

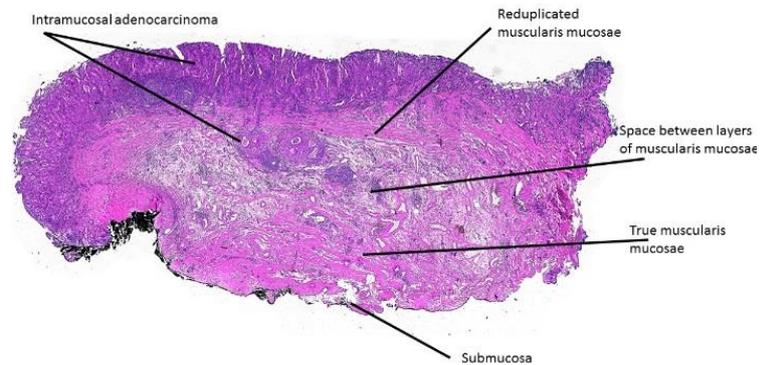
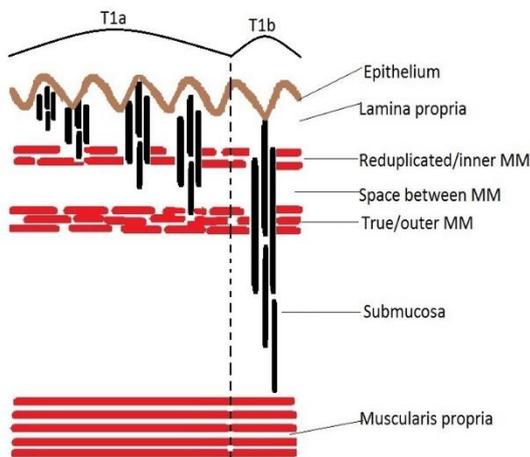
**Background:** The use of endoscopic mucosal resection (EMR) as treatment of early Barrett’s oesophagus related adenocarcinoma has allowed definitive treatment of these lesions with greatly reduced cost and morbidity when compared with oesophagectomy.

**Significance of histological features:** Histological risk factors identified in the EMR specimen predict 2 main outcomes: 1) risk of lymph node metastasis and 2) risk of residual disease. These may indicate the need for further, more definitive treatment such as oesophagectomy and/or systemic chemotherapy. When certain high-risk features are absent, EMR has approximately 98% cure rate. When a high-risk feature is present, the cure rate falls to approximately 80%.

**High risk features:**

*1. Submucosal invasion*

The depth of invasion in EMR specimens is assessed by direct measurement on the microscopic slide and by documenting the layer in the oesophageal wall based on anatomical landmarks. The two most widely used systems for recording depth are the AJCC and the Stolte systems.



	Depth of invasion	AJCC classification	Stolte classification
<b>T1a</b>	In-situ	M1	
	Lamina propria	M2	M1
	Inner MM	M3	M2
	Space between MM	M3	M3
	Outer MM	M3	M4
<b>T1b</b>	Superficial submucosa	Sm1	Sm1
	Mid submucosa	Sm2	Sm2
	Deep submucosa	Sm3	Sm3

Determination of the depth of invasion is complicated by the phenomenon of **reduplication of the muscularis mucosae**, which is seen in approximately 80% of cases of Barrett's oesophagus related dysplasia/carcinoma. Recognition of muscularis mucosa reduplication is important to prevent the categorisation of tumours invading into the space between the duplication as submucosal invasion (pT1a vs pT1b) or the over-staging of intramucosal carcinomas (pT1a) as muscularis propria invasion (pT2).

Tumours confined to the mucosa (pT1a) have a significantly better 5-year recurrence-free and overall survival rates (100% and 91%) than those showing involvement of the submucosa (60% and 58%).

pT1a adenocarcinoma is also associated with low risk for lymph node metastasis (1-2%). In pT1b adenocarcinoma the depth of submucosal invasion may correlate with risk of nodal metastases. pT1sm1 lesions (invasion into the submucosa within 500 µm) have a low risk whereas with invasion into the deep submucosa, nodal metastases can be seen in up to 50%. In practice, accurate measurement can be difficult and subclassification of the level of submucosal invasion (superficial, mid, deep) technically requires the presence of the muscularis propria as a comparative landmark.

## *2. Poor differentiation (PD)*

## *3. Lymphatic or venous invasion (LVI)*

Other essential information conveyed in the pathology report that may affect treatment/prognosis includes:

- Tumour phenotype
- Tumour budding
- Perineural invasion
- Circumferential and deep margin status

A composite of these parameters can be used to help determine when referral for a surgical opinion may be warranted.

### **Pathological criteria for EMR with likely curative intent:**

- **pT1a + no high-risk features + clear margins**
- **pT1b Sm1 (submucosal invasion ≤ 500µm) + no high-risk features + clear margins**