Extraprostatic extension (Required and Recommended)

Reason/Evidentiary Support

Extraprostatic extension (EPE), defined as the extension of tumour beyond the confines of the gland into the periprostatic soft tissue, is a required (core) element of the generic International Collaboration on Cancer Reporting (ICCR) dataset as it is a significant predictor of recurrence in node negative patients.[1,2] EPE replaced earlier, less clearly defined terms, such capsular penetration, perforation or invasion, following a 1996 Consensus Conference.[3] The assessment of EPE can be difficult, as the prostate is not surrounded by a discrete, well defined fibrous capsule,[4] but rather by a band of concentrically placed fibromuscular tissue that is an inseparable component of the prostatic stroma.[5] EPE can be recognised in several different settings: (1) the presence of neoplastic glands abutting on or within periprostatic fat or beyond the adjacent fat plane in situations where no fat is present in the immediate area of interest (most useful at the lateral, posterolateral and posterior aspects of the prostate); (2) neoplastic glands surrounding nerves in the neurovascular bundle (posterolaterally) beyond the boundary of the normal prostatic glandular tissue; (3) the presence of a nodular extension of tumour bulging beyond the periphery of the prostate or beyond the compressed fibromuscular prostatic stroma at the outer edge of the gland—since there is often a desmoplastic reaction in the vicinity of EPE and the neoplastic extraprostatic glands may then be seen in fibrous tissue, rather than in fat.[5,6] Extraprostatic tumour in fibrous tissue is best identified initially at low power magnification, but should be then confirmed by high power magnification examination verifying that the neoplastic glands are in stroma that is fibrous and beyond the condensed smooth muscle of the prostate.[2,6] The presence of cancer within fibrous stroma that is in the same tissue plane as adipose tissue on either side is a helpful indicator of EPE.

The boundary of the prostate gland cannot be readily identified anteriorly and at the base or apex of the prostate. Moreover, at the apex benign glands are frequently admixed with skeletal muscle and the presence of neoplastic glands within skeletal muscle does not necessarily constitute EPE. Hence, in this region it is more important to accurately assess the completeness of surgical resection. Similarly, the assessment of EPE at the anterior aspect of the prostate may be difficult as the prostatic stroma blends in with extraprostatic fibromuscular tissue, but in this location EPE can be diagnosed (in the manner described in the previous paragraph) when the carcinoma appears to bulge beyond the boundary of the normal prostate gland.[6,7]

Extent of EPE

Categorisation of the extent of EPE as focal or non-focal (also referred to as ‘extensive’ or ‘established’) is a required (core) item in the ICCR dataset. Focal EPE was originally defined no more than ‘a few’ neoplastic glands just outside the prostate, then subsequently, in a more semi-quantified manner, as extraprostatic glands which occupy no more than one high power field in no more than two sections, with extensive EPE representing anything more than this.[2] More rigorous quantification of the extent of EPE by measuring the maximum distance that the tumour bulges beyond the outer edge of the fibromuscular prostatic stroma radially has been proposed by some investigators.[8] However, the practical value of such parameters is limited by the difficulty in precisely defining the outer limit of the prostate gland, especially when the tumour is associated with a desmoplastic reaction. The identification of any EPE is important, as both focal and non-focal EPE are associated with a significantly higher risk of recurrence at both 5 and 10 years.[1,2] Following radical

prostatectomy, the progression-free probability for node negative patients with uninvolved seminal vesicles at 10 years for organ confined disease is 85–89%, falling to 67–69% for focal EPE and to 36–58% for extensive EPE.[1,2]

Location of EPE

Since it was considered a generic element forming part of a comprehensive pathology report, the location of any EPE present has been included in the recommended (non-core) dataset, despite the lack of published evidence for its influence on staging, prognosis or treatment.[6] It provides potentially useful information to the urologist, enabling correlation with clinical findings and any pre-operative imaging studies performed.

References

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