

National Trends and Outcomes of Operative Versus Nonoperative Management in Acute Pyogenic Flexor Tenosynovitis

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INTRODUCTION: Acute Pyogenic Flexor Tenosynovitis (APFT) is a severe hand infection classically treated with urgent surgical drainage. Recently, there has been growing interest in nonoperative management, particularly early intravenous antibiotic treatment, to avoid operative morbidity. As diagnostic and therapeutic strategies evolve, understanding national trends and outcomes in operative versus nonoperative treatment is critical. The objective of this study was to assess temporal trends in surgical intervention for APFT and compare long-term outcomes, including mortality and amputation, between patients managed operatively and nonoperatively. Additionally, we investigated how body mass index (BMI) and patient comorbidities influence treatment patterns.

METHODS: A retrospective cohort study was conducted using the TriNetX U.S. Collaborative Network, encompassing electronic health records from over 113 million patients. Adults diagnosed with APFT from 2015–2023 were included based on ICD-10 codes for tendon sheath infection. Surgical intervention was identified using CPT code 26020. Patients were grouped by treatment type (operative vs. nonoperative) and stratified by BMI (20–29 vs. 30–39). Primary outcomes included trends in the incidence and prevalence of surgical intervention. Secondary outcomes included 1-, 3-, and 5-year mortality, rates of amputation, and reoperation. Propensity score matching (1:1) was applied for age, gender, race, and ethnicity. Statistical comparisons were performed using two-sided independent sample t-tests and z-tests for proportions.

RESULTS:

A total of 6,299 patients met inclusion criteria (operative: n=2,200; nonoperative: n=4,099). Operative patients were younger (mean age 52 vs. 55 years), more likely to be male, White, and have comorbidities including nicotine dependence, tobacco use, and diabetes (all p<0.05). The incidence of surgical treatment rose from 0.59% in 2015 to 13.29% in 2023, with prevalence increasing from 0.76% to 35.38% during the same period. After propensity matching, 5-year mortality was significantly higher in the operative cohort (OR=1.284; 95% CI: 1.004–1.643). Amputation rates were also significantly increased in surgical patients (OR=2.400; 95% CI: 1.836–3.138). Patients with BMI 30–39 were more likely to undergo surgery than those with BMI 20–29 (OR=1.584; 95% CI: 1.131–2.217), though the number of reoperations did not differ significantly (p=0.26).

DISCUSSION AND CONCLUSION: This study demonstrates a sharp rise in surgical intervention for APFT over the past decade, likely reflecting improved diagnostic recognition and broader access to surgical care. However, operative treatment is associated with higher long-term mortality and amputation rates, suggesting a potential link between severity at presentation and adverse outcomes. Patients with modifiable risk factors such as smoking and diabetes were more likely to require surgery, highlighting the need for preventive education. Nonoperative management with IV antibiotics may offer a viable option in select early-stage cases and warrants further prospective studies. Our findings emphasize the importance of early recognition, stratified treatment, and modifiable risk factor management to help reduce APFT morbidity.

Figure 1. Trends in Incidence and Prevalence of Surgical Intervention for Acute Pyogenic Flexor Tenosynovitis (APFT), 2015–2023

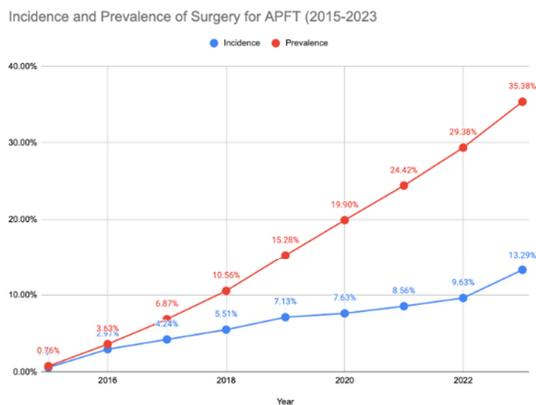


Table 1. Baseline Demographic and Clinical Characteristics of Operative Versus Nonoperative APFT Cohorts

Baseline Characteristics Comparison			
	Operative Group (n=2,200) (%)	Non-Operative Group (n=4,099) (%)	p-value
Current Age	52.1 +/- 16.1	55.2 +/- 16.8	0.0001
Male	1,323 (60)	2,298 (56)	0.0018
Female	795 (36)	1,557 (38)	0.1482
Unknown Gender	82 (4)	244 (6)	0.0001
Not Hispanic or Latino	1,690 (77)	2,773 (68)	0.0001
Hispanic or Latino	230 (10)	307 (7)	0.0001
Unknown Ethnicity	280 (13)	1,019 (25)	0.0001
White	1,567 (71)	2,777 (68)	0.0044
Black or African American	268 (12)	514 (13)	0.6814
Unknown Race	213 (10)	519 (13)	0.0004
Other Race	82 (4)	138 (3)	0.4574
Asian	38 (2)	93 (2)	0.151
Native Hawaiian or Other Pacific Islander	16 (1)	41 (1)	0.2754
American Indian or Alaska Native	16 (1)	17 (0)	0.1014
Body mass index (BMI) 19.9 or less, adult	82 (4)	136 (3)	0.3968
Body mass index (BMI) 20-29, adult	263 (12)	552 (13)	0.0882
Body mass index (BMI) 30-39, adult	343 (16)	650 (16)	0.7819
Body mass index (BMI) 40 or greater, adult	163 (7)	294 (7)	0.73
Nicotine dependence, cigarettes	747 (34)	1,287 (31)	0.0386
Nicotine dependence, unspecified	652 (30)	1,099 (27)	0.017
Tobacco use	459 (21)	741 (18)	0.0073
Type 2 diabetes mellitus	722 (33)	1,232 (30)	0.0239
Type 1 diabetes mellitus	190 (9)	294 (7)	0.0376