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Appendix 1

Grading the plane of mesocolic surgery

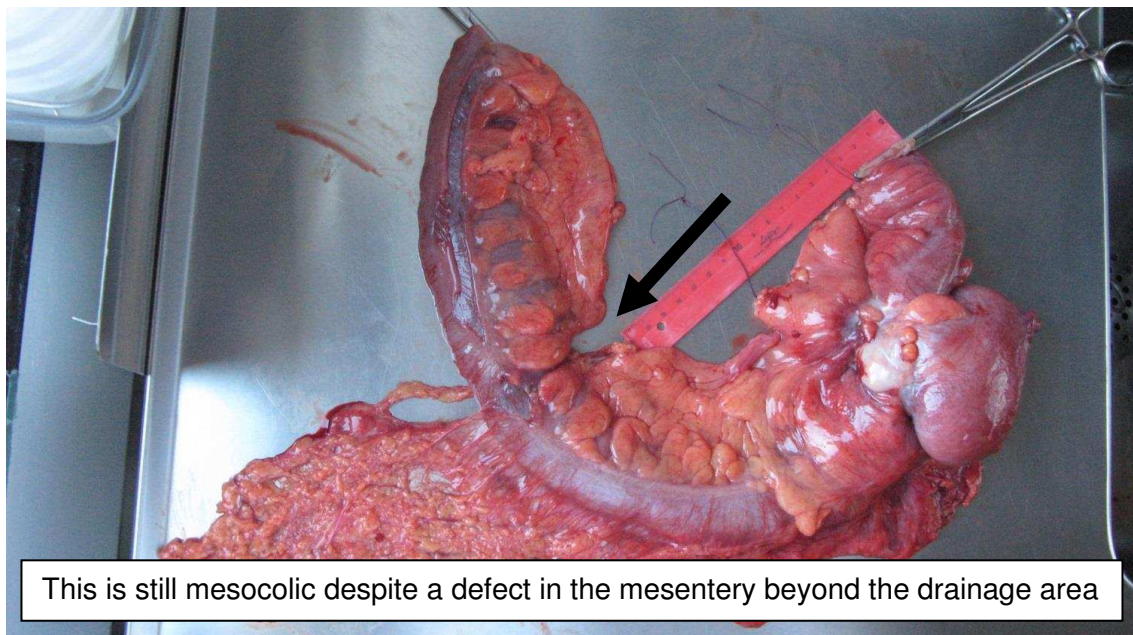
The plane of surgery should be determined from specimen photographs by assessing the surface of the mesocolic dissection and classified as being in the mesocolic, intramesocolic or muscularis propria plane.

General points

1. Grading should be undertaken primarily on the whole (preferably fresh but can be formalin-fixed) specimen photographs (where available) backed up by evidence from the cross sectional slices. Apparent defects appearing on the slices that are not visible on the whole specimen (provided that the whole specimen views are clear) should be ignored and presumed to be artefactual. Similarly apparent defects appearing on the fixed whole specimen that are not visible on the fresh specimen (provided that the fresh specimen views are clear) should be ignored and presumed to be artefactual. If defects are present on the whole specimen pictures but not visible on the slices then it can be presumed that the area containing defects has not been included in the slices – the whole specimen assessment therefore should be used. Cross sectional slices are most useful for assessing the depth of defects noted on the whole specimen photographs. As a guiding principle, the plane should be assessed on the fresh whole specimen first and confirmed by evidence generated from the fixed whole specimen and slices.
2. The mesentery that is present on the specimen should be graded and not the mesentery expected to be present. This means that D1 and D2 resections with an intact mesentery should be graded in the 'mesocolic plane'. Data regarding the central radicality of resection will be collected through the tumour/nearest bowel wall to high tie measurements. The only exception is where there is no mesentery surrounding the muscle tube of the bowel in the region of lymphatic drainage – these should be classified as 'muscularis propria plane'.



