

Esophageal resection for cancer in The University of Hong Kong, Queen Mary Hospital, Hong Kong, China (1982–2008)

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Abstract: Esophageal resection is a high-risk procedure. In the early 1980s, it carried a mortality of more than 20%. Through a concerted effort which include meticulous surgical technique, vigilant post-operative care, and a low threshold to correct respiratory problem, the mortality rate was reduced to almost 0%. Our single layer continuous anastomotic technique also dramatically reduced the anastomotic leakage rate.

Keywords: Esophageal resection; cancer; operative mortality; anastomotic leakage

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Till the early 1980s, resection was the primary mode of treatment for esophageal cancer in patients who were fit to undergo a major procedure, including a thoracotomy. Alternative treatments were in their rudimentary stage of development.

Understandably, the results of resection were poor. These patients had advanced disease, who were often malnourished and had co-morbidities such as chronic obstructive pulmonary disease (COPD) from smoking and pulmonary tuberculosis.

Hospital mortality was in excess of 20% and the anastomotic leakage rate was 25%. Pulmonary complications and anastomotic leakage were frequent and accounted for many of the postoperative deaths.

A concerted effort was started in the early 1980s to tackle these two clinical problems.

For hospital mortality, over the years and after more than a thousand resections, this was reduced from 20% to almost zero percent. The main ingredients of this success were meticulous surgical technique, vigilant post-operative care, a low threshold to correct respiratory problem including almost routine bronchoscopy in the first few days, followed by tracheostomy should coughing effort be inadequate.

Perhaps the most important adjunct to improvement was the institution of epidural analgesia. This has vastly improved pain relief and enabled patients to cough

effectively, reducing the need for repeated bronchoscopy and tracheostomy.

Preoperatively, a short nutritional support program with the correction of serum albumin was instituted when required.

As is self-evident, the reduction in hospital mortality has also led to significant gain in survival; the 5-year survival improved from 20% to 35%. Of course, more effective adjuvant treatment also contributed.

For anastomotic leakage, the circular stapler (EEA) was introduced in the 1980s and it was hoped this would reduce the high leakage rate. The hand sewn method at that time underwent many changes to determine which was the best. None was. Hence, for a while, the stapler replaced the suture technique.

While the circular stapler did significantly reduce the leakage to single figures, there was a high incidence of strictures, which was size-dependent.

Not satisfied with the circular stapler, further consideration was given to reintroduce a hand-sewn method. It was decided that a single layer of continuous suture, properly carried out, should achieve as good, if not better results than a mechanical stapler. It did. The clinical leakage rate fell to 2%. Contrast studies were routinely performed about a week postoperatively on all patients and sub-clinical leakage was detected in another 1%. The cost saving at that

time was huge; USD 400 for the EEA stapler, and USD 4 for two 3/0 Maxon tied end to end. An important aspect of this hand-sewn technique was that the two parts should be lightly apposed, and not approximated tightly as to strangulate the two edges.

Another aspect we studied was (what was also self-evident) the correlation between the ease and aesthetic appearance of the completed anastomosis and the leakage rate, clinical and sub-clinical. The anastomosis was classified as “Simple” when it was straightforward and looked pleasing; “Problematic” when there were some suture placement issues but still felt secure; “Difficult” when there was a struggle to complete it and looked a little ragged at the end. Leakage rates for “Simple” (n=1,043): 3%; “Problematic” (n=105): 6%; “Difficult” (n=21): 16%. A clear example of surgical technique and visual satisfaction on outcome.

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Therefore, the improvement of our results of resection have been contributed from many directions. More will be achieved in future with precise and functional imaging, individualized neo-adjuvant therapies, and appreciation of the factors determining the quality of life survival. Surgical technique remains the mainstay in patients where this modality is part of the integrated treatment plan.

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Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.