

Gorsche R, Wiley JP, et al. Prevalence and Incidence of Stenosing Flexor Tenosynovitis (Trigger Finger) in a Meat-Packing Plant. J Occup Environmental Med 1998;40(6):556-560.

Design: Cross-sectional study followed by a prospective cohort study

Population/sample size/setting:

- 915 employees who had been working for at least one month at a meat-packing plant in Canada
- 665 (522 men, 93 women, mean age 32) of the workers participated in the study, for a response rate of 73%
- Employees performed tasks in separate departments for skinning, sawing, gutting, trimming, bagging, boxing, and loading beef products
- All jobs were repetitive, with cycle lengths between 3 seconds and 3 minutes

Main outcome measures:

- Two exposure groups were defined: hand-held tool use (knife, hook) and non-tool use (sawing, hosing, bagging)
- Knife handle grip and hook handle grip were characterized by the positions of the thumb and index fingers in relation to the tool
- Initially, the 665 workers were interviewed by a research assistant to determine the prevalence of trigger finger (TF) in the population at the outset of the study; case definition required both a positive history (pain along the flexor tendon and locking with digit movement) and a positive physical exam (a palpable nodule at the distal palmar crease or evidence of locking on active or passive flexion of the affected digit)
- 93 cases of TF were diagnosed during the first examination, for a prevalence of 14%; the prevalence of TF was 1.9 times as great in the hand tool users as in the non-tool users
- Only 3 workers reported having comorbid conditions (arthritis) at baseline
- The prevalence of TF was not affected by hand position for tool use, and was not associated with the age of the worker
- After the prevalence study was done, 454 workers (354 hand tool users, 100 non-tool users) who did not have TF at baseline were followed prospectively to determine the incidence of TF
- In tool users, 43 incident cases were observed during 347 person-years of follow-up, for an incidence rate of 12.4 cases per 100 person-years
- In non-tool users, only 3 incident cases were observed during 114.87 person-years of follow-up, for an incidence rate of 2.6 cases per 100 person-years
- The relative risk of TF associated with hand tool use was 4.7
- Age, ethnicity, and gender were not predictors of incidence of TF
- The third and fourth digits were affected in 85% of the TF cases

Authors' conclusions:

- Trigger finger appears to be work-related in the meat-packing industry, with a relative risk of 4.7 for hand-held tool use

- There is high employee turnover in this industry; nearly one third of workers examined initially failed to make the second of two follow-up visits for evaluation of the incidence of TF
- The small number of workers with comorbidity is consistent with the healthy worker effect in this labor-intensive industry
- The reported incidence, in the setting of high turnover, is probably an underestimation of the true incidence of TF

Comments:

- In Table 2, the number of dropouts between interval 1 and interval 2 is 91 (=454-363); during this interval, there were 26 cases of TF who were seen at the end of the interval
- Many of the dropouts may have developed TF or other disorders that led to their withdrawal from the work place, supporting the authors' hypothesis that the estimated incidence of TF is likely to be an underestimation of the true incidence
- The definition of the "unexposed" group, which consisted of "non-tool users," is vague; it included workers who use saws, hoses, and who do bagging, but the hand activities associated with these job activities is not clear (repetitive activity is very likely to occur with these jobs)
- However, this does not weaken the authors' conclusions; if the "unexposed" group actually does have significant amounts of hand use, the estimated relative risk of 4.7 would also be an underestimate
- The assessment of the TF diagnosis was done by a research assistant who was aware of the hand tool use of the worker, rather than by a blinded assessor
- Poisson regression was used in the analysis, which would have made it possible to report a relative risk which was adjusted for other possible covariates; however, only the crude relative risk of 4.7 was reported
- This relative risk, however, is very unlikely to differ greatly from what an adjusted relative risk would be, and it would require some very strong confounders to produce a relative risk of only 1.0
- Eligibility and exclusion criteria were not clearly reported; it appears that anyone who worked in the meat-processing plant was eligible if the period of employment were greater than one month
- Hand tool use is not reported in terms of units of force and repetition (kg of force, etc), making it difficult to apply the results in recognizable units of exposure
- The study was done in a setting in which paced work makes it likely that the exposures were present for 6 hours per day or more

Assessment: Adequate for an evidence statement that hand tool use increases the risk of trigger finger (many of the shortcomings in reporting the results are more likely to underestimate rather than overestimate the risk of TF with tool use in this industry)