

## Plane of sphincter excision (Non-core)

Abdominoperineal excision for low rectal cancer has been associated with poorer outcomes compared to anterior resection for higher tumours due to increased rates of circumferential resection margin (CRM) involvement and intraoperative full thickness defects (“perforations”).<sup>1</sup> Extralevator abdominoperineal excision has been shown in meta-analyses to reduce CRM involvement and intraoperative full thickness defects leading to better long term outcomes.<sup>2</sup> This is due to the removal of more tissue around the tumour.<sup>3</sup> Radiologists are able to predict the optimal dissection plane in abdominoperineal excision from the staging magnetic resonance imaging.<sup>4</sup> This should be correlated with the plane of dissection achieved on the resection specimen around the sphincters (below the mesorectum). The plane of surgery in the mesorectum should be assessed separately.

Assessment requires examination of the intact specimen and overall assessment is based on the worst area, as described below:<sup>5</sup>

### Extralevator plane

- Dissection plane lies external to the external sphincter and levator ani muscles, which are removed en bloc with the mesorectum and anal canal
- Cylindrical-shaped specimen with the levators forming an extra protective layer above the sphincters
- No significant defects into the sphincter muscles or levators

### Sphincteric plane

- Dissection plane lies on the surface of the sphincter muscles
- No levator ani muscle attached or only a very small cuff leading to coning or surgical waisting at the level of puborectalis
- No significant defects into the sphincter muscles

### Intrasphincteric plane

- Dissection plane lies within the sphincter muscles or even deeper into the submucosa
- Full thickness iatrogenic defect of the specimen at any point below the peritoneal reflection.

## References

- 1 den Dulk M, Putter H, Collette L, Marijnen CAM, Folkesson J, Bosset JF, Rodel C, Bujko K, Pahlman L and van de Velde CJH (2009). The abdominoperineal resection itself is associated with an adverse outcome: the European experience based on a pooled analysis of five European randomised clinical trials on rectal cancer. *Eur J Cancer* 45(7):1175-1183.
- 2 Stelzner S, Koehler C, Stelzer J, Sims A and Witzigmann H (2011). Extended abdominoperineal excision vs. standard abdominoperineal excision in rectal cancer--a systematic overview. *Int J Colorectal Dis* 26(10):1227-1240.
- 3 West NP, Anderin C, Smith KJ, Holm T and Quirke P (2010). Multicentre experience with extralevator abdominoperineal excision for low rectal cancer. *Br J Surg* 97(4):588-599.
- 4 Battersby NJ, How P, Moran B, Stelzner S, West NP, Branagan G, Strassburg J, Quirke P, Tekkis P, Pedersen BG, Gudgeon M, Heald B and Brown G (2016). Prospective validation of a low rectal cancer magnetic resonance imaging staging system and development of a local recurrence risk stratification model: the MERCURY II study. *Ann Surg* 263(4):751-760.
- 5 Nagtegaal ID, van de Velde CJ, Marijnen CA, van Krieken JH and Quirke P (2005). Low rectal cancer: a call for a change of approach in abdominoperineal resection. *J Clin Oncol* 23(36):9257-9264.