ABSTRACT

The thulium-doped yttrium-aluminum-garnet (Tm:YAG) laser (RevoLix™, Lisa Laser Products, Katlenburg, Germany) demonstrates several advantages over currently available laser systems. This novel laser produces a continuous-wave beam with a wavelength of 2 µm, allowing for smooth incision and thermal damage. We hypothesized that the Tm:YAG laser would yield improved tissue visualization and decreased blood loss as compared with traditional laser systems. In this study, we compared the TORS outcomes of 45 patients undergoing transoral robotic surgery (TORS) for oropharyngeal squamous cell carcinoma (OPSCC) using either EC:TORS (Endocut+ carbon dioxide laser) or TY:TORS (Thulium laser) from March 2007 through August 2010. The TY:TORS group was significantly better in terms of postoperative pain and swallowing function, with a significantly shorter hospital stay. No significant differences in complication rates prior to discharge were observed. These results demonstrate that TORS, whether performed with traditional laser systems or the Tm:YAG laser, is a feasible and safe modality for the treatment of OPSCC and is associated with improved postoperative outcomes.

INTRODUCTION

Early reports using TORS uniformly described the use of monopolar electrocautery (EC) to perform surgical resections due to the lack of a robust flexible laser fiber. This prompted investigation into a new laser design: the thulium-doped yttrium-aluminum-garnet (Tm:YAG) laser (RevoLix™, Lisa Laser Products, Katlenburg, Germany). The Tm:YAG laser produces a continuous-wave beam with a wavelength of 2 µm, allowing for smooth incision and thermal damage [9, 10]. The use of the Tm:YAG laser was hypothesized to result in improved tissue visualization and decreased blood loss compared with traditional laser systems.

RESULTS

All patients were identified using a prospectively collected database with supplemental data obtained via retrospective chart review. Institutional Review Board approval was obtained prior to study commencement.

Early postoperative pain was greater in EC:TORS when compared with TY:TORS (p = 0.03). Postoperative pain was minimal: 1 patient in the EC:TORS group required reoperation for this purpose while no patient in the TY:TORS group did. No significant difference in complication rates prior to discharge was observed between the groups (p = 0.26).

DISCUSSION & CONCLUSION

Early postoperative pain and swallowing function were significantly better in the TY:TORS group when compared with EC:TORS (p = 0.03). The use of the Tm:YAG laser was hypothesized to yield improved tissue visualization and decreased blood loss as compared with traditional laser systems. In conclusion, the Tm:YAG laser is a feasible and safe modality for the treatment of OPSCC and is associated with improved postoperative outcomes.

REFERENCES


