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Effectiveness of proximal interphalangeal joint–blocking orthosis vs metacarpophalangeal joint–blocking orthosis in trigger digit management: A randomized clinical trial

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ABSTRACT

Study Design: Patients with Green's classification grade 2 or 3 A1-pulley trigger digit (TD) were recruited and randomized to receive the proximal interphalangeal joint–blocking orthosis (PIPJ-BO) or meta-carpophalangeal joint–blocking orthosis (MCPJ-BO).
Introduction: TD is a common hand condition that can affect one's performance in activities of daily living. Conservative management of TD involves prescription of orthoses to facilitate recovery. No studies have evaluated the effectiveness of PIPJ-BO, optimal orthosis wear regime, and other factors affecting orthotic effectiveness.
Purpose of the Study: To compare the effectiveness of PIPJ-BO vs MCPJ-BO in TD management.
Methods: Outcome measures included pain numerical rating scale, Green's classification grading, and Quick Disability of the Arm, Shoulder and Hand. Orthosis wear duration was also collated. Patients were followed up for 2 months, and changes between initial and final assessment score within each group and between both groups were analyzed.
Results: Thirty-five patients with 43 TD were included in final analysis. Twenty-three TD were allocated PIPJ-BO while 20 with MCPJ-BO. Pain reduction was observed in both groups, but reduction was greater in PIPJ-BO group ($P = .02$). About 47.83% in PIPJ-BO group and 40% in MCPJ-BO group improved by at least 1 Green's classification grade. There was only significant improvement in Quick Disability of the Arm, Shoulder and Hand score for PIPJ-BO group ($P = .0007$), and duration of orthosis wear was significantly longer in the PIPJ-BO group ($P = .0010$). Advancing age was found to have higher rate of orthosis failure.
Discussion: Findings suggest that both orthoses are effective in reducing pain and disability and improve in triggering symptoms, with PIPJ-BO being more superior. Moreover, PIPJ-BO is less restrictive, has better cosmesis and allowed better functional performance than MCPJ-BO.
Conclusion: PIPJ-BO is more effective than MCPJ-BO in pain reduction and achieved better functional outcome. Orthosis wear of 24 hours for more than 8 weeks is recommended.

Introduction

Stenosing tendovaginitis, or trigger digit (TD), is a debilitating common hand condition. It is diagnosed when an individual presents with a symptomatic clicking or locking of a finger or the thumb. The etiology involves pathological thickening of the flexor sheath, the annular pulley system, and intrasubstance changes within the flexor tendons.[1-5] These changes, which can be felt as a palpable nodule, resulted in the inability of the affected digit to flex or extend smoothly. A person with TD may initially experience painless clicking of the digit during movements which may progress to painful triggering and locking. This often affects one's performance in activities of daily living.

Triggering occurs at the site of first annular (A1) pulley as the maximal stress occurs at the A1 pulley region during gripping and

pinching activities.[3] For A1 pulley triggering in fingers, the pain and tenderness is located palmar to metacarpophalangeal joint (MCPJ), whereas the triggering symptoms occur at the proximal interphalangeal joint (PIPJ). Either the flexor digitorum superficialis (FDS), flexor digitorum profundus (FDP), or both FDS and FDP are involved.[2,6] Triggering at the third annular (A3) pulley is less common where the pain is located palmar to the PIPJ. The triggering is at distal interphalangeal joint and is due to FDP pathology.[3]

Any individual in a general population has a 2.6% risk of sustaining TD in their lifetime.[7] It occurs more frequently in women and when one is in their fifth to sixth decades of life.[8] Primary TD etiology is often idiopathic. Secondary TD can be caused by trauma (chronic trauma or repetitive strain) and is often found in association with other conditions such as diabetes mellitus, rheumatoid arthritis, carpal tunnel syndrome, and de Quervain's tenovaginitis.[9,10] The thumb, middle, and ring fingers are involved more frequently than little and index fingers.[10-12]

The Green's classification grading (Table 1) is used in our hospital to grade the severity of TD.[13] This grading system is similar to the Quinnell grading system.[14] In TD of grade 1, one can expect a good outcome with conservative management and a fair outcome for grade 2 and 3. TD of grade 4 is usually resistant to conservative management and likely requires surgical release.[15]

Conservative treatment often includes education on the TD condition, resting of the affected digits through wearing of orthosis and activity modification to minimize aggravation of the condition.[16] Pain is managed with the use of thermal or electrical modalities, while massage over the palpable nodule is taught to increase flexibility of the thickened soft tissue and to decrease swelling. Passive range of motion and tendon gliding exercises are also taught to maintain joint range of motion and smooth tendon excursion.[2]

