

Incidental metastatic endocrine tumor diagnosed at laparoscopic radical prostatectomy and bilateral lymph node dissection

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ABSTRACT

The introduction and expansion of laparoscopic and robotic radical retropubic prostatectomy (LRRP and RRRP) for organ-confined prostate cancer have led to an increase in pelvic lymphadenectomy specimens. Extended lymph node dissection (eLND) involves removing nodes over the obturator fossa, external iliac vessels as well as the internal iliac and increases the number of nodes examined. This has the potential to increase incidental nonprostatic nodal pathology identified in prostatectomy specimens. For the first time in the current literature we report the incidental diagnosis of a metastatic small bowel endocrine tumor in a 69-year-old gentleman, made at the time of LRRP and bilateral lymph node dissection. This report suggests that the benefit of an extended lymph node dissection is not only to prostate cancer control and staging, but also to the possibility of diagnosing potentially treatable incidental disease. It is a possibility that both pathologists and urologists alike should be aware of.

Key words: Endocrine tumor, lymph node dissection, radical prostatectomy

INTRODUCTION

Over recent years there has been the introduction and expansion of laparoscopic and robotic radical retropubic prostatectomy (LRRP and RRRP) for organ-confined prostate cancer. Currently there is no consensus as to when an extended pelvic lymph node dissection (eLND) should be performed in conjunction with LRRP.^[1] There is evidence to suggest that it should be performed in intermediate disease where the estimated risk of positive nodes is 15--40%.^[2] We do not perform eLND in low risk disease (PSA<10, Gleason score <7) due to the low probability of nodal disease in this group. Due to the paucity of literature on incidental nodal pathology at

LRRP, there are no studies, to the best of our knowledge, that directly correlate the increased use of LRRP and eLND in the last 10 years with an increase in the diagnosis of incidental nodal pathology. However it would appear plausible to suggest that the more the patients who have lymph nodes removed with procedures such as LRRP, the more likely the fact that incidental disease will be identified. Here we report for the first time a case of metastatic neuroendocrine tumor, diagnosed at LRRP and eLND.

CASE REPORT

A 69-year-old gentleman presented to our department with a PSA of 16 and mild lower urinary tract symptoms. Prostatic biopsies demonstrated adenocarcinoma, Gleason score 3+3=6 in 25% of cores from the right side of the prostate. A bone scan was negative for distant metastasis and magnetic resonance imaging (MRI) revealed no abnormal lymph nodes, but did suggest possible T3 disease anteriorly [Figure 1]. In view of this, eLND was performed in conjunction with laparoscopic radical prostatectomy. In a prostate weighing 60 g histology revealed multifocal adenocarcinoma, Gleason score 3+4=7, with a positive basal margin (stage pT3a). He made an uneventful recovery, with undetectable PSA postoperatively.

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Histological examination of the lymph nodes revealed a single node infiltrated by a low-grade endocrine tumor. The morphology was difficult to interpret although immunohistochemical analysis revealed strong staining for chromogranin. The regional neuroendocrine multidisciplinary team (MDT) requested pentreotide and computed tomography (CT) scanning. These identified a presumed small bowel primary in the terminal ileum and solitary liver metastasis [Figures 2 and 3]. He underwent a laparotomy, right hemicolectomy with lymph node dissection, and liver resection. Histology demonstrated an endocrine tumor of the

terminal ileum with metastases involving 6/11 lymph nodes [Figure 4]. Synaptophysin and chromogranin were strongly positive and the Ki67 proliferation index was <2%, consistent with a grade 1 endocrine tumor (WHO classification: Well differentiated endocrine carcinoma; low grade malignant). The final staging was pT4 N1 M1.

DISCUSSION

Pathologies other than prostate carcinoma can cause abnormalities in lymph nodes taken at LRRP and RRRP. This however is unusual with a frequency of 1.8% in a series of 854 patients.^[3] In a study of incidentally diagnosed lymphomas, 18 cases were identified from a cohort of 1,160 prostatectomies (1.5%).^[4] Lymphomas (B cell, lymphocytic, and follicular), histiocytosis following prosthetic joint replacement, noncaseating granulomas, and foreign body reactions have all been described [Table 1]. Although lymphomas are the most frequent malignant diagnosis, histiocytosis secondary to joint replacement was nearly three times more frequent.^[3] This is the first report in the literature of a neuroendocrine tumor diagnosed in a lymphadenectomy specimen taken with prostatectomy. The prompt investigation and evaluation post-prostatectomy enabled aggressive surgical resection with a curative intent.

The clinical outcome of incidentally found pathology in pelvic lymphadenectomy specimens is not clearly defined.

