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Management and Outcome of Intrathoracic Bleeding Due to Vascular Injury During Transhiatal Esophagectomy

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Study objective: The objective of this study was to ascertain the incidence and outcome of intrathoracic vascular injury during transhiatal resection of the esophagus.

Background: Resection of the esophagus is indicated for a variety of benign and malignant diseases and can be performed via the transhiatal or transthoracic route. As the esophagus is in close vicinity to the aorta, pulmonary vessels and the azygous vein, these blood vessels can be injured during its resection.

Methods: We extracted data on the incidence, management and outcome of intrathoracic vascular injuries that occurred during transhiatal esophagectomy between 1983 and 2010 from a prospectively maintained esophageal diseases database.

Results: During this period, 710 transhiatal esophagectomies were done for malignant (n=617) and benign causes (n=93). Intrathoracic vascular injury occurred in 10 patients (1.4%). The indication for esophagectomy was malignancy (9 patients) and corrosive stricture (1 patient). All 9 patients with malignancy had squamous cell carcinoma and the tumor was located in the mid-thoracic esophagus in 7 and lower thoracic esophagus in 2 patients. Eight of 9 patients with cancer had received preoperative radiotherapy. The site of injury was the aorta/its esophageal branch (6 patients), azygous vein (3 patients) and inferior pulmonary vein (1 patient). The estimated median intraoperative blood loss was 4450 ml (range 2000-6000 ml) and the median duration of surgery was 5 hours (range 4-7 hours). In 7 patients a thoracotomy was required to control the bleeding while in 2 patients, it could be identified and controlled transhiatally. Two patients died intraoperatively due to massive bleeding and another 2 died in the postoperative period. Of the patients who survived (n=6), 3 patients had an uneventful recovery, 1 patient developed a cervical anastomotic leak, and 2 patients developed chest infection.

Conclusion: Intrathoracic vascular injury during transhiatal esophagectomy is a rare but life threatening complication. Careful patient selection and meticulous surgical technique should prevent many such injuries. Management requires prompt identification and control either through the dilated hiatus or a thoracotomy.