Orthosis prescription offers an alternative for patients who do not wish to undergo a steroid injection.[3,17] For A1 pulley triggering, a custom-made thermoplastic orthosis is fabricated to immobilize the MCPJ in $0°–15°$ of flexion, while allowing the proximal and distal interphalangeal joints to be freed for movement. This design alters the biomechanics of the flexor tendon through minimizing the friction between the tendon and pulley system. Through this, it aids in changing the mechanical pressure of the proximal pulley system and allows maximal differential tendon glide. In turn, it helps to reverse the pathologic state of the tendon and its sheath.[18] Several studies have evaluated the effectiveness of the MCPJ-blocking orthosis (MCPJ-BO), and the reported success rate range from 70% to 92.9%.[17-20]

There were 2 studies which evaluated the effectiveness of distal interphalangeal joint–blocking orthosis. Rogers et al[21] demonstrated 83% success rate, whereas Tarbhai et al[20] reported 47% success rate. Tarbhai et al[20] compared the effectiveness between MCPJ-BO and distal interphalangeal joint–blocking orthosis. Their participants reported MCPJ-BO providing better comfort and were less restrictive for daily function, thus resulting in better compliance.

Valdes[22] evaluated the efficacy of orthotic devices for TD, using interphalangeal joint–blocking orthosis for thumb trigger, PIPJ-blocking orthosis (PIPJ-BO) for single TD, and MCPJ-BO for multiple TDs. The results of the 3 different orthoses were analyzed together, and she reported significant decreased in pain score and improvement in trigger grading.

Current literature search found no studies comparing the effectiveness of PIPJ-BO with MCPJ-BO for TD management. The aim of this pilot study was to evaluate the effectiveness of PIPJ-BO vs MCPJ-BO in reducing pain, trigger grading, and disability for individuals presenting with grade 2 or 3 A1-pulley TDs. As the orthosis wear regimen varies in available literature,[17-22] it is also of interest to find out what is the optimal TD orthosis wear regimen.

Studies have found that patients with comorbidities such as diabetes mellitus, rheumatoid arthritis, history of other tendinopathies of the upper extremity, or of the thumb have less success with orthosis wear and were associated with higher rate of treatment failure.[3,13,17,18,23,24] The secondary aim was to find out if there are other factors affecting orthosis effectiveness for TD management.

Methods

This is a study of randomized trial design. A research ethics committee in our institutional review board approved the study protocol. Eligible participants were patients who were diagnosed with TD and referred for outpatient hand therapy TD management in our hospital. The inclusion criteria were patients diagnosed with a grade 2 or 3 A1-pulley TD and who did not receive any steroid injection at the affected digit within the last 6 months. Patients who presented with other repetitive strain injury or musculoskeletal problem on the same affected hand; with third annular pulley triggering; diagnosed with diabetes mellitus or rheumatoid arthritis; or with only thumb trigger were excluded as they have been found to have higher rates of treatment failure. Those who had undergone trigger release surgery previously were also excluded.

The investigators aimed to recruit 20 TD patients per orthosis group based on convenience sampling. It was estimated that 1 out of 5 TD patients referred in a week would be eligible for the study. Assuming 10% of patients refused participation and 5% dropout rate, a total of 40 patients could be recruited in 1 year. Those who declined to participate in the study would receive standard interventions, where they will receive MCPJ-BO and routine therapy, with review frequency of 1- to 3-week interval. After informed consent was obtained, patients were randomly assigned to the MCPJ-BO or PIPJ-BO group at 1:1 ratio, according to the computer-generated randomization list done by a statistician who was not in the study team. The custom-made low profile, volar-based ring MCPJ-BO designed by Lindner-Tons and Ingell[25] was used (Fig. 1), whereas the commercially available Oval-8 orthoses were prescribed as the PIPJ-BO (Fig. 2). Patients were required to wear the orthoses prescribed during daily activities and keep track of the hours of usage. If any of them experienced locked digit(s) during sleep, they were advised to don the orthoses during sleep. Patients from both groups were charged the same price for the orthoses prescribed.

Recruited patients have to attend 4 sessions of therapy on a fortnightly basis. The assessments were done at the first (ie,

