

The Temporal Effect of Corticosteroid Injections Into Large Joints Prior to Trigger Finger Release on Infection

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INTRODUCTION: Trigger fingers are common in adults, where open surgical release of the annular pulley is the definitive treatment, local corticosteroid injections have also demonstrated success. However, studies suggest that patients who receive local corticosteroid injections into the flexor sheath up to 90 days prior to open surgery are at increased risk of post-operative infection. Despite this association, the possible link between corticosteroid injections into large joints prior to trigger finger release remains unexplored. Therefore, this study aimed to provide large-scale analyses of infections and complications for patients who underwent trigger finger release after receiving a non-local corticosteroid injection into a large joint, such as the shoulders, hips, or knees. We specifically assessed 90-day: (1) requirement for antibiotics; (2) infections rates; as well as (3) irrigations and debridement.

METHODS: A review of a national, all-payer administrative claims database (PearlDiver) was conducted to examine patients who did not receive (n = 10,000) and those who received corticosteroid injections two (n = 1,185), four (n = 1,058), or six weeks (n = 874) prior to trigger finger release between January 1, 2010 and December 31, 2019. This source utilizes International Classification of Disease (ICD) as well as Current Procedural Terminology (CPT) codes. The primary outcomes of interest were 90-day requirement for antibiotics, diagnoses of infection, as well as irrigations and debridement. Multivariate logistic regressions were used to calculate and compare between groups using unadjusted odds ratios (ORs) with 95% confidence intervals (CIs).

RESULTS: No trends were found regarding antibiotic requirements, infection diagnoses, as well as irrigations and debridement within 90 days for patients who received corticosteroid injections two, four, or six weeks prior to open trigger finger release. However, alcohol abuse, diabetes mellitus, and tobacco use were demonstrated to be independent risk factors for requiring antibiotics as well as irrigation and debridements (all ORs > 1.13, all p < 0.001).

DISCUSSION AND CONCLUSION: These large analyses of patients who underwent trigger finger release after receiving a corticosteroid injection into a large joint, such as the shoulders, hips, or knees, two, four, or six weeks prior demonstrates no association regarding antibiotic requirements, infection diagnoses, as well as irrigations and debridement within 90 days. However, and importantly, alcohol abuse, diabetes mellitus, and tobacco use were demonstrated to be independent risk factors for requiring antibiotics as well as irrigation and debridements. While the indications and comfort levels for individual surgeons or practices may vary, optimizing these comorbidities prior to surgery may be an important goal discussed with patients to lower the risk of post-operative infections.

Table 1. Demographics and baseline characteristics

	Control (n = 10,000)	Injection Two Weeks Prior to Surgery (n = 1,185)	Injection Four Weeks Prior to Surgery (n = 1,058)	Injection Six Weeks Prior to Surgery (n = 874)	p-value
Age (SD)	62 (15.5)	64 (15.8)	63 (16.1)	63 (16.1)	<0.001
Sex					<0.001
Female	8,042 (80.42)	849 (71.65)	746 (70.56)	666 (76.20)	
Male	1,958 (19.58)	336 (28.35)	312 (29.44)	208 (23.80)	
Alcohol Abuse	441 (4.41)	68 (5.76)	61 (5.76)	36 (4.12)	0.711
CCI + 3	1,366 (13.66)	148 (12.49)	176 (16.67)	146 (16.62)	0.081
DM	1,615 (16.15)	191 (16.11)	203 (19.16)	146 (16.62)	0.087
Obesity	4,881 (48.81)	562 (47.43)	548 (51.84)	423 (48.30)	<0.001
Tobacco Use	1,787 (17.87)	301 (25.45)	321 (30.36)	242 (27.79)	<0.001

SD = standard deviation; CCI = Current Procedural Terminology; DM = diabetes mellitus.

Table 2. Bivariate analysis of post-operative outcomes of trigger finger release

	Control (n = 10,000)	Injection Two Weeks Prior to Surgery (n = 1,185)	Injection Four Weeks Prior to Surgery (n = 1,058)	Injection Six Weeks Prior to Surgery (n = 874)	p-value
Wrist Complications					
Arthrocentesis	1,139 (11.39)	149 (12.58)	155 (14.66)	151 (17.27)	<0.001
Infection	56 (0.56)	4	4	4	0.040
Diagnosis					
MD	377 (3.77)	46 (3.88)	21 (2.17)	26 (2.97)	0.042

MD = irrigation and debridement.

Table 3. Odds ratio of post-operative outcomes of trigger finger release

	Corticosteroid Injection Two Weeks Prior to Surgery	Corticosteroid Injection Four Weeks Prior to Surgery	Corticosteroid Injection Six Weeks Prior to Surgery
Wrist Complications			
Arthrocentesis	1.29 [1.06-1.54]	1.14 [0.94-1.38]	1.40 [1.15-1.70]
Infection	1.06 [0.48-2.32]	0.87 [0.24-3.06]	0.82 [0.28-2.28]
Diagnosis			
MD	0.89 [0.64-1.24]	0.57 [0.37-0.89]	0.78 [0.52-1.17]

OR = odds ratio; CI = confidence interval; MD = irrigation and debridement.

Table 4. Multivariate logistic regression for associated risk factors

	Adjusted Odds Ratio (95% CI)	p-value
Male sex	1.12 [1.09-1.16]	<0.001
Age <55 years	1.21 [1.11-1.31]	<0.001
Alcohol Abuse	1.14 [1.06-1.21]	<0.001
Diabetes Mellitus	1.19 [1.16-1.23]	<0.001
Obesity	1.13 [1.10-1.17]	<0.001
Tobacco Use	1.17 [1.14-1.21]	<0.001

OR = Odds ratio; 95% CI = 95% confidence interval; MD = irrigation and debridement.

Table 5. Multivariate logistic regression for independent risk factors

	OR*	95% CI	p-value
90-Day Antibiotics			
Male sex	0.92	0.90-0.94	<0.001
Age <55 years	0.95	0.90-1.00	0.054
Alcohol Abuse	1.10	1.06-1.15	<0.001
Diabetes Mellitus	1.15	1.13-1.17	<0.001
Obesity	1.18	1.16-1.21	<0.001
Tobacco Use	1.16	1.14-1.18	<0.001
Injection two weeks prior	1.27	1.06-1.51	0.007
Injection four weeks prior	1.08	0.89-1.29	0.421
Injection six weeks prior	1.33	1.10-1.60	0.002

*Referent group: no prior injection (control).

OR = Odds ratio; 95% CI = 95% confidence interval; MD = irrigation and debridement.

90-Day I&D

	OR*	95% CI	p-value
Male sex	1.12	1.09-1.16	<0.001
Age <55 years	1.21	1.11-1.31	<0.001
Alcohol Abuse	1.14	1.06-1.21	<0.001
Diabetes Mellitus	1.19	1.16-1.23	<0.001
Obesity	1.13	1.10-1.17	<0.001
Tobacco Use	1.17	1.14-1.21	<0.001
Injection two weeks prior	0.90	0.63-1.23	0.521
Injection four weeks prior	0.52	0.34-0.77	0.002
Injection six weeks prior	0.72	0.48-1.05	0.104

*Referent group: no prior injection (control).

OR = Odds ratio; 95% CI = 95% confidence interval; I&D = irrigation and debridement.