Comparison of Complication Rates with Stapled versus Traditional Suture Closure after Total Laryngectomy: A Retrospective Case Control Study

Brett A. Miles DDS MD1, Deborah Larrison MD2, Larry L. Myers, MD2

1 Dept. OTOHNS Mount Sinai Medical Center - New York, NY
2 Dept. OTOHNS UT Southwestern Medical Center - Dallas, TX

INTRODUCTION

The use of stapling devices for pharyngeal closure after total laryngectomy was originally described in the Russian literature by Luk’ianchenko in 1971 and the technique was further elaborated by Paches in 1972.1,2 These early reports indicated that the stapled technique may offer a possible reduction of fistula formation and decreased healing times when compared to traditional techniques. However, few studies conntrolled for confounding factors in order to directly compare traditional closure with the stapled technique. The purpose of the current study is to compare outcomes with the stapling device with traditional suture closure in the treatment of advanced stage laryngeal squamous cell carcinomas when total laryngectomy is required.

MATERIALS AND METHODS

The study design is a retrospective case control study. The records of all total laryngectomies performed by a single surgeon (L.M.) at the University of Texas Southwestern Medical Center from 2002 to 2007 were reviewed. Inclusion criteria were as follows: All patients must have exhibited advanced stage malignancy requiring total laryngectomy, be amenable to primary closure either by the stapling device or traditional suture. All patients requiring some other type of reconstruction such as a regional flap or free tissue transfer were excluded from the study. Factors contributing to healing were examined in order to compare outcomes related to the closure technique.

RESULTS

A total of 42 patients met criteria for inclusion in the study. Twenty-six patients underwent traditional suture closure after laryngectomy while 16 patients underwent closure with the linear stapler after laryngectomy. Regarding surgical technique, there were no statistically significant differences between groups in terms of cricopharyngeal myotomy, tracheoesophageal puncture, or neck dissection. The groups were also statistically similar in terms of adjuvant radiotherapy. There were eight post-operative infections in the cohort, five in the stapled closure group (31%) and three in the traditional closure (11.5%) however this was not statistically significant. The fistula rate in the stapled closure group was 25% (4/16). The fistula rate in the traditional closure group was 23% (6/26). The fistula rate did not statistically differ between the two groups.

CONCLUSIONS

In this review of 42 patients undergoing total laryngectomy for advanced laryngeal squamous cell carcinoma, there was no statistically significant difference in fistula or infection rates between traditional suture and stapled closure. Although this investigation is somewhat insufficiently powered, stapled laryngeal closure is an appropriate technique for selected patients and does not appear to result in increased risk of fistula formation.