Table 1
Green's classification grading

| Grade	Classification	Description
Grade 1	Pretriggering	Pain; history of catching, but not demonstrable on physical examination; tenderness over the A1 pulley
Grade 2	Active	Demonstrable catching, but the patient can actively extend the digit
Grade 3a	Passive	Demonstrable catching requiring passive extension
Grade 3b		Demonstrable catching, inability to actively flex
Grade 4	Contracture	Demonstrable catching with a fixed flexion contracture of proximal interphalangeal joint (PIPJ)
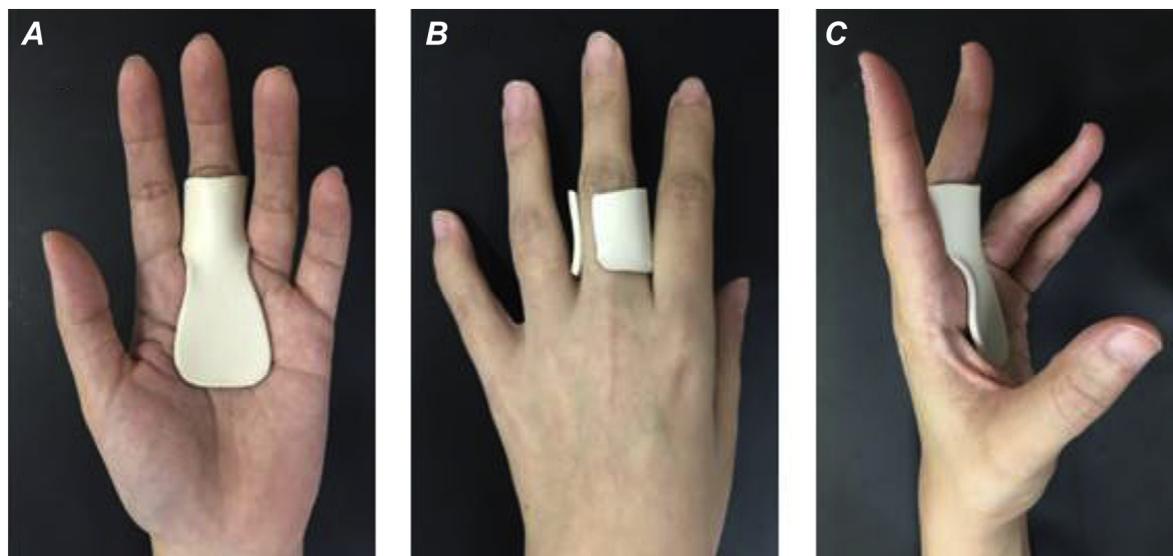
Fig. 1. MCPJ-BO (**A**) volar view, (**B**) dorsal view, and (**C**) lateral view. MCPJ-BO = metacarpophalangeal joint–blocking orthosis.

initial) session after randomization and at the fourth (ie, final) session. The occupational therapists on duty that day conducted the assessments according to the study protocol, regardless of the orthosis allocation. The severity of TD was graded using the Green's classification grading (grade 1-4). Physical pain per digit at the point of assessment was measured on a numerical scale where 0 point implies no pain to 10 points implying the worst pain. Pain numerical rating scale was found to be responsive and had good applicability for assessment of pain intensity.[26] Quick Disability of the Arm, Shoulder and Hand (QuickDASH) was also administered. It is a well-validated 11-item self-administered questionnaire which measures upper extremity function, symptoms, and the impact on social activities and sleep and was found to be able to discriminate functional difference between different trigger gradings.[14,27,28] The higher the QuickDASH score, the greater the disability in daily function. At each visit, the average duration (ie, hours) of orthosis wear per day was also recorded.

Apart from the prescribed orthoses, other treatments given included education on TD condition, activity modification, and deep circular massage over the A1 pulley area during the first session. During the second and third session, pain management via thermal or electrical modalities can be applied as needed and patients were taught to continue thermal application as home program if it was deemed useful in relieving symptoms. Patients were also taught to perform passive range of motion exercises (full finger flexion and extension) and active range of motion exercises (without causing digit triggering). In the fourth session, the tendon gliding exercises[29] (Fig. 3) was taught and patients were to wean off the orthoses if triggering resolved.

