Vessel Ligation in Transoral Robotic Surgery: Survey of the American Head and Neck Society

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VESSEL LIGATION IN TRANSORAL ROBOTIC SURGERY: SURVEY OF THE AMERICAN HEAD AND NECK SOCIETY

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WHAT IS TORS?

• Transoral Robotic Surgery (TORS) is a minimally invasive approach to the treatment of oral, throat, and skull base cancers.

• Contrast to traditional open surgical approaches, primary defects in TORS are left open to heal by secondary intention.

• Subsequent to its emergence, a variety of reports demonstrated that the risk of postoperative hemorrhage range from 3.6-18.5%.

• Neck vessel ligation has been an increasingly adopted technique as a means to prophylactically decrease the risk of severe life-threatening bleeds.
STUDY DESIGN

• We performed a survey in which 165 members of AHNS completed 10 questions focusing on their experiences with TORS

• Questions included length of time performing TORS, number of TORS completed since residency/fellowship and per year, reasons for vessel ligation, changes in ligation practices, as well as incidence of hemorrhage
How long have you performed TORS?

- 55.8% reported 3-6 years
- 26.7% reported 1-3 years
- 8.5% reported <1 year
- 9.1% reported prior to 2009 FDA approval

How many TORS cases for cancer-related diagnosis per year?

- 38% reported performing 10-20 procedures per year
- 14% reported performing 21-30 per year
- 37% reported performing <10 per year
Which vessels are ligated?

- 77.6% reported ligating the lingual artery
- 63% reported ligating the facial artery
- 29.7% reported ligating the ascending pharyngeal artery
- 12.7% reported ligating the superior thyroid artery
- 8.5% reported ligating the external carotid artery

Reasons for vessel ligation

- 28.5% due to discussion with peers without personally experiencing bad outcome
- 14.5% due to fatality/near fatality in their own or partner’s patient
- 28.5% adopted it from training
RESULTS CONT’D.

• Unligated vessels:
  • Life-threatening bleeds (Grade IV) in 21.2% of cases
  • Death secondary to bleed (Grade V) in 9.1% of cases
  • Bleeding that was easily managed in the OR (Grade III) in 42% of cases

• Ligated vessels:
  • Life-threatening bleeds (Grade IV) in 6.1% of cases
  • Death secondary to bleed (Grade V) in 1.8% of cases
  • Bleeding that was easily managed in the OR (Grade III) in 33.3% of cases
DISCUSSION

• Although there was a strong agreement amongst the surgeons with regards to prophylactic vessel ligation, there was an appreciable variation when choosing which vessel to ligate, the most common being the lingual artery

• Of note, 15% of respondents did not incorporate vessel ligation into their practice, citing futility in light of the bilateral blood supply
Analysis of postoperative bleeding and risk factors in transoral surgery of the oropharynx.

Pellel TA1, Henifield ML, Moore EJ1, Hayden RE, Olsen KD, Castle JD, Walsh LC.

Author information

Abstract

IMPORTANCE: With an increasing incidence of oropharyngeal carcinoma and prevalence of transoral surgical techniques, postoperative bleeding, with its associated risk factors, deserves evaluation.

OBJECTIVE: To classify and review postobstructive bleeding hemorrhage rates and associated risk factors.

DESIGN, SETTING, AND PARTICIPANTS: Single-institution, multicenter retrospective medical chart review analyzing surgical procedures in 906 patients treated with transoral surgery for oropharyngeal carcinoma at a tertiary care, academic referral center from 1994 to 2012. Tumor stage, previous treatment, resection method, and transcervical external carotid branch ligation were analyzed in relationship to postoperative hemorrhage rate, and severity. A novel classification system was created, grading bleeding episodes as minor, intermediate, major, or severe based on management method and related sequelae.

RESULTS: Postoperative bleeding occurred in 5.4% of patients (49 of 906) with 67.3% of those (33 of 49) requiring operative intervention. Severe bleeding episodes were very rare (1.1% of patients). Transcervical external carotid system vessel ligation was performed with the primary resection in 15.6% of patients with no overall difference in bleeding rate or severity of bleeding in patients who underwent ligation vs those who did not (P = .21 and P = .88, respectively). Vessel ligation was performed more frequently in patients with a higher T stage (P = .002). In previously treated patients, severity of bleeding was decreased if vessels were ligated (P < .05). Higher T-stage tumors had a higher bleeding rate (P = .02). Bleeding rates were similar between those treated with laser (5.6%) and robotic (5.5%) oropharyngectomy (P = .80); however, patients with significantly higher T-stage tumors were treated with laser vs robotic techniques (P < .001).

CONCLUSIONS AND RELEVANCE: Transoral resection of oropharyngeal carcinoma is safe, and severe life-threatening hemorrhage is rare. Although transcervical vessel ligation did result in an overall decrease in bleeding rate, there is a trend toward reduced postpharyngectomy bleeding severity with ligation. We recommend ligation for higher T-stage tumors, primary tonsil tumors, and patients undergoing revision surgery.

Analysis of post-transoral robotic-assisted surgery hemorrhage: Frequency, outcomes, and prevention.

Mandai R1, Duvvuri U1,2, Eferi RL1, Kuffnerberger TR1, Choob SW1, Kim S1.

Author information

Abstract

BACKGROUND: Transoral robotic-assisted surgery (TORS) carries a small, but not insignificant, risk of life-threatening postsurgical hemorrhage. The purpose of this study was to analyze all post-TORS hemorrhagic events at our institution to establish preventative recommendations.

METHODS: We conducted a retrospective review of 224 consecutive patients who underwent TORS for any indication at a single tertiary care institution.

RESULTS: Twenty-two patients (n = 22, 9.82%) had varying degrees of postoperative bleeding. An impaired ability to protect the airway at the time of hemorrhage increased the rate of severe complications. Prophylactic transcervical arterial ligation did not significantly decrease overall postoperative bleeding rates (9.1% vs 9.9%, p = 1.00); however, there was a trend toward decreased hemorrhage severity in prophylactically ligated patients (3.0% vs 7.3%, p = .7040).

CONCLUSION: Prophylactic transcervical arterial ligation may reduce the incidence of severe bleeding following TORS. Post-TORS patients displaying an inability to protect the airway should be strongly considered for prophylactic tracheostomy to assist airway protection. © 2015 Wiley Periodicals, Inc. Head Neck 38: E775-E782, 2016.
LIMITATIONS AND FUTURE WORK

• As with any survey, there is potential for bias
• The survey focused on members of AHNS, who may not be representative of other surgeons
• Future work should focus multi-center protocols for vessel ligation incorporating larger numbers of cases to obtain more powerful data
• The choice of which vessels to ligate and their relative associations with risk of hemorrhage should be further explored as it remains controversial and subjective
QUESTIONS?

Thank you!
REFERENCES


