

## BRIEF COMMUNICATION

Barry K. Logan,<sup>1</sup> Ph.D. and Rodney G. Gullberg,<sup>2</sup> B.S., M.P.A.

# Lack of Effect of Tongue Piercing on an Evidential Breath Alcohol Test

**REFERENCE:** Logan BK, Gullberg RG. Lack of effect of tongue piercing on an evidential breath alcohol test. *J Forensic Sci* 1998; 43(1):239–240.

**ABSTRACT:** Defendants in several driving under the influence cases have asserted that the presence in the mouth of a metal stud through a hole pierced in the tongue invalidates the breath alcohol test because of the prohibition against foreign substances in the mouth, and because of the potential for the jewelry to retain alcohol and interfere with the breath test. Rates of mouth alcohol elimination were evaluated in two subjects with pierced tongues and in two control subjects. No differences in the mouth alcohol elimination patterns were observed. The 15 min alcohol deprivation period prior to the test ensures no effect from residual mouth alcohol. For the purposes of breath alcohol testing, oral jewelry should be treated in the same manner as dental work, and may be left in place during the test without affecting its outcome.

**KEYWORDS:** forensic science, breath alcohol testing, tongue piercing

Inspection of the mouth for the presence of foreign substances (e.g., chewing gum, tobacco, cotton, etc.), followed by a 15 or 20 min observation/alcohol deprivation period is a standard feature of most evidential breath alcohol testing protocols. This ensures that no alcohol absorbing or retaining substances are present in the mouth, and allows for dissipation and equilibration into the tissues of residual alcohol in the mouth following consumption. Careful work in alcohol free subjects (1), has shown that neither the presence of dental work or appliances, nor dental adhesives, result in trapping or retention of mouth alcohol, providing the deprivation period is observed.

Furthermore, it has been demonstrated (2) that mouth alcohol elimination rates for drinking subjects are much shorter (around 6–8 min when the subject's breath alcohol content (BrAC) is 0.10 g/210 L), since the baseline level to be achieved is not zero. As a result of these findings, most jurisdictions do not require the subject to remove dental work prior to performing a test. This is also preferred from the point of view of esthetics, hygiene, and the comfort of the subject.

With the rise in popularity of body piercing, including that of the tongue (3,4), the question has arisen in more than six cases of

driving under the influence of alcohol (DUI) in Washington state, as to whether piercing of the tongue itself, or the wearing of oral jewelry in the tongue, could cause the retention of mouth alcohol beyond the 15 min observation period and thus interfere with the breath test.

In order to investigate this, tests were conducted on two subjects who had pierced tongues. Institutional review for this and related projects was granted by the Human Subjects Committee at the University of Washington, and all subjects gave informed consent. The subjects, both female, aged 19 and 24, had had their tongues pierced for 5 weeks, and 8 months respectively. Neither had removed the jewelry since its insertion, and were not asked to do so for this experiment. A third subject interviewed but not studied, had had the stud in place for eighteen months without removing it. The subjects, and two controls (females with no oral piercings) had been alcohol free for at least 24 hours. Each was given 1 oz. of Listerine mouthwash, containing 28% alcohol by volume (equivalent in alcohol content to undiluted 56 proof liquor), with which they rinsed their mouth for 30 s and then expectorated. They immediately began giving breath samples into a DataMaster breath test instrument (National Patent Analytical Systems, Mansfield, OH) modified to disable the mouth alcohol detection feature, and connected to a data acquisition system (MacLab, Milford, MA). The peak alcohol reading on each exhalation was monitored to determine the interval beyond which no effect from the mouth alcohol could be observed.

The initial breath sample from each subject and control, saturated the DataMaster alcohol detector ( $>0.60$  g/210 L), however, readings of less than 0.10 g/210 L were obtained within 2.1 min on both the test subjects and controls. Readings of less than 0.01 g/210 L were obtained in less than 9.0 min in all test subjects and controls. Each subject had readings of less than 0.002 by 15 min, illustrating both the effectiveness of the waiting period, and the absence of any additional effect from piercing.

