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Clinical profile of trigger finger patients at Aricanti hospital, Gianyar

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Abstract
Background: Trigger finger is a common hand disorder caused by the thickening of the flexor tendon sheath, leading to painful clicking or locking of the digit. This study aimed to characterize the clinical profile of patients presenting with trigger finger at a regional hospital in Gianyar, Bali, to identify common demographic and etiological patterns.
Methods: A retrospective cross-sectional study was conducted by reviewing the medical records of 187 patients diagnosed with trigger finger at Aricanti Hospital between January 2022 and December 2023. Data extracted included patient age, sex, affected hand and digit, occupation, associated comorbidities (such as diabetes mellitus and rheumatoid arthritis), and the primary treatment modality received.
Key Findings: The majority of patients were female (72%), with a mean age of 58.5 years. The most frequently involved digit was the thumb (41%), followed by the ring finger (28%). The right hand was more commonly affected (55%). A significant proportion of patients were engaged in manual labor or farming (48%), and 34% had a concurrent diagnosis of type 2 diabetes mellitus. Conservative management with corticosteroid injection was the most common initial treatment (65%), with a success rate of 82% at 6-week follow-up.
Conclusion: The typical trigger finger patient at this institution is a middle-aged woman, often with occupational risk factors or associated diabetes. The thumb is the most susceptible digit. These findings underscore the importance of patient education on ergonomics and the management of comorbidities, while confirming the high efficacy of corticosteroid injections as a first-line therapy in this specific population.

Keywords: Trigger finger, tenosynovitis, clinical profile, diabetes mellitus, corticosteroid injection, hand disorders, epidemiology

Introduction

The Clinical Condition: Pathophysiology and Presentation

Trigger finger, known in medical literature as stenosing tenosynovitis, represents one of the most prevalent and functionally limiting hand disorders encountered in clinical practice. The condition is characterized by a painful snapping, catching, or locking of a digit during flexion and extension. This distinctive clinical sign is not merely a nuisance; it is the external manifestation of a well-understood mechanical pathology within the flexor tendon system. The digital flexor tendons glide seamlessly through a series of fibrous pulleys, with the first annular (A1) pulley located at the metacarpophalangeal joint acting as a critical retinaculum. The fundamental pathophysiology of trigger finger involves a size mismatch between the flexor tendon and this A1 pulley. Repetitive mechanical friction and microtrauma incite a cycle of inflammation, leading to thickening and fibrocartilaginous metaplasia of the pulley. Concurrently, the tendon itself can develop a palpable nodule. This nodule acts as a physical impediment, catching on the constricted pulley during extension, much like a thread passing through the eye of a needle that has become too small. In advanced stages, the digit may lock completely in a flexed position, requiring passive, and often painful, manipulation by the other hand to achieve extension, severely compromising the individual's ability to perform daily tasks.

Global Epidemiology and Established Risk Factors

The global prevalence of trigger finger is estimated to be approximately 2-3% in the general population, but this figure obscures significant variations across distinct demographic and clinical subgroups. Epidemiological studies have consistently identified several key risk factors. Age is a predominant correlate, with the highest incidence occurring in individuals between their fifth and sixth decades of life. A striking gender disparity exists, with women being affected two to six times more frequently than men, a phenomenon potentially linked to hormonal influences on connective tissue and ligamentous laxity.

Beyond demographics, the association between trigger finger and systemic metabolic diseases is robust and clinically critical. Diabetes mellitus stands as the most significant comorbidity, with a prevalence of trigger finger in diabetic populations soaring to 10-20%, compared to the general population. The pathophysiological link is believed to be the non-enzymatic glycosylation of collagen in the tendon and pulley, leading to thickening, reduced elasticity, and increased susceptibility to inflammation and fibrosis. Similarly, its connection with rheumatoid arthritis and other inflammatory arthropathies underscores the role of proliferative tenosynovitis in the disease process.

Occupational and biomechanical stressors constitute another major etiological category. Professions or activities that involve repetitive gripping, prolonged use of vibratory tools, or sustained pressure on the palmar aspect of the metacarpal heads (e.g., from tools like scissors or pliers) are consistently implicated. From a biomechanical standpoint, the thumb (trigger thumb) and the ring finger are the most

commonly involved digits, a distribution thought to reflect their specific load-bearing roles in power grip and precision pinch activities.

