

Capsular invasion (Core)

There is no consensus as to the definition of capsular invasion (CI). While there is universal agreement that complete transgression of the capsule constitutes CI,¹ other authorities do not require complete transgression of the capsule.² Figure 1 depicts the various histologic appearances associated with the presence or absence of CI. According to Chan (2007),¹ a given neoplasm should not be diagnosed as carcinoma if complete capsular penetration cannot be proven after extensive sampling except in the following circumstance. This situation occurs when a satellite tumour nodule, morphologically similar to the main tumour, is lying just outside the tumour capsule (Figure 1e). This appearance results from failure to identify the point of capsular penetration. It is noteworthy that not all authors agree that these satellite nodules represent CI.³ In equivocal cases of CI, the entire capsule, irrespective of tumour size, should be processed in the attempt to clarify whether CI is present. Deeper sections of the representative paraffin block(s) should be performed in the areas of concern in order to exclude CI.¹ Despite enhanced histologic examination, there are cases where the presence of CI is questionable. In this instance the term uncertain CI should be used. There is no need to report on the number of foci of CI since it has not been shown to have clinical value.

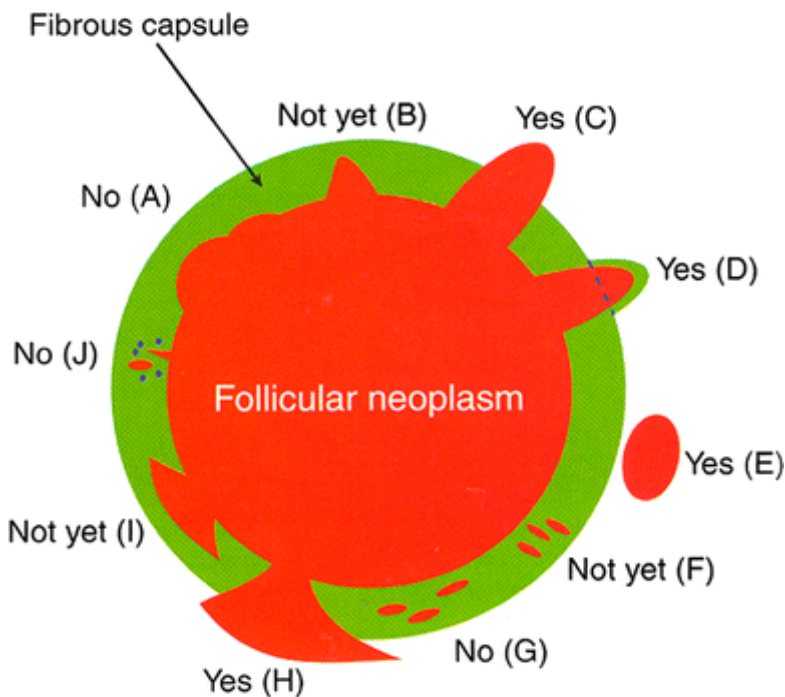


Figure 1: Capsular invasion. Capsular invasion (CI): Schematic drawing for the interpretation of the presence or absence of CI. The diagram depicts a follicular neoplasm (orange) surrounded by a fibrous capsule (green). **a** bosselation on the inner aspect of the capsule does not represent CI; **b** sharp tumour bud invades into but not through the capsule suggesting CI requiring deeper sections to exclude or confirm the presence of CI; **c** tumour totally transgresses the capsule invading beyond the outer contour of the capsule qualifying as CI; **d** tumour clothed by thin (probably new) fibrous capsule but already extending beyond an imaginary (dotted) line drawn through the outer contour of the capsule qualifying as CI; **e** satellite tumour nodule with similar features (architecture, cytomorphology) to the main tumour lying outside the capsule qualifying as CI; **f** Follicles aligned perpendicular to the capsule suggesting invasion requiring deeper sections to exclude or confirm the presence of CI; **g** Follicles aligned parallel to the capsule do not represent CI; **h** Mushroom-shaped tumour with total transgression of the capsule qualifies as CI; **i** mushroom-shaped tumour within but not through the capsule suggests invasion requiring deeper sections to exclude or confirm the

presence of CI; j neoplastic follicles in the fibrous capsule with a degenerated appearance accompanied by lymphocytes and siderophages does not represent CI but rather capsular rupture related to prior FNA. Reproduced with permission from Chan J (2007). *Tumours of the thyroid and parathyroid glands*. Diagnostic Histopathology of Tumours. Fletcher CDM. Churchill Livingstone Elsevier, Philadelphia.¹

References

- 1 Chan J (2007). *Tumours of the thyroid and parathyroid glands*. In: *Diagnostic Histopathology of tumours*. Fletcher CDM. Churchill Livingstone Elsevier, Philadelphia.
- 2 Thompson LD, Wieneke JA, Paal E, Frommelt RA, Adair CF and Heffess CS (2001). A clinicopathologic study of minimally invasive follicular carcinoma of the thyroid gland with a review of the English literature. *Cancer* 91(3):505-524.
- 3 Suster S (2006). Thyroid tumors with a follicular growth pattern: problems in differential diagnosis. *Arch Pathol Lab Med* 130(7):984-988.