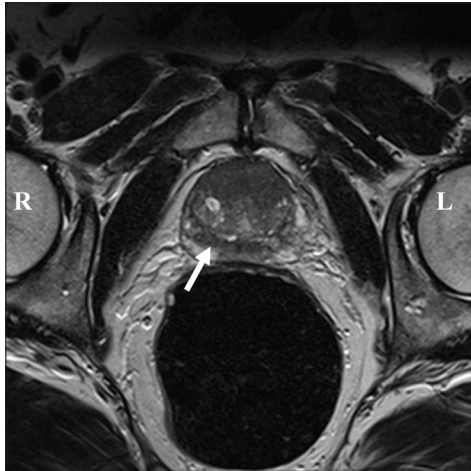


Figure 1: T2-weighted pelvic MRI of the prostate. Low-density areas can be seen anteriorly and in the peripheral zone on the right (arrowed). There were no reported enlarged lymph nodes

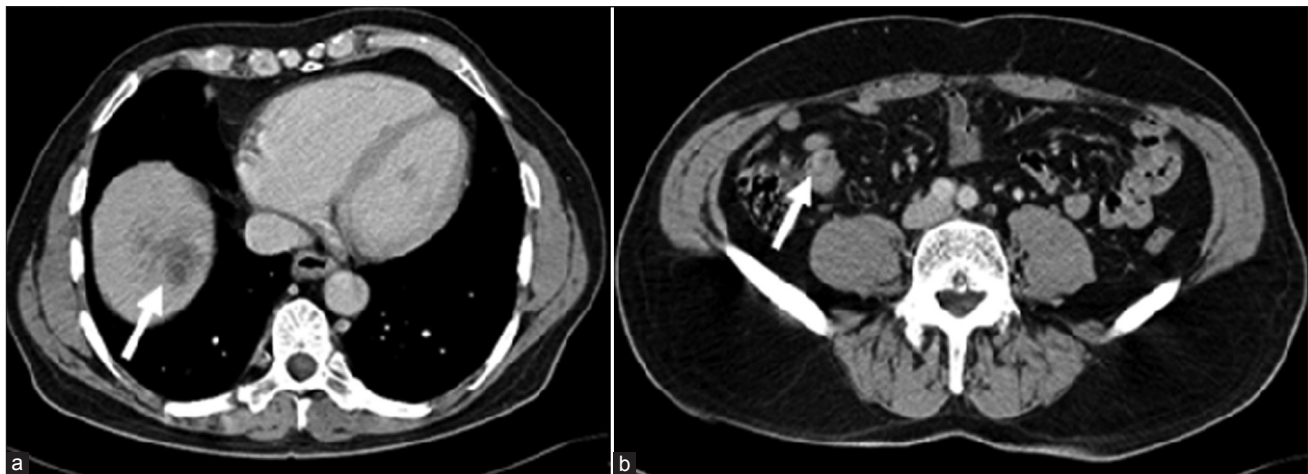


Figure 2: Computed Tomography demonstrating low attenuation lesion in the upper part of the liver (arrowed) consistent with metastasis (a) and also a soft tissue mass in the terminal ileum (arrowed) which represented the primary neuro-endocrine tumour (b).

Table 1: Summary of reported literature on incidental lymph node pathology at the time of radical prostatectomy and lymph node dissection

Author	Year	Patients (n=)	Dates of procedures	No. of incidental findings	Commonest finding	Other findings
Winstanley ^[3]	2002	854	1988–2001	15 (1.8%)	Histiocytosis post joint replacement (8)	Granulomas(3) Lymphoma (3) Foreign body reaction (1)
Chu ^[4]	2005	1,160	1989–2004	10 (0.8%)	Lymphoma (only lymphoma diagnosis reviewed)	Long term outcome from this cohort was good (He 2007 ^[5])

One report suggests that in pelvic node malignant B-cell lymphomas, detected at the time of radical prostatectomy, the prognosis is good in the majority of patients.^[5] However it should be noted that from the pathologist's view point certain lymphomas can be difficult to differentiate from chronic lymphoid hyperplasia.^[4]

Staging lymphadenectomy can provide useful information for prostate cancer prognosis and provide some therapeutic advantage,^[1] An eLND involves removal of nodes overlying the external iliac and vein, the obturator fossa (cranially and caudally to obturator nerve), medial and lateral to the internal iliac artery [Figure 5]. Some have also suggested removal of the nodes over the common iliac. To be representative a mean of 20 nodes should be sampled. A limited LND involves approximately 8-10 nodes in the

region of the external iliac and obturator fossa and reports suggest that this will miss up to half of potentially affected nodes by prostate cancer.^[2] There are no data to corroborate whether limited LND is as good as eLND in identifying incidental nodal disease. However, just as limited LND can miss potentially half of affected lymph nodes in prostate cancer, it is not an unreasonable assumption to suggest that it would be less likely to identify incidental disease than eLND. Despite this, the disadvantages of eLND, namely technical difficulty, increasing operative time, and increased complication rate (up to three times) than with limited LND, mean that we would not advocate performing eLND for every patient. Rather each patient's criteria for eLND or limited LND should be assessed on an individual basis and patients clearly counseled regarding the benefits, as well as risks, of eLND. However this report does suggest that the

