Dupuytren's Contracture Induces Stenosing Tenosynovitis? Analysis of a National Database Investigating Dupuytren's Impact on the Development of Trigger Finger

Michael B. Gehring, MD, Ryan Constantine, MD, Elliot Le, MD, MBA, Jonathan Freedman, MD, PhD, Brandon Wolfe, BA, Matthew Iorio, MD

University of Colorado Anschutz Medical Center, Division of Plastic & Reconstructive Surgery, Aurora, Colorado

Background

- Large comprehensive data sets can longitudinally identify variances and potential unknown associations in the post-operative phase.
- One such previously unlinked disease state may be Dupuytren's contracture and stenosing tenosynovitis.
- Some papers have shown that treatment of Dupuytren's contracture may lead to trigger finger, but no major risk factors have been identified on a nationwide scale.
- The aim of the study was to expand and evaluate any potential associations between Dupuytren's disease treatment and the progression of trigger finger, utilizing a large national database to characterize risk factors with greater statistical sensitivity.

Methods

- PearlDiver, a patient database encompassing a national cohort of private payers encompassing fifty-three million unique patients was utilized.
- Study cohort included patients diagnosed with either Dupuytren's or trigger finger utilizing both International Classification Codes (ICD) 9 and 10. Current Procedural Terminology (CPT) codes were used to identify the most common Dupuytren's procedures, as well as trigger finger release.
- Patient demographics included age, gender, alcohol and tobacco use. Comorbid conditions included diabetes mellitus, hypothyroidism, rheumatoid arthritis, human immunodeficiency disorder (HIV) and obesity (BMI $\geq$ 30).
- Logistic regression analysis was used to define independent risk factors for developing trigger finger.

Results

- A total of 115,127 and 593,606 patients were identified with Dupuytren's contracture and trigger finger, respectively.
- 15,416 (13.4%) patients were diagnosed with trigger finger after being diagnosed with Dupuytren's and 4,959 (4.3%) patients required operative intervention with trigger finger release, which served as the cohort for analysis.
- Independent risk factors for the development of trigger finger requiring tendon sheath incision after Dupuytren's diagnosis included age (>65), diabetes and BMI > 30.
- Patients who underwent fasciotomy or fasciectomy for Dupuytren's were more likely to be diagnosed with trigger finger requiring surgical release. Male patients, those who received collagenase clostridium histolyticum (CCH) treatment for Dupuytren's or had a history of alcohol abuse were less likely to develop trigger finger.
- Dupuytren's treatment with percutaneous needle aponeurotomy (PNA) was not a statistically significant risk factor for the development of trigger finger, nor was tobacco use, HIV, hypothyroidism or rheumatoid arthritis.

Table 1

Demographic Data of Patients Diagnosed with Dupuytren's Disease that Subsequently Required Surgical Release for Trigger Finger

	No. of Patients; %
Demographics	
Gender, Male	2,220; 45%
Social History	
Alcohol Abuse	246, 5%
Tobacco Use	1,256; 25%
Comorbid Conditions	
Diabetes	2870; 58%
HIV	<10, 0.2%
Hypothyroidism	1,584; 32%
BMI $\geq$ 30	1,750; 35%
Rheumatoid Arthritis	266, 5%

HIV: human immunodeficiency virus

Table 2

Logistic Regression Analysis of Risk Factors for Diagnosis of Trigger Finger Requiring Operative Release After Diagnosis of Dupuytren's Disease

Variable	Odds Ratio	Confidence Interval (95%)		P-Value
Demographics				
Age	1.00388	1.00090	1.00689	0.01098
Gender, Male	0.56361	0.53037	0.59887	<2E-16
Social History				
Alcohol Abuse	0.63660	0.55583	0.72577	3.16E-11
Tobacco Use	1.10069	1.02825	1.17750	0.00552
Comorbid Conditions				
Diabetes	1.11952	0.99920	1.25121	0.04905
HIV	0.50367	0.22801	0.95136	0.05652
Hypothyroidism	1.02994	0.96570	1.09803	0.36782
BMI $\geq$ 30	1.19734	1.12342	1.27575	2.81E-08
Rheumatoid Arthritis	0.99951	0.87657	1.13495	0.99412
Procedure				
CCH	0.33779	0.27012	0.41644	<2E-16
PNA	0.94023	0.77909	1.12422	0.50968
Fasciectomy	2.43289	2.28063	2.59421	<2E-16
Fasciotomy	2.69081	2.34195	3.07989	<2E-16

HIV: human immunodeficiency virus, CCH: collagenase clostridium histolyticum, PNA: percutaneous needle aponeurotomy; BMI: body mass index

Conclusions

- Hand surgeons should consider concurrent tendon sheath incision while performing fasciotomy or fasciectomy for treatment of Dupuytren's, particularly in patients aged > 65 years, BMI $\geq$ 30 and diabetic patients.
- CCH injection may be protective from the development of trigger finger after Dupuytren's diagnosis and therefore, treatment with CCH prior to proceeding with fasciectomy in patients with known risk factors for trigger finger should be considered.