Statistical methods

Demographics of patients including age, gender, occupation, and the number of digits involved were reported by MCPJ-BO and PIPJ-BO groups. Since there were patients with more than 1 digit
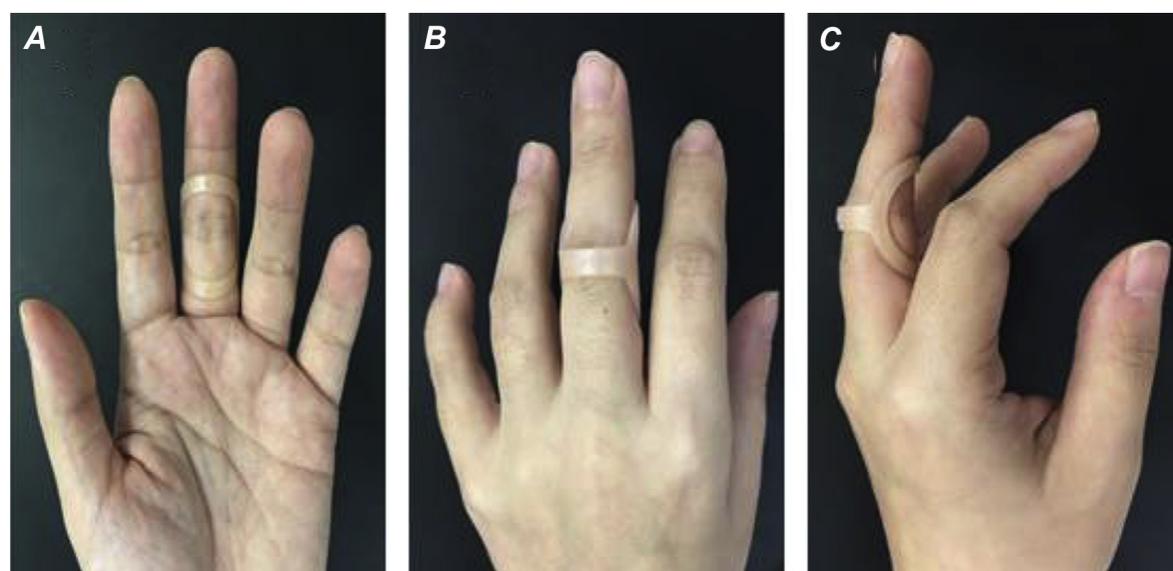
Fig. 2. PIPJ-BO (**A**) volar view, (**B**) dorsal view, and (**C**) later view. PIPJ-BO = proximal interphalangeal joint–blocking orthosis.
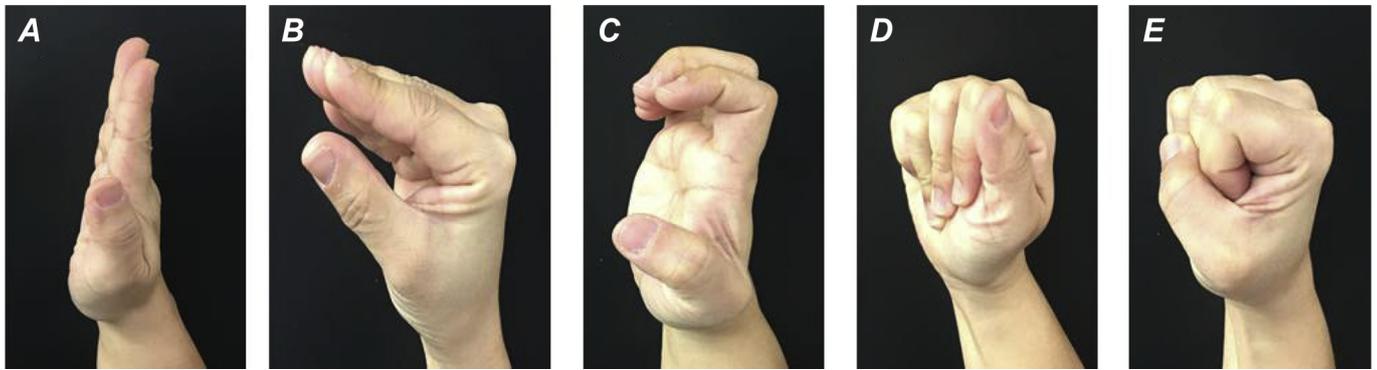
Fig. 3. Tendon gliding exercises; (**A**) full extension, (**B**) table-top fist, (**C**) hook fist, (**D**) straight fist, and (**E**) full fist.

involved, the onset of symptoms by digit, the fingers involved, and hand dominance were analyzed in the 2 orthoses groups. The continuous and categorical variables were assessed using the Student's *t*-test and chi-square test, respectively.

The initial and final average pain scores, QuickDASH scores per digit, and the changes in scores after treatment of the 2 orthoses groups were compared accordingly using the Student's *t*-test. In addition, the patient's individual pretreatment and posttreatment scores were also analyzed using paired *t*-test to evaluate if the individual patient's improvement was significant.

In order to compare Green's classification grading of TD between the 2 orthoses groups, the changes in grade between initial and final assessment were grouped into no change in grade ("no change") or improvement by at least 1 grade level ("improvement of ≥1 grade"), and the proportions were compared using the chi-square test. The average orthosis wear duration (hours per day) over the past 8 weeks between the 2 orthoses groups were compared using the Student's *t*-test.

Orthosis treatment was defined as effective when there was improvement of both the pain scores and Green's classification grading. Patients were regrouped into "success" or "failure" group, regardless of what treatment were given. Orthosis "success" was defined as reduction in pain scores and improvement in the Green's classification by at least 1 grade at final assessment, whereas orthosis "failure" was defined as same or increased pain score, and/or no improvement in Green's classification grading. Factors associated with success or failure were compared using the Student's *t*-test for continuous variables and chi-square test for categorical variables.