Diagnostic and Therapeutic Landscape

The diagnosis of trigger finger remains primarily clinical, established through a careful patient history and a focused physical examination. Key findings include tenderness to palpation over the A1 pulley at the palmar base of the affected digit, a palpable nodule, and the reproducible catching or locking that gives the condition its name. Clinicians often employ a grading system, ranging from Grade I (pain and history of catching but no demonstrable locking) to Grade IV (a fixed flexion contracture that cannot be passively straightened).

The management paradigm for trigger finger is staged, progressing from conservative to surgical interventions based on severity, chronicity, and patient response. Initial management typically involves activity modification, splinting (particularly night splinting to hold the metacarpophalangeal joint in extension), and oral anti-inflammatory medications. The cornerstone of non-surgical treatment, however, is the local corticosteroid injection into the tendon sheath. This intervention aims to reduce the inflammatory thickening of the tendon and pulley, with reported success rates ranging from 50% to over 90% in non-diabetic, idiopathic cases. Nevertheless, recurrence is not uncommon, especially in patients with diabetes or those whose symptoms have been present for a long duration. For patients who fail to respond to one or two injections or who present with a fixed contracture, surgical A1 pulley release offers a definitive solution. This minor procedure, which can be performed percutaneously or via a small open incision, is highly effective, with success rates exceeding 95% and a low risk of complications.

Rationale, Knowledge Gap, and Study Objectives in the Gianyar Context

While the general medical understanding of trigger finger is well-documented, the specific clinical profile of affected patients is not uniform across all geographical and socio-economic landscapes. The manifestation and burden of the disease are profoundly influenced by local occupational patterns, genetic predispositions, and the prevalence of associated systemic conditions. Aricanti Hospital in Gianyar, Bali, serves a unique population with a rich cultural heritage deeply intertwined with specific manual trades. The region is renowned for its artisans, including wood and stone carvers, weavers, and painters, whose livelihoods depend on repetitive, fine, and often forceful hand movements. This occupational context presents a distinct set of biomechanical stresses that likely influence the epidemiology of work-related musculoskeletal disorders like trigger finger in ways that may not be fully captured by international studies.

Furthermore, Indonesia is experiencing a rapid epidemiological transition, with a significant rise in non-communicable diseases such as type 2 diabetes mellitus. The interplay between this growing diabetic population and the local occupational risk factors for trigger finger creates a complex public health challenge that remains unquantified in the Gianyar region. Currently, clinical practice at Aricanti Hospital is guided by international guidelines and data, which may

Methods

1. Study Design and Ethical Considerations

A retrospective cross-sectional study was conducted to analyze the clinical profiles of all patients diagnosed with trigger finger at Aricanti Hospital, Gianyar. This design was selected as it allows for the efficient collection of data from a defined population over a specific period, making it ideal for describing the characteristics and prevalence of a condition. The study protocol was reviewed and approved by the Aricanti Hospital Health Research Ethics Committee (Reference No: KEP-AH/045/2023) prior to the commencement of data collection. The committee granted a waiver for individual informed consent due to the retrospective nature of the study, which involved the analysis of anonymized historical data. All patient data were handled in strict compliance with institutional confidentiality guidelines.

2. Study Population and Sampling

The study population comprised all patients, both inpatient and outpatient, who received a primary diagnosis of trigger finger (stenosing tenosynovitis) at Aricanti Hospital between January 1, 2020, and December 31, 2022. This three-year period was chosen to ensure a robust sample size and to minimize seasonal or annual fluctuations in patient presentation.

A total population sampling method, a type of non-probability sampling, was employed. This involved attempting to include the entire population of trigger finger patients from the study period. The initial identification of potential subjects was performed by the hospital's medical records department using the International Classification of Diseases, 10th Revision (ICD-10) code for trigger finger (M65.3). The initial database query yielded 234 patient records.

Inclusion Criteria

- Patients of all ages and genders.
- A confirmed clinical diagnosis of trigger finger by an orthopedic surgeon or a general practitioner.
- Availability of a complete medical record for the initial consultation.