The jewelry used in the tongue is apparently quite uniform in construction. Typically (such as worn by our subjects) (Fig. 1) the device is a 0.5–1 in., 10 or 20 gage (although 6 gage are available) barbell of surgical steel or gold. The post is not hollow, however 0.5 mm diameter threads are tapped into each end to a depth of about 4 mm, and hematite (a solid, non-porous composite material), or stainless steel balls with threaded posts 3 mm long, are screwed into the barbell. There is no significant volume available for trapping or retention of alcohol within the post, when the balls are affixed. The hole in the tongue is generally placed along the mid-

<sup>1</sup>Washington State Toxicology Laboratory, Department of Laboratory Medicine, University of Washington, 2203 Airport Way S., Seattle, WA.

<sup>2</sup>Washington State Patrol, 811 E. Roanoke, Seattle, WA.

Received 21 Feb. 1997; and in revised form 6 May 1997; accepted 20 May 1997.

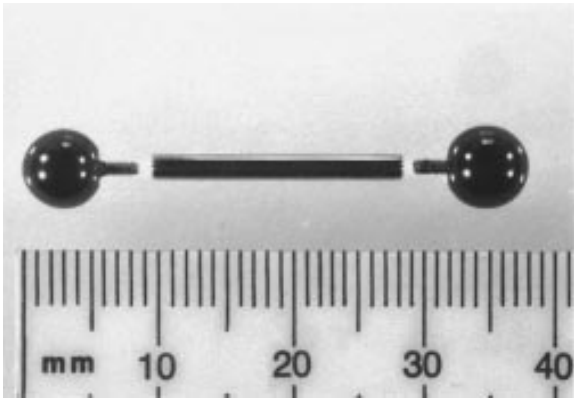


FIG. 1—14 ga. stainless steel barbell with hematite balls. Shaft is not threaded all the way through, only deeply enough to accommodate the posts on the balls.

line, and may be placed further forward which allegedly enhances performance of oral sex, but interferes with speech, or further back, where the effect on speech is less (5). The latter was the case with the two subjects we evaluated, and there was no obvious effect on their speech. The tongue swells considerably after piercing, but returns to normal within four to eight weeks (5,6). Neither subject had any trouble providing adequate breath samples for testing on the DataMaster.

Based on previous research of factors that can lead to mouth alcohol interference, and the experimental results on these two subjects, we found no basis to believe that tongue piercing, or the wearing of oral jewelry would interfere with the results of the breath test, or that such jewelry need be removed prior to administering a breath alcohol test for evidential purposes.

The response of the judicial system to this issue has been interesting. The rules for breath testing in the state of Washington (7), require that the subject's mouth be checked prior to the test to determine that it contains no ". . . foreign substance, not to include dental work, fixed or removable . . ." In each case noted above,

the defendant has alleged both a potential effect from the jewelry in trapping alcohol, and also that the presence of the jewelry constituted a foreign substance in the mouth, and therefore invalidated the test by an infraction of the rules. In the one case which has to date proceeded to trial, the court ruled that, the rule-making authority had the ability to determine whether the jewelry should be considered in the same way as dental work, since this vogue was not anticipated when the rules were written. The rule making authority in this state, the state toxicologist (BKL), has on the basis of the study described above, taken the position that at least with respect to the breath test, oral jewelry and dental work are indeed equivalent. On the other hand, licensing revocation hearings which generally do not take expert testimony, have ruled along the strict language of the rules as they are currently written, and have reversed license suspensions on the basis that the jewelry constituted a foreign substance and therefore violated the rules.

### References

1. Harding PM, McMurray MC, Laessig RH, Simley DO, Correll PJ, Tsunehiro JK. The effect of dentures and denture adhesives on mouth alcohol retention. *J Forensic Sci* 1992;37(4):999-1007.
2. Gullberg RG. The elimination rate of mouth alcohol: mathematical modeling and implications in breath alcohol analysis. *J Forensic Sci* 1992;37(4):1363-72.
3. Armstrong ML. You pierced what? *Pediatr Nurs* 1996;22(3):236-8.
4. Wright J. Modifying the body: piercing and tattoos. *Nurs Stand* 1995;10(11):27-30.
5. Edwards, G. Hoop dreams. *Details magazine* August 1996.
6. Armstrong ML, Ekmark E, Brooks B. Body piercing: promoting informed decision making. *J School Nurs* 1995;11(2):20-5.
7. Washington Administrative Code, Administration of Breath Test Program 448.13.040.

Additional information and reprint requests:

Barry K. Logan, Ph.D.  
Washington State Toxicology Laboratory  
Department of Laboratory Medicine  
University of Washington  
2203 Airport Way S.  
Seattle, WA 98134  
e-mail: logan@u.washington.edu