In this study, we used 2-sided tests with statistical significance level set at 0.05. Analyses were performed with Stata Statistical Software: Release 13 (StataCorp, College Station, TX: StataCorp LP).

Results

Between July 2011 to June 2013, and July 2014 to June 2016, a total of 1171 patients with TD referred for hand therapy were screened for eligibility in participating the study, 987 patients were not recruited due to the inclusion and exclusion criteria, whereas 142 declined to participate in the study. Forty-two patients were recruited and randomized, of which 7 participants subsequently dropped out: 2 in MCPJ-BO group and 1 in PIPJ-BO group went for corticosteroid injection, 3 in PIPJ-BO group defaulted their follow-up appointment, and 1 in PIPJ-BO group withdrew from the study due to the development of inflammatory arthritis. These 7 participants were not included in the final data analysis.

Thirty-five participants were included in the final data analysis, in which 16 were assigned to MCPJ-BO and 19 in PIPJ-BO group (Fig. 4). Altogether, there were 24 females and 11 males, ranging in age from 42 to 74 years, with a mean age of 60 years. The majority of them were homemakers or retirees and had only 1 digit affected (Table 2). Out of 43 affected fingers from these 35 patients, 30 digits were symptomatic for less than 6 months at the first therapy visit, and 23 had the TD on their dominant hand. Middle and ring fingers were more commonly involved than index and little fingers (Table 3). Statistical analysis showed that there is no significant difference in demographics between the 2 groups.

When comparing the initial pain and QuickDASH scores at the beginning of treatment, both MCPJ-BO and PIPJ-BO group reported similarly. Over the 8-week period, we compared their pain score pretreatment and posttreatment separately for the 2 groups. Both groups showed a significant improvement, with much lowered pain score reported in the final assessment ($P = .0066$ for MCPJ-BO and $P < .0001$ for PIPJ-BO). In terms of the magnitude of changes, the overall pain reduction in the PIPJ-BO group (-2.65, standard deviation [SD]: 2.08) was greater than when compared with the MCPJ-BO group (-1.25, SD: 1.83) ($P = .0249$). Both groups showed improvement in QuickDASH score over time, but only the PIPJ-BO group demonstrated improvement that was statistically significant after treatment ($P = .0007$). As for the changes in QuickDASH scores between the 2 groups, there was no significant difference (Table 4 and Fig. 5).

As shown in Table 5, 40% of those in the MCPJ-BO group and 47.8% of those in the PIPJ-BO group had improvement of at least 1 Green's classification grade ($P = .606$).

The average duration of orthosis wear for MCPJ-BO group was 9.6 hours per day vs 13.3 hours per day of those in the PIPJ-BO group. The duration of orthosis wear was found to be significantly longer in the PIPJ-BO group ($P = .001$).

The overall effectiveness of orthosis treatment was analyzed. Thirty patients who succeeded in orthosis treatment had a mean age of 58.87 (SD: 6.93) years, whereas 5 who failed who had a mean age of 65.80 (SD: 5.54) years ($P = .0378$). There was no association of orthosis failure reported with other factors including gender, occupation, duration of TD onset, multiple TD, hand dominance, and type of orthosis in our study population.

Discussion

This study evaluated the effectiveness of PIPJ-BO and MCPJ-BO in conservative management for individuals presenting with grade 2 or 3 A1-pulley TDs. Both orthosis were effective in reducing pain and disability and improve triggering symptoms, but PIPJ-BO provided superior results.

