these, Khandwala *et al*.[18] presented a prospective randomised trial in 100 patients with extensor tendon injuries in zones V and VI. They were the first to mobilise MCP and IP joints together. In their study, patients were divided into two groups of 50 patients each. One group was managed by dynamic extension splinting and the other by controlled active mobilisation. In the mobilisation group, active flexion of MCPJ was moderated by a blocking palmer splint extending from proximal forearm to just short of PIPJ, while IPJs were mobilised without restrains of splint. They have reported three tendon ruptures after splint application. This study has reported that there is no distinct advantage of EAM over dynamic splinting except the ease to the patient and the therapist.

In our study, we compared the results of immobilisation versus EAM. We selected tendon injuries in zones V–VII as there is lesser implication of length and tension adjustment at this level as compared to the delicate relation of flexor and extensor apparatus in the digits. Active mobilisation used in our study was started with active flexion and extension of MCPJs without IPJ movements for the initial 2 weeks, followed by unrestricted movement at IPJs and specific mobilisation schedule for MCPJs. We felt that flexing MCP and IP joints at the same time may

cause unacceptable tension at the repair sites. MCPJs, if immobilised in extension, might lead to disabling stiffness, so they were mobilised first. Immobilisation of IPJs in extension for 2 weeks, on the other hand, was unlikely to cause significant stiffness, hence IPJ mobilisation was started later. This technique practically does not appear to stress the repair sites any more than the dynamic outrigger splints.

Splint designs used in previous studies have been variable. Studies have shown that for injuries in zones V and VI, the wrist should be held in 22° dorsiflexion to produce enough tendon relaxation throughout the range of digital motion.[21] It is also not very clear from the studies in the past as to how much motion is required to promote optimum hand function. Duran and Housur[22] have suggested that flexor tendon adhesions are avoided by permitting a minimum of 3–5mm of glide. If the same can be applied to extensor tendons, Evans and Brukhalter (1986)[23] have suggested that around 38° of finger MCPJ flexion is enough to produce this excursion in repaired extensor tendons. In our study, we started slowly so as to prevent extension lag, a complication of premature stretching of the repair site. We selected a wrist position of 30° dorsiflexion on the basis of previous dynamic excursion studies demonstrating optimum wrist extension that relieves stress upon tendon repair site during motion.[10] By avoiding dynamic splinting, the treatment was made simpler and less expensive. Also, once the angle of the adjustable block was adjusted during review visit, patients only had to remove it, perform exercise and replace the adjustable block back [Figure 1]. Patients could do it on their own without any assistance at home and were very comfortable with the regime.

In the study group, only injured fingers were splinted leaving the uninjured fingers free to move all the time. We observed statistically significant difference in the combined range of motion of injured and uninjured fingers between the two groups up to 12 weeks. The hands in group B experienced less stiffness as compared to those in group A. Early mobilisation and splinting of only injured fingers probably reduces undue stiffness in other fingers and seems to improve overall hand function.

Previous studies have used either Dargan,[8] Miller[3] or TAM[13-17] systems for the assessment of results. The Dargan system calculates the fingertip to distal palmar crease distance. It is too lenient in its assessment of extension deficit. Dargan himself has shown a diagram indicating how the finger pulp could touch the distal palmar crease with only 60° of MCPJ flexion.[8] Miller has compared the overall movement at injured digit with contralateral normal digit.[3] In this study, we used TAM to assess the results as it has been used in most of the prominent studies in the literature.[13-18] The extrinsic extensor tendons primarily extend MCPJs, while IPJ extension is primarily done by the intrinsic muscles, though any tendon adhesion over the dorsum of hand is likely to cause restriction of movements at all the finger joints. TAM thus helps in the assessment of the amount of restriction caused by adhesions, while the extension lag mostly reflects the movement/restriction of MCPJs as the intrinsic system (extending IPJs) is unaffected and is comparable in both the groups.

Our findings suggested that patients in group B, i.e. EAM group, had better range of motion when compared with patients in static splinting group (group A). This difference was significant at 4, 6, 8 and 12 weeks, but not at 6 months. This indicates that the range of movement probably increases with passage of time. This probably is because of the stress of the routine work that is much greater and is continued over a longer period of time. This probably works better than specific periods of physical therapy/passive mobilisation that are done during hospital visits or during specific schedule at home. For the same reason, they should be encouraged to return to work as early as possible. Again, probably strong repairs (following prolonged immobilisation) were better to tolerate this excessive stress as felt by authors advocating static splinting[2-6] (though at the expense of more rehabilitation time, pain and loss of weges).

Stuart (1965)[9] and Mowlavi *et al*. (2005)[19] have reported no long-term superiority of mobilisation protocols over immobilisation. They also commented that spontaneous improvement in range of motion does occur with passage of time in some patients in the immobilisation group. This probably follows the same logic as in our patients. These improvements are patient dependent. In our study, most of the patients were laborers and were keen about returning to work. If the above-mentioned logic of constant stress over a longer period is true, this explains their improvement following return to work. Our early results (at 4, 6, 8 weeks) are comparable to the results published by Mowlavi *et al*.[19] However, their study shows significant improvement of ROM by 12 weeks in immobilisation group which compared favourably with mobilisation group. Our patients showed gradual improvement and were comparable at 6

months. In this study, the delay in regaining motion or the stress required for stretching adhesions probably also may be the effect of scarring tendency which may be more in our population, though this would need to be proved by biopsy at various time intervals (that was not done). Contrary to the common perception that the Asian hands are supple, we feel that not all the Asians are blessed with supple hands.

Though TAM, flexion loss, extension loss and grip strength are good indicators of hand function, they may not reflect loss of function at an individual joint or the ability to use tools effectively. As most of these patients were manual workers, we feel that their rehabilitation to work should also be a criterion for final evaluation.

As is true for dynamic mobilisation, patients undergoing early active mobilisation should be well motivated to comply with this demanding postoperative regime. Though the splint and technique is simple and patient controlled, frequent observations are necessary. Repeated observation would help in monitoring the progress and patient's reliability; also in case of complications, it would help us to intervene early. In contrast to previous studies,[18,24] we found that if the patients are motivated and explained well, they usually are compliant. By making the splinting technique friendlier, the average number of visits could be reduced to 12 in group A patients and 14 in group B patients. Visit at 6 months was optional, but most of them preferred to come back.

### Limitations of the study

The method used for randomisation in this study was not ideal; this may introduce bias in the final assessment. Secondly, along with TAM, assessment of movements at individual joints and their statistical comparison would have given more precise information. Also softening of the scar collagen and the long-term results also need detailed studies.

## CONCLUSION

EAM following extensor tendon repair hastens patients' recovery and helps patients to gain complete range of motion at earlier postoperative period. With improved grip strength, the early return to work is facilitated. Early motion, reduces pain, stiffness, oedema, and helps in better patient rehabilitation. However the long term results (6 months) are not very different.

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