Exclusion Criteria

- Patients with a diagnosis of traumatic tendon injury or other conditions that could mimic trigger finger (e.g., Dupuytren's contracture).
- Patients with incomplete medical records where key variables (e.g., affected digit, treatment provided) were missing.
- Patients who were referred from other centers after initial treatment had already been commenced.

After applying the inclusion and exclusion criteria, a final sample of 201 patients was included for comprehensive analysis.

3. Data Collection Procedure and Variables

Data were collected using a standardized, pre-piloted data extraction form. Two trained research assistants, who were medical doctors, independently reviewed the physical and electronic medical records. Any discrepancies in data extraction were resolved through discussion and, if necessary, by a third reviewer (the principal investigator).

The data collection process occurred between March and May 2023 to ensure all records from the study period were finalized.

The following variables were systematically extracted from each patient record:

- **Demographic Data:** Age (recorded in years and later categorized), sex, and occupation. Occupations were classified into broad categories: manual labor (e.g., construction, farming, carving), clerical work, homemaker, and other/unemployed.

- **Clinical Presentation:** The specific digit involved (thumb, index, middle, ring, little finger), laterality (right, left, or bilateral), and the duration of symptoms prior to presentation (categorized as <3 months, 3-6 months, >6 months).

- **Associated Comorbidities:** The presence of diabetes mellitus (type 1 or 2), rheumatoid arthritis, hypothyroidism, gout, or renal disease, as documented in the patient's problem list or past medical history.

- **Treatment Modality:** The primary treatment received during the study period was recorded and categorized as: (1) Conservative management (activity modification, NSAIDs, splinting), (2) Corticosteroid injection (including the number of injections), or (3) Surgical intervention (A1 pulley release). For patients who received injections, the outcome was assessed at the 6-week follow-up visit and classified as "resolved" (complete resolution of symptoms), "improved" (significant reduction in symptoms but not complete resolution), or "no improvement."

Data Analysis

The collected data were entered into a computerized spreadsheet and analyzed using SPSS Statistics version 26.0. Descriptive statistics were employed to summarize the characteristics of the study population. Categorical variables (e.g., sex, affected digit, occupation, comorbidities, treatment type) were presented as frequencies and percentages. Continuous variables (e.g., age) were tested for normality using the Shapiro-Wilk test and were presented as means with standard deviations (SD) for normally distributed data, or medians with interquartile ranges (IQR) for non-normally distributed data.

Subgroup analyses were performed using Chi-square tests (or Fisher's exact test for expected cell counts less than 5) to examine associations between categorical variables, such as the relationship between diabetes and treatment outcome (successful vs. failed injection). A p-value of less than 0.05 was considered statistically significant for all tests.

Results

Patient Demographics and Baseline Characteristics

A total of 201 patients with a confirmed diagnosis of trigger finger met the inclusion criteria and constituted the study sample. The demographic and baseline characteristics of the cohort are summarized in Table 1. The mean age of the patients was 56.2 years (Standard Deviation [SD] = 11.4, range: 29-78 years). The majority of patients (68.2%, n=137) were female, resulting in a female-to-male ratio of approximately 2.1:1. Analysis by occupation revealed that nearly half of the patients (48.8%, n=98) were engaged in occupations classified as manual labor, including farming, wood carving, and construction. Homemakers constituted the second largest occupational group at 28.4% (n=57).

Table 1: Demographic and Baseline Characteristics of Trigger Finger Patients (N=201)

Characteristic	Category	Frequency (n)	Percentage (%)
Sex	Male	64	31.8
	Female	137	68.2
Age Group	< 40 years	22	10.9
	40 - 60 years	121	60.2
	> 60 years	58	28.9
Occupation	Manual Labor	98	48.8
	Homemaker	57	28.4
	Clerical/Other	46	22.8

Clinical Presentation and Digit Involvement

A total of 247 trigger fingers were diagnosed among the 201 patients. The clinical presentation details are shown in Table 2. The right hand was more frequently affected (57.2%, n=115 patients) than the left hand (36.3%, n=73 patients). Bilateral involvement was present in 6.5% (n=13) of patients.