The purpose of orthosis wear for TD was to decrease the amount of mechanical friction of the FDS and FDP tendons within the
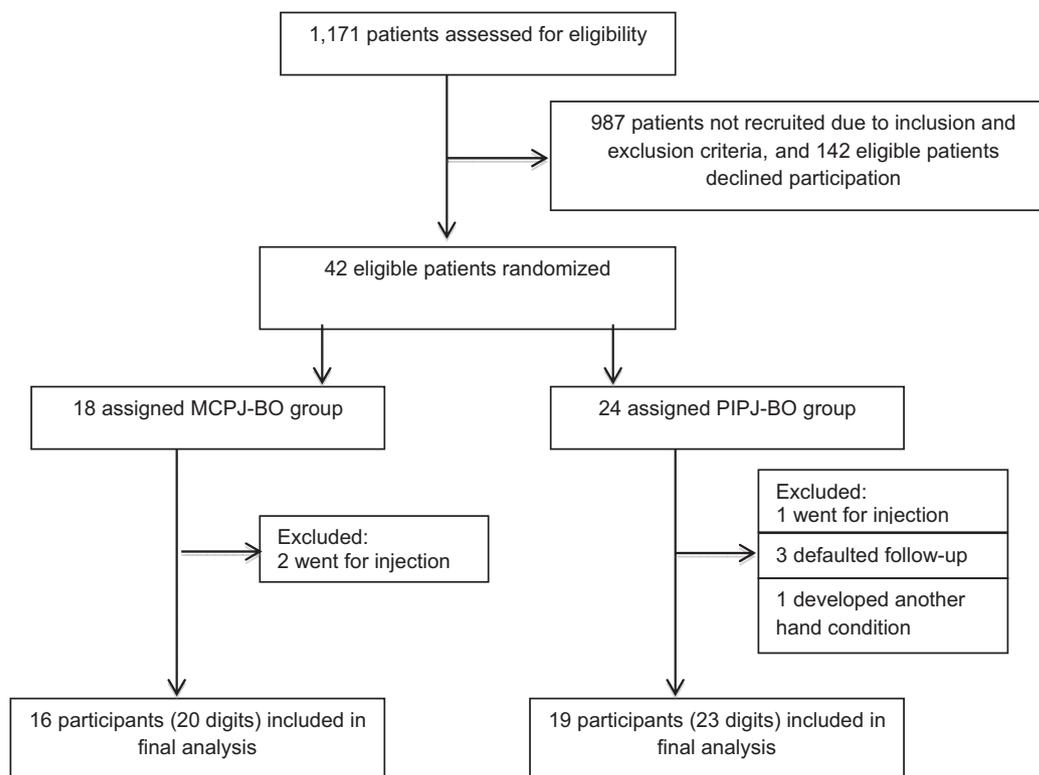
Fig. 4. Enrollment and randomization of study participants. MCPJ-BO = metacarpophalangeal joint–blocking orthosis; PIPJ-BO = proximal interphalangeal joint–blocking orthosis.

tendon sheath, allowing the affected site to rest and heal.[30] Wehbé and Hunter[31] found that FDS maximal glide occurs while the hand is in the straight fist position, the FDP maximal glide occurs at the full fist position, and the most differential glide between FDS and FDP tendon occurs at the hook fist position. Both MCPJ-BO and the PIPJ-BO limit the maximal glide of FDS and FDP, allowing the tendons to rest, thus the pain was reduced. As PIPJ-BO restricted the hook fist posture, it limits the maximal differential glide between FDS and FDP; hence, it may explain why PIPJ-BO is more effective in reducing pain than MCPJ-BO.

There has been no known consensus on the orthotic regimens for TD.[30] Different studies had varied grading improvement for different period of orthosis wear. Evans et al[18] reported 73%

improvement in pain and symptom for participants who wore MCPJ-BO during waking hours for 3–6 weeks. Patel and Bassini[17] had 70% success for 24-hour MCPJ-BO wear for 3–12 weeks. Colbourn et al[19] reported statistical difference for trigger grading after 6–10 weeks of 24 hours MCPJ-BO wear, whereas Alsancak et al[32] demonstrated statistical significant improvement in pain and grading for 24-hour thumb trigger orthosis wear for 10 weeks. Saldana[33] suggested that orthoses may have to be worn for as long as 4 months to be successful. In this study, patients were required to wear the orthoses prescribed during activities and also during sleep if they experienced locked digit(s). Nearly half of the patients in both PIPJ-BO and MCPJ-BO group had improvement of at least 1 level of Green's classification grading for 8 weeks of orthosis wear. This suggests that orthosis wear of more than 8 weeks duration for

Table 2
Background characteristics of participants with TD

Background characteristics	MCPJ-BO	PIPJ-BO	P value[a]
Age			
Min-max	42-74	49-71	.4091[b]
Mean (SD)	60.94 (8.00)	58.95 (6.07)	
Gender			
Male	5 (31.25%)	6 (31.58%)	.983
Female	11 (68.75%)	13 (68.42%)	
Occupation			
Blue collar	3 (18.75%)	2 (10.53%)	.526
White collar	4 (25.00%)	8 (42.11%)	
Others (eg, homemakers and retirees)	9 (56.25%)	9 (47.37%)	
Number of injured digits			
One digits	12 (75.00%)	15 (78.95%)	.782
Two digits	4 (25.00%)	4 (21.05%)	
TOTAL no of participants	**16**	**19**	

TD = trigger digit; MCPJ-BO = metacarpophalangeal joint–blocking orthosis; PIPJ-BO = proximal interphalangeal joint–blocking orthosis; SD = standard deviation.
[a] P value from the chi-square test for categorical variables.
[b] P value from the Student's t-test for continuous variables.

