

Risk Factors For Trichiasis Recurrence in a Trachoma-endemic Area

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Abstract:

Background:

The World Health Organization recommends trichiasis surgery to prevent blindness from trachoma; however, recurrence is common. Risk factors for recurrence have not been widely studied, particularly in trachoma hyper-endemic areas.

Methods:

394 trichiasis cases in Tanzania were examined. Participants had undergone surgery >18 months prior to the study. Trichiasis recurrence and active trachoma at study visit were assessed. Ocular swabs were collected and tested for *C. trachomatis*. Household members were examined for active trachoma.

Results:

28% of operated eyes had recurrence; 40% of patients had recurrence in one or both eyes. Rates did not vary by time since surgery. Eye-level recurrence rates varied significantly across districts, ranging from 16% - 38%. Current chlamydial infection among surgical cases was low (6%) and was not associated with trichiasis recurrence. Recurrence was associated with tarsal conjunctival inflammation (OR: 2.4; 95% CI: 1.6-3.8) and residence in Kongwa district (OR: 2.3; 95% CI: 1.2-4.6).

Conclusions:

Recurrence after trichiasis surgery is high, suggesting vigilant follow up of surgical cases is needed to reduce blindness. Recurrence is associated with evidence of inflammation in the tarsal conjunctiva, although it is not clear if the inflammation contributed to recurrence, or is a result of the recurrence. Longitudinal studies of trichiasis cases following surgery are needed.

Synopsis prepared by Dr. Emily West

Many trachoma-endemic countries are currently establishing surgical programs to reduce the burden of trichiasis in the community. It is important that the initial results of these programs are very successful in order to develop long-term sustainability and high participation rates. Several studies have shown that trichiasis recurs in approximately 20% of cases within one year following surgery, and in some regions the long-term trichiasis recurrence rate is over 50%. In order to develop successful surgical programs with high participation rates, recurrence rates need to be much lower. Risk factors for trichiasis recurrence have just recently begun to be examined.

In this study, we estimated the long-term trichiasis recurrence rate in central Tanzania and examined risk factors for trichiasis recurrence in this region. Trichiasis recurrence was statistically significantly associated with having TI in the surgical eye and having two or more household members with TI. Given the cross-sectional nature of the data collection, we were unable to definitely conclude whether inflammation causes continuation of scarring and thus

promotes trichiasis recurrence, or whether the inflammation is a result of recurrence itself. However, the association with TI among family members suggests that active trachoma in a household is a risk factor for trichiasis recurrence. Furthermore, although our infection rate was very low, there was a statistically significant association between TI and *C. trachomatis* infection. 10% of eyes with TI were infected while only 2% of eyes without TI were infected.

We also found an association between district of residence and trichiasis recurrence. Our study included participants from five districts. Participants living in Kongwa district were more than twice as likely to have recurrence as individuals living in Singida district (adjusted OR: 2.3, 95% CI: 1.2-4.6). District may serve as a proxy for a variety of factors such as trachoma markers and surgical factors. The rate of trachoma within these districts varied significantly. Kongwa had the highest rate of trachoma among family members. Therefore, even after adjustment for household trachoma, the increased rate of recurrence in this population may be a marker for community-level exposure to trachoma. Alternatively, district may be a marker for differences in surgical factors. In each of these districts, with the exception of Kongwa, 1 or 2 individuals complete nearly all of the trichiasis surgeries. The use of district as a covariate serves as a proxy for the individual performing the surgeries. Kongwa district is a training area for trichiasis surgeons; hence, many newly trained individuals perform surgeries in this region and the higher rate of recurrence may be an indicator of the skill level of the surgeon.

While the cross-sectional nature of this study prevents drawing firm conclusions regarding the importance of community trachoma levels and skill level of the surgeon, these data suggest that thorough training and certification of health care workers prior to performing surgery are important components of a successful surgical program. Longitudinal studies involving trachoma treatment are needed in order to evaluate the importance of TI in surgical cases and the community burden of trachoma on trichiasis recurrence. These studies will shed light on the importance of individual or community mass treatment on reducing the rate of trichiasis recurrence.