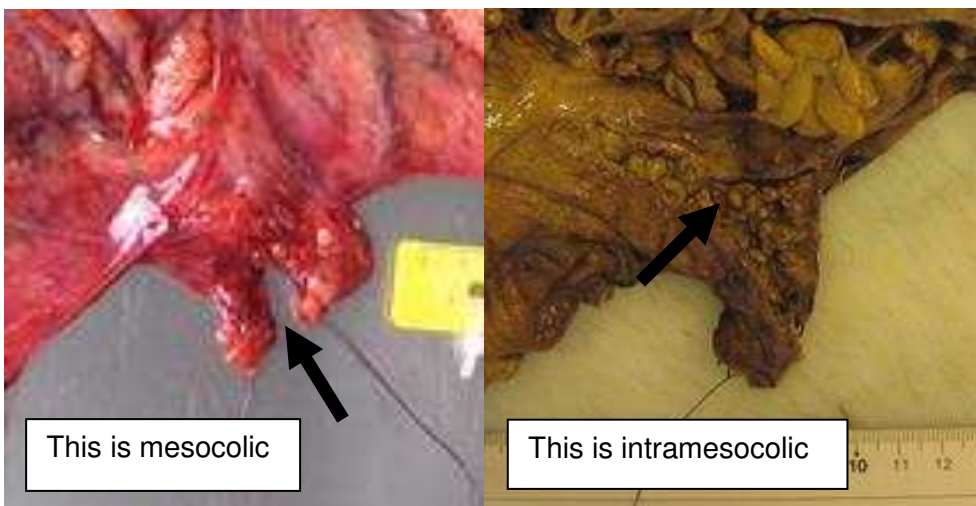
3. Only the region of mesocolon within the lymphatic drainage of the tumour should be assessed. This includes the area between the vascular pedicle(s) either side of a tumour which would ordinarily be within ten centimetres of the tumour-bearing segment. If the tumour lies midway between two pedicles then the area between the two pedicles is presumed to be the area of drainage. If one of the pedicles is within ten centimetres of the tumour then drainage can occur up to the ten centimetre point.



4. The 'worst' area within the region of lymphatic drainage should be used to determine the grade, not the predominant grade. Any sufficient defect is therefore significant.
5. In some specimens, a thin translucent peritoneal 'window' is seen in the mesocolon formed by a bilayer of fused serosal layers with no intervening fat. Isolated disruption of these windows should not downgrade the specimen from the 'mesocolic plane'.



6. On the cross sectional slices of a right hemicolectomy specimen, it is easy to get confused with the smoothness or irregularity of the retroperitoneal resection margin. Both mesocolic fascia and muscularis propria can appear smooth so it is important to determine whether any connective tissue is visible between the muscularis propria and the margin. Similarly extrafascial resections (deep to the posterior mesocolic fascia) may appear irregular but should be classified in the 'mesocolic plane'.
7. If specimens (especially laparoscopic-assisted) have separation of the vessels at their origin only then the 'mesocolic plane' is appropriate. If the separation extends into the mesentery then this should be classified as 'intramesocolic'.



8. The mesocolic region within one centimetre of the longitudinal resection margins should not be evaluated, even if it falls within the lymphatic drainage region. The distal margin in left sided specimens can often be irregular and we should not downgrade on this basis, as long as it is within one centimetre of the margin.

9. All specimens should be graded wherever possible. The rate of 'ungradable specimens' should be exceptionally low. It is accepted that grading from photographs will not be as accurate as grading the physical specimen but every effort should be made.
10. Sometimes the cross sectional slices can reveal a more extensive mesentery than the whole specimen photographs suggest due to distortion and/or failure to lay the mesentery out flat. The integrity of the mesentery is still assessed in the same way starting with the whole specimen assessment and confirmation on the slices.

Mesocolic plane (Good quality specimen)

1. There should be an intact and smooth mesocolic surface covered by peritoneum or fascia (where appropriate). Only minor surface irregularities are allowed (see below).
2. Any peritoneal or fascial defects must be no deeper than five millimetres from the adjacent surface. There is no restriction to the width of superficial defects i.e. a large area where the peritoneum or fascia has been stripped but where the defect is less than five millimetres deep should still be classified in the 'mesocolic plane'.

Intramesocolic plane (Moderate quality specimen)

1. There may be only moderate bulk to the mesocolon with significant irregularity of the peritoneal or fascial surface in at least one area that is deeper than five millimetres.
2. The muscularis propria should not be visible within these defects (either on the whole specimen or slices).

Muscularis propria plane (Poor quality specimen)

1. There may be little bulk to the mesocolon and there will be at least one extensive defect that extends down to the muscularis propria. This often requires identification on the whole specimen photographs and confirmation of the depth on the cross sectional slices.
2. Occasionally muscularis propria is obviously visible on the whole specimen photographs. If significant defects are apparent but muscularis propria is not definitely visible and cross sectional slices do not include the area of interest then the 'intramesocolic plane' is appropriate.