Table 3
Profile of participants by orthosis type

Variables	MCPJ-BO	PIPJ-BO	P value[a]
Onset of symptoms			
<6 mo	13 (65.00%)	17 (73.91%)	.791
6-12 mo	4 (20.00%)	3 (13.04%)	
>12 mo	3 (15.00%)	3 (13.04%)	
Finger			
Index finger(s)	2 (10.00%)	1 (4.35%)	.893
Middle finger(s)	9 (45.00%)	12 (52.17%)	
Ring finger(s)	8 (40.00%)	9 (39.13%)	
Small finger(s)	1 (5.00%)	1 (4.35%)	
Dominant hand			
Same as injured	11 (55.00%)	12 (52.17%)	.853
Different from injured	9 (45.00%)	11 (47.83%)	
TOTAL no of digits	**20**	**23**	

MCPJ-BO = metacarpophalangeal joint–blocking orthosis; PIPJ-BO = proximal interphalangeal joint–blocking orthosis.
[a] P-value from the chi-square test for categorical variables.

Table 4
Average scores for pain scale and QuickDASH between MCPJ-BO and PIPJ-BO

Outcomes	MCPJ-BO (N = 20)		PIPJ-BO (N = 23)		P-value[b]
	Mean (SD)	P-value[a]	Mean (SD)	P-value[a]	
Pain score					
The initial assessment	4.65 (2.39)	**.0066**	4.87 (2.24)	**< .0001**	.7577
The final assessment	3.40 (2.44)		2.22 (1.78)		.0742
Changes in pain score	−1.25 (1.83)		−2.65 (2.08)		**.0249**
QuickDASH score					
The initial assessment	29.70 (16.94)	.0704	21.81 (13.87)	**.0007**	.1015
The final assessment	22.67 (15.43)		13.00 (10.58)		**.0199**
Changes in QuickDASH score	−7.01 (16.36)		−8.81 (10.66)		.6675

QuickDASH = Quick Disability of the Arm, Shoulder and Hand; MCPJ-BO = metacarpophalangeal joint–blocking orthosis; PIPJ-BO = proximal interphalangeal joint–blocking orthosis; SD = standard deviation.
The bold values denote P-value < .05.
[a] P-value from paired t-test (ie, initial vs final assessment) for comparison of prescores and postscores from same patient.
[b] P-value from the Student's t-test for comparison of means between treatments.

24 hours is needed to achieve a statistical significant improvement in the Green's classification grading.

Compliance has been identified as a significant problem that interferes with treatment efficacy and clinical outcomes.[34] Saldana[33] highlighted that the lack of success with orthosis wear for TD may be due to the lack compliance. One of the noncompliance reason participants cited was that the orthoses interfered with their family or social life.[35] Colbourn et al[19] reported that 57% of their participants were not compliant with MCPJ-BO because it limits their functional performance. Orthosis cosmesis also affects client compliance to orthosis utilization.[36] The PIPJ-BO is smaller in size, lighter, and attracts less unwanted attention than the MCPJ-BO. The results in this study showed that PIPJ-BO group had significantly longer orthosis wear duration and significant improvement in QuickDASH scores than MCPJ-BO group. This suggests that PIPJ-BO is less restrictive, has better cosmesis, and allowed better functional performance than MCPJ-BO.

Cost-effectiveness is an important consideration in the health care setting. The choice of treatment should be low cost with an effective outcome.[37] In our hospital, the cost of MCPJ-BO is higher than the PIPJ-BO in terms of the material and manpower cost required to customize the orthosis. The PIPJ-BO is commercially available, and less time is required for prescription. The recurrence of TD is common[38,39]; hence, orthosis durability needs to be considered for longer term orthosis use.[40] The PIPJ-BO used in this study is made from high-temperature thermoplastic, whereas the customized MCPJ-BO is made from low-temperature thermoplastic. Hence, the PIPJ-BO is more durable than MCPJ-BO, as low-

temperature thermoplastic will become brittle over time. The PIPJ-BO of the affected TD that has recovered can be used for other digits of similar size to the affected digit should TD develop. As such, PIPJ-BO is not only clinically more effective but is also more time and cost-effective than MCPJ-BO.

Previous studies have found that in patients with comorbidities such as diabetes mellitus, rheumatoid arthritis, history of other tendinopathies of the upper extremity, or of the thumb have less success with orthosis wear and were associated with higher rate of treatment failure.[3,13,17,18,23,24] After excluding patients with these comorbidities, we found that there was a significant association between orthosis failure and age, but not with gender, occupation, duration of TD onset, multiple TD, hand dominance, and type of orthoses. Astrom[41] reported that advancing age is associated with diminished tendon blood flow, which results in slower healing after injury. Tendon properties and function also deteriorate with aging.[42] The patients in the orthosis failure group were more elderly; hence, it corresponds to having a slower rate of physiological healing and thus may likely be associated with higher rate of treatment failure.

