

Esophagectomy in Patients with Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome: A Viable Option

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The objective of this study was to assess the outcomes for patients with human immunodeficiency virus (HIV) and acquired immune deficiency virus (AIDS) who had esophagectomy done for both benign and malignant conditions. A retrospective chart review of patients with HIV and AIDS undergoing esophagectomy at a rural referral hospital was done for the period of 2009–2014. Patient postoperative complications, outcomes, and follow-up data were charted. All procedures were done by a single lead surgeon. Nine patients met the study criteria, 7 of whom had esophageal cancer, and 2 with strictures. Four patients had received nutritional self-expanding metal stent preoperatively. The mean stent duration was 61 days. Three patients had been on antiretroviral therapy before surgery. Preoperative CD4 counts were available in 7 patients. Eight patients underwent a 3-field esophagectomy and 1 was unresectable. Seven of these patients had successful outcomes, with varying follow-up times. One patient died post procedure while in the hospital. Complications included stricture and anastomotic leak. Although HIV-positive patients face increased risk during surgical procedures, this status should not be a firm contraindication to surgery. Quality nutritional status, antiretroviral use, and overall CD4 count levels remain important parameters in considering surgical treatment for these patients. With careful patient evaluation and planning, esophagectomy in an HIV and AIDS setting is feasible with successful outcomes.

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INTRODUCTION

Esophageal cancer is the eighth most diagnosed cancer and the sixth leading cause of cancer death worldwide, with an estimated 456,000 new esophageal cancer cases and 400,000 deaths in 2012.¹ The highest incidence rates are found in Asia and in sub-Saharan Africa, whereas the lowest occur in Europe and in North America.² The populations of western Kenya also retains high rates, with some reports indicating that esophageal cancer is the most common cancer in Kenya.^{3–7}

A large majority of human immunodeficiency virus (HIV) prevalence is also found in sub-Saharan Africa, with 24.7 million affected

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Two of the authors, Dr Michael Mwachiro (left) and Dr Russell White (right).

Central Message

Esophagectomy in patients with HIV and AIDS is a viable option and has been associated with good outcomes in benign and malignant diseases.

Perspective Statement

Despite significant improvement in recent decades, esophagectomy continues to be associated with relatively high rates of morbidity and mortality. Esophagectomy in patients with HIV disease has rarely been reported. With improvements in medical therapy of HIV disease, we now believe that HIV disease should not be considered a contraindication to esophagectomy in appropriately selected patients.

individuals in this region out of a worldwide population of 35 million affected individuals in 2013.⁸ Recent studies have demonstrated that HIV infection imparts a higher risk of developing esophageal cancer.^{9–11} In 1997, the advent of highly active antiretroviral therapy (HAART) revolutionized the care of individuals living with HIV, dramatically improving life spans.⁶ Because of antiretroviral medication, patients now have the potential to survive with HIV as a chronic condition rather than as a terminal disease. Acquired immune deficiency syndrome (AIDS)-related deaths are at their lowest levels since the peak in 2005, having declined by 35% since then.⁸ Longer life spans predispose HIV-positive patients to disease processes found in the non-HIV population. Non-AIDS defining cancers, including esophageal cancer, are becoming increasingly common.¹² As a result, studies have begun to evaluate the safety and efficacy of common major operations once thought to be unsafe

in the HIV-positive population. Cardiac surgery, kidney and liver transplants, and joint replacement have all been safely performed in properly selected HIV-positive patients.^{7,13-16}

Esophagectomy is a procedure that is associated with significant morbidity and mortality globally. In the developing world, this risk is often exacerbated because of delayed presentation and associated malnutrition. As such, surgery requires careful planning and rigorous follow-up, and the presence of critical care units. However, the English literature is void of studies evaluating the safety of esophagectomy in the HIV-positive population. In the present study, we report on several surgical cases in which HIV-positive patients underwent esophagectomy in western Kenya. As HIV and esophageal cancer are both common in the region, development of a selection criteria and proof of efficacy are key to treating this malignancy in a high-risk population.