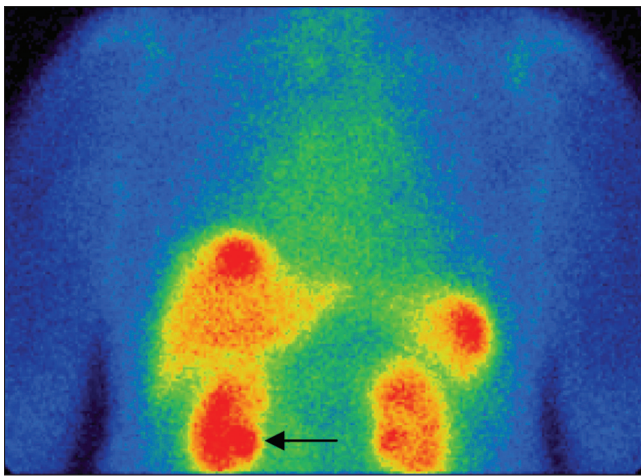


Figure 3: Pentetreotide tumour imaging scan. Raised uptake in the dome of the liver superiorly. This is consistent with an area of low attenuation in right liver on CT. There is also slightly increased uptake infero-medial to the right kidney (arrowed) which may correlate with the 2.5cm soft tissue mass seen on CT. This was felt to represent the primary endocrine tumour and liver metastasis which was confirmed on subsequent laparotomy

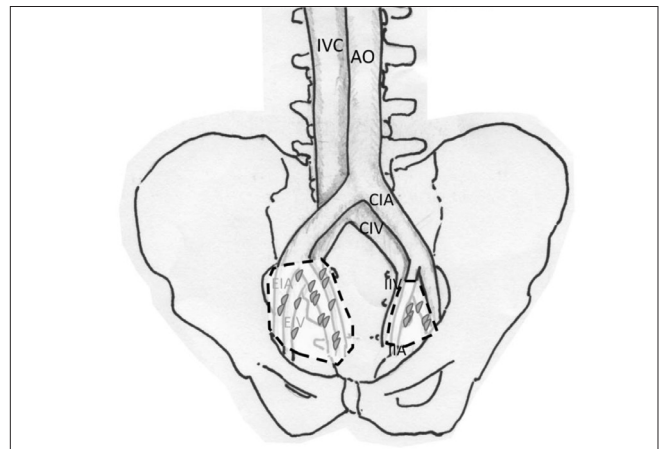


Figure 5: A standard LND comprises lymph nodes removed from the obturator fossa and the external iliac artery (region marked on the left side of pelvis). An extended LND comprises nodes from the external iliac artery and vein, obturator fossa, and medial and lateral to the internal iliac artery (region marked on the right side of pelvis). (IVC=inferior vena cava, AO=aorta, CIA=common iliac artery, CIV=common iliac vein, IIA=internal iliac artery, IIV=internal iliac vein, EIA=external iliac artery, EIV=external iliac vein.)

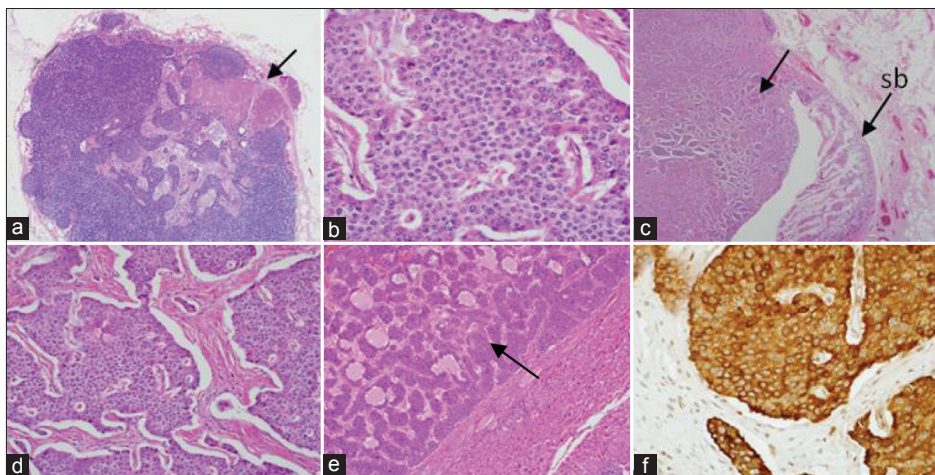


Figure 4: (a) Lymph node from right pelvic lymph node dissection packet demonstrating metastatic endocrine tumor (arrowed; $\times 40$). (b) Cell nuclei are relatively uniform and show stippled chromatin typical of endocrine tumors. (c) Ileum with primary tumor. Small bowel mucosa (arrowed sb) adjacent to tumor (arrowed; $\times 20$). (d) Higher magnification of primary tumor seen in C ($\times 200$). (e) Solitary liver metastasis (arrowed) with adjacent normal liver ($\times 200$). (f) Strong diffuse staining of tumor cells with chromogranin ($\times 400$)

benefit of an extended lymph node dissection is not only to prostate cancer control and staging, but also to the possibility of diagnosing potentially treatable incidental disease.

Although it is more pressing for pathologists to have an acute awareness of the possibility of nonprostatic pathology being diagnosed in lymphadenectomy specimens, it is also important that urological surgeons understand this concept. These incidental diagnoses may be clinically relevant and necessitate prompt referral to other specialties for appropriate management of newly diagnosed disease.

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