One of the limitations of our study is that the stringent exclusion criteria have excluded majority of the patients and thus resulting in a small sample size recruited in extended recruitment period. This in turn may potentially limits generalizability. The patients were not blinded, as they had to be informed on the orthosis that they were receiving. The attending therapists were also not blinded, as they need to check for comfort of the orthoses and made any adjustments as required. However, all the assessments were made according to
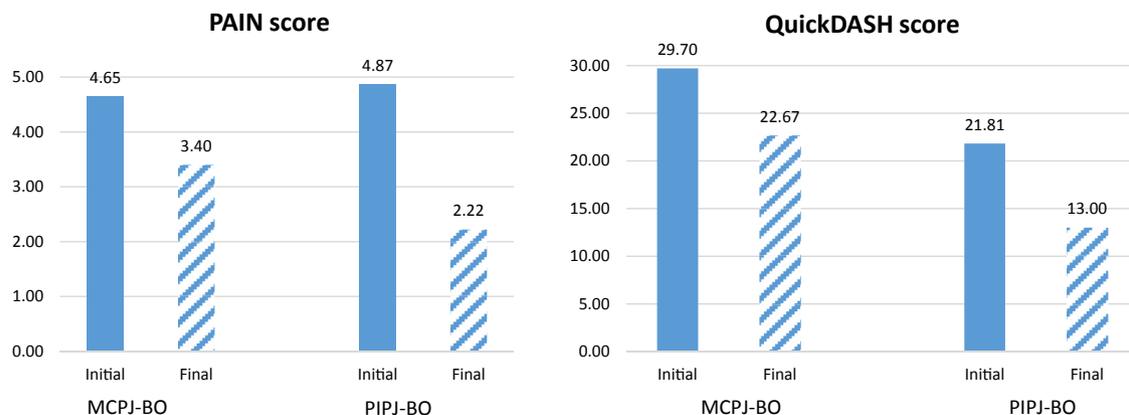
Fig. 5. Average scores for pain scale and QuickDASH between MCPJ-BO and PIPJ-BO. QuickDASH = Quick Disability of the Arm, Shoulder and Hand; MCPJ-BO = metacarpophalangeal joint–blocking orthosis; PIPJ-BO = proximal interphalangeal joint–blocking orthosis.

Table 5
Green's classification grading between MCPJ-BO and PIPJ-BO

Green classification grading	MCPJ-BO (N = 20) n (%)	PIPJ-BO (N = 23) n (%)	P-value[a]
Changes in grade between initial and final assessment			
No change	12 (60.0%)	12 (52.2%)	.606
Improvement of ≥1 grade	8 (40.0%)	11 (47.8%)	

MCPJ-BO = metacarpophalangeal joint–blocking orthosis; PIPJ-BO = proximal interphalangeal joint–blocking orthosis.

[a] P-value from Chi-square test for comparison of proportions between treatments.

standard procedures, and the subjective assessments were based on patients' reporting. We believed the outcome measurements done were objective and without bias. The other limitation is that the long-term outcomes were not monitored. For future studies, it is recommended to increase sample size via multicenter study, to have longer orthosis wear duration, and to have a longer follow-up duration. In addition, it will be useful to gather qualitative feedback from patients regarding the orthosis wear.

Conclusion

From our study, we concluded that PIPJ-BO is more effective than MCPJ-BO in pain reduction and in achieving better functional outcome. Orthosis wear of more than 8 weeks duration for 24 hours is recommended for reducing triggering symptoms. TD patients aged more than 60 years old may have higher rates of conservative treatment failure. The PIPJ-BO appears to be the preferred orthoses for clinicians and patients with TD for reasons of better cosmesis, durability, and cost-effectiveness. Therefore, we recommend the prescription of PIPJ-BO for patients presenting with Green's classification grade of 2 and 3 A1-pulley TD.

Acknowledgments

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Quiz: # 635

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1. Subjects were diagnosed with trigger digit (aka trigger finger)
   a. half (group one) involving the A1 pulley, and half (group 2) involving the A2 pully
   b. all involving the A1 pulley
   c. all involving the A2 pulley
   d. all involving both the A1 and A2 pullies

2. Outcomes were measured by
   a. Green's classification rating
   b. the Quick DASH
   c. a pain assessment tool
   d. all of the above

3. Determining which of the two different orthoses was to be worn was
   a. based on severity of symptoms
   b. by physician assignment
   c. by random assignment
   d. by therapist assignment

4. Patients were followed for
   a. 2 weeks
   b. 2 months
   c. 2 years
   d. 20 years

5. The authors preferred the PIP device and recommend wearing it for 24 hours a day for more than 8 weeks
   a. true
   b. false

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