OUR SETUP

Tenwek Hospital is a 300-bed tertiary referral hospital in rural western Kenya that treats 14,000 inpatients and performs 3500 major operations per year. As esophageal cancer is one of the most common malignancies in Kenya, we diagnose over 300 cases and perform approximately 30 esophagectomies per year. All patients with appropriate signs and symptoms undergo upper gastrointestinal (GI) endoscopy, and diagnosis is always made with endoscopic confirmation and histologic confirmation with biopsy. In our overall patient population with esophageal cancer, in unpublished data, we have found that 3% had tumors in the proximal third of the esophagus, 14% had tumors purely in the middle third, 57% had both mid and distal tumors, and 26% had tumors in the lower third. Squamous cell carcinoma accounts for a majority of these cases (94%), whereas adenocarcinoma accounts for a small proportion of only 6%.¹⁷

Determining the rate of HIV infection in our general population is somewhat difficult. The prevalence of HIV in Kenya is approximately 6% and that in Bomet county is 5.8%.¹⁸ However, the prevalence of HIV infection found in patients presenting to our institution for treatment is 4.4% (Tenwek Hospital laboratory data). Despite the high esophageal cancer rates, the number of patients presenting with both HIV and AIDS and esophageal cancer is low. The staging of HIV and AIDS is done via the Centers for Disease Control and Prevention and World Health Organization (WHO) classification.^{19,20} The Centers for Disease Control and Prevention staging is based on both clinical staging and CD4 cell count and has 3 stages. The WHO staging is based on clinical parameters and has 4 stages.¹⁹

Once the diagnosis of esophageal cancer is made, patient suitability is evaluated as well as tumor resectability. Patients are considered candidates for surgery if they meet the following criteria: absence of M1 disease noted on chest X-ray, abdominal ultrasound or abdominal computed tomography (CT) scan, albumin of >3 g/dL, body mass index (BMI) of >18.5, age <70 years, tumor length of <10 cm, and presence of a self-expanding metal stent (SEMS) for less than 8 weeks to avoid the inflammatory changes making the dissection difficult. BMI of >18.5 was chosen because it is the cutoff for normal range in adults as per WHO. The op-

erative approach is determined by the surgeon. In general, a 3-field esophagectomy is performed for all tumors of the upper and middle thirds of the esophagus, whereas a transhiatal esophagectomy is occasionally used for small tumors of the distal esophagus. In cases where significant concern exists regarding the resectability of a distal lesion, Ivor Lewis esophagectomy is occasionally performed. The patient's HIV status does not influence the type of surgical resection performed.

METHODS

We performed a retrospective chart review of all HIV-positive patients who underwent esophagectomy at Tenwek Hospital between 2009 and 2014. The hospital record system was paper based and very comprehensive, and was recently transitioned to an electronic platform in 2013 based on the prior paper system. All the procedures were performed with RW as the head surgeon assisted by the other authors, MM and EM, and other surgical staff. We reviewed patient demographics, preoperative workup including HIV-specific parameters, HAART use, operation type, perioperative complications, duration of hospital stay, and 30-day mortality. Perioperative complications included all surgical site infections up to 30 days following surgery, any other infections (eg, pneumonia and urinary tract infections), feeding intolerance (per jejunostomy tube initiated on postoperative day 1), chylothorax, recurrent laryngeal nerve injury, phrenic nerve injury, need for blood product transfusion, wound dehiscence, anastomotic leak (as determined by contrast radiograph in all patients on postoperative day 7), and prolonged hospitalization (defined as a hospital stay of longer than 12 days). Late complications were defined as those occurring after 1 month from the time of surgery. Approval for the present study was obtained from the Tenwek Hospital's Institutional Review Board. Our complications were classified and defined based on standard guidelines from the American College of Surgeons. Preoperative evaluation always includes a thorough history and physical examination. It is our firm belief that seeing the patient (which we call the "eyeball test") is crucial to decision making. It is true that some of our criteria are somewhat vague, for example, comorbid conditions and extreme cachexia. However, in our setting, where weight loss was difficult to quantify (because of many patients never having weighed themselves previously), the difference between a 40-year-old man who can actively walk up and down several flights of stairs and a 40-year-old man who is too weak to stand up from a wheelchair was quite obvious.

All patients undergoing esophagectomy were routinely seen in the outpatient clinic at 2 weeks, 6 weeks, and 6 months following hospital discharge. Plain radiograph was routinely performed at the 6-week visit. All patients with symptoms of dysphagia, oral feeding intolerance, or vomiting undergo upper GI endoscopy. Patients were discharged from clinic follow-up at 6 months and were instructed to return for review in case of the development of any of the aforementioned symptoms, or any other significant complaint (eg, weight loss, breathing difficulties, GI blood loss). Intermittent follow-up by telephone interview was conducted as well, with instructions given to any patient describing concerning

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