Envoi SPECIALIST PATHOLOGISTS *inside insights*

Update No.5 – 2018 *Dr Christophe Rosty*

Tumour budding in CRC

Tumour budding is an independent adverse prognostic factor in colorectal carcinoma. It is associated with higher TNM stages, lympho-vascular invasion, lymph node and distant metastasis. International consensus guidelines have been recently published (1).

***Definition**:* A tumour bud is defined as a cluster of 1-4 tumour cells at the invasive front of CRC.

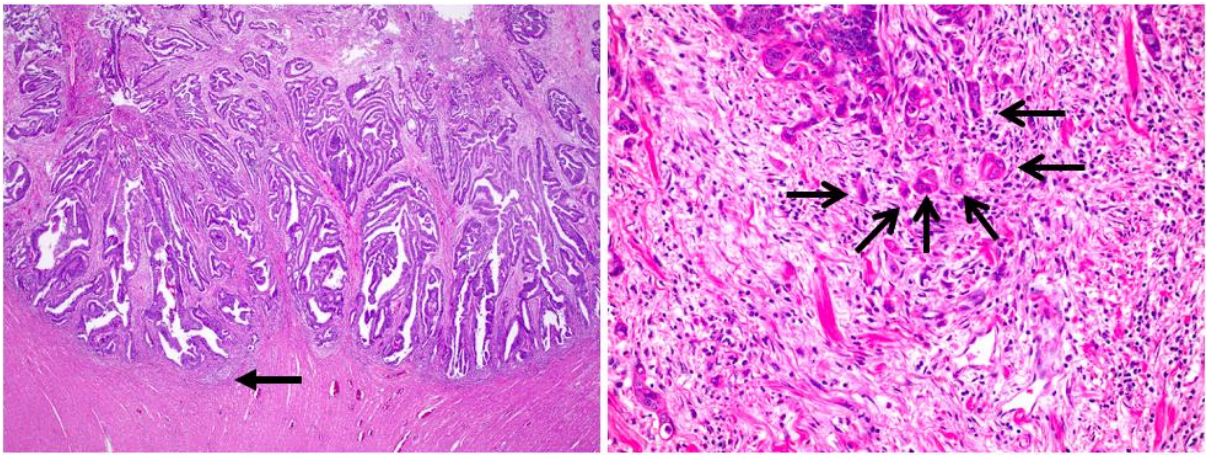
***Histological assessment**:*

- Scan all sections of tumour to identify the area with highest degree of tumour budding at the invasive front ('hot spot').
- Count the number of tumour buds on H&E in the 'hot spot' field at 20x objective.
- Normalise (if necessary) to come up with tumour bud number for a 0.785mm^2 area (for microscopes used at Envoi, divide number of counted tumour buds by 1.2).

***Quantification**:*

Tumour budding is reporting using a 3-tier system based on the normalised number of tumour buds

• 0 – 4 buds:	Bd 1	low
• 5 – 9 buds:	Bd 2	intermediate
• 10 or more buds:	Bd 3	high



Left: Invasive front of CRC at low magnification. Right: Tumour buds at 20x magnification.

Clinical significance:

- Malignant polyps: In malignant polyps resected endoscopically, Bd 2 and Bd 3 are independently associated with *increased risk of lymph node metastasis* (2).

- Stage II CRCs (pT3/T4 N0): Bd 3 is independently associated with *increased risk of recurrence and mortality* (3).

References

1. Lugli A, Kirsch R, Ajioka Y, et al. Recommendations for reporting tumor budding in colorectal cancer based on the International Tumor Budding Consensus Conference (ITBCC) 2016. *Mod Pathol* 2017;30:1299-1311.
2. Bosch SL, Teerenstra S, de Wilt JH, Cunningham C, Nagtegaal ID. Predicting lymph node metastasis in pT1 colorectal cancer: a systematic review of risk factors providing rationale for therapy decisions. *Endoscopy* 2013;45:827-834.
3. van Wyk HC, Park J, Roxburgh C, et al. The role of tumour budding in predicting survival in patients with primary operable colorectal cancer: a systematic review. *Cancer Treat Rev* 2015;41:151-159.