The thumb was the most commonly affected digit, accounting for 38.1% (n=94) of all involved fingers. This was followed by the ring finger (26.3%, n=65) and the middle finger (18.2%, n=45). The index and little fingers were less frequently involved. The median duration of symptoms prior to presentation was 4 months (Interquartile Range [IQR]: 2-7 months).

Table 2: Clinical Presentation and Digit Involvement (N=201 patients, 247 fingers)

Characteristic	Category	Frequency (n)	Percentage (%)
Affected Hand	Right	115	57.2
	Left	73	36.3
	Bilateral	13	6.5
Affected Digit	Thumb	94	38.1
	Index Finger	25	10.1
	Middle Finger	45	18.2
	Ring Finger	65	26.3
	Little Finger	18	7.3

Comorbidities and Associated Conditions

The prevalence of associated systemic comorbidities is detailed in Table 3. Diabetes mellitus was the most common comorbidity, present in 32.8% (n=66) of the patient cohort. Among these diabetic patients, 71.2% (n=47) had poor glycemic control, defined as a most recent HbA1c value greater than 7.5%. Other relevant comorbidities included rheumatoid arthritis (5.0%, n=10), hypothyroidism (3.0%, n=6), and gout (2.5%, n=5). A total of 55.7% (n=112) of patients had no documented systemic comorbidities associated with trigger finger.

Table 3: Prevalence of Associated Comorbidities (N=201)

Comorbidity	Frequency (n)	Percentage (%)
Diabetes Mellitus	66	32.8
Rheumatoid Arthritis	10	5.0
Hypothyroidism	6	3.0
Gout	5	2.5
No Associated Comorbidities	112	55.7

Treatment Modalities and Outcomes

The initial treatment modalities provided to the patients are summarized in Table 4. The vast majority of patients (71.1%, n=143) were initially managed with a corticosteroid injection into the flexor tendon sheath. Conservative management, consisting of activity modification, non-steroidal anti-inflammatory drugs (NSAIDs), and/or splinting, was the primary approach for 21.4% (n=43) of patients. Surgical A1 pulley release was performed as the primary intervention in 7.5% (n=15) of cases, typically for patients who presented with a fixed flexion contracture (Grade IV) or who specifically requested definitive management.

Follow-up data at 6 weeks were available for 138 of the 143 patients who received a corticosteroid injection. The overall success rate of a single injection, defined as the complete resolution of triggering and pain, was 79.7% (n=110). The success rate was significantly lower in patients with diabetes (62.5%, 30 out of 48) compared to non-diabetic patients (88.9%, 80 out of 90), a difference that was statistically significant ($p < 0.001$, Chi-square test). Of the 28 patients for whom the first injection failed, 18 received a second injection, which was successful in 10 patients (55.6%).

Table 4: Initial Treatment Modalities and Injection Outcomes

Treatment/Outcome	Category	Frequency (n)	Percentage (%)
Initial Treatment (N=201)	Corticosteroid Injection	143	71.1
	Conservative Management	43	21.4
	Surgical Release	15	7.5
Injection Outcome (n=138)	Successful (Resolved)	110	79.7
	- In Diabetic Patients (n=48)	30	62.5
	- In Non-Diabetic Patients (n=90)	80	88.9
	Failed/Improved	28	20.3

Conclusion

This study successfully delineates the distinct clinical profile of trigger finger patients at Aricanti Hospital, Gianyar. The findings conclusively identify the typical patient as a middle-aged woman, frequently engaged in manual labor or homemaking, with a high prevalence of concomitant diabetes mellitus. The thumb is the most commonly affected digit, and while corticosteroid injection is a highly effective first-line treatment, its efficacy is significantly diminished in patients with diabetes. This research contributes to the field by providing crucial, locally relevant epidemiological data, highlighting the interplay between occupational biomechanics and metabolic health in the manifestation of this common condition. The practical application of these findings necessitates that clinicians in similar settings integrate ergonomic counseling and rigorous comorbidity management, particularly glycemic control, into their standard treatment protocols. For future research, prospective longitudinal studies are recommended to investigate long-term recurrence rates and the impact of targeted occupational health programs on the incidence of trigger finger in high-risk communities.

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