



In this issue

Should the involvement of skeletal muscle by prostatic adenocarcinoma be reported on biopsies? ☆, ☆ ☆



Evita T. Sadimin MD^a, Huihui Ye MD^b, Jonathan I. Epstein MD^{a,*}

^aDepartment of Pathology, Urology and Oncology, The Johns Hopkins Medical Institutions, Baltimore, MD 21231

^bDepartment of Pathology, Beth Israel Deaconess Medical Center, Boston, MA 02120

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Summary Skeletal muscle is seen at the distal part of the prostate apex, where benign glands may reside as part of normal anatomy and histology, and extends more proximally anteriorly. At times, prostatic adenocarcinoma can be seen admixed with skeletal muscle, raising the question of extraprostatic extension. Although there has been increased attention regarding biopsy sampling of the distal apex to guide the performing of the apical dissection on radical prostatectomy, the finding of skeletal muscle involvement by prostatic adenocarcinoma has not been consistently reported by pathologists on biopsies. We searched our database spanning 12 years from 2000 to 2012 for all patients who had prostatic adenocarcinoma Gleason score 3 + 3 = 6 involving skeletal muscle on biopsy. We identified 220 patients who met the criteria. Of the 220 patients, 101 underwent prostatectomy, which comprised the “study group.” Prostatectomy reports from these patients were compared with those of a “control group,” which consisted of 201 contemporaneous patients with Gleason score 3 + 3 = 6 prostatic adenocarcinoma on biopsy without skeletal muscle involvement. The results showed a significantly higher percentage of positive margins in the study group compared with the control group ($P = .006$). The study group also had a higher percentage of positive margins at the apex admixed with skeletal muscle ($P = .008$). In summary, the findings in this study support that pathologists should report the involvement of skeletal muscle by tumor, and recommend that urologists performing radical prostatectomies on these patients try to ensure adequate excision in the apical area to avoid positive apical margin.

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1. Introduction

The human prostate is composed of a complex arrangement of glandular epithelium and fibromuscular stroma. At the posterior part of the prostate, there is a distinct border between the fibromuscular stroma and the extraprostatic fibroadipose tissue. In contrast, there is no distinct boundary at the anterior part of the prostate, where smooth muscle of

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* Corresponding author at: Department of Pathology, The Johns Hopkins Hospital, 401 N Broadway St, Weinberg Room 2242, Baltimore, MD 21231.

E-mail address: jepstein@jhmi.edu (J. I. Epstein).

the prostate merges with the extraprostatic tissue. The skeletal muscle fibers of the urogenital diaphragm are present from the distal apex up to the mid anterior area of the prostate, where at the distal apex they can be seen admixed with benign prostate glands (Fig. 1A and B) [1]. Although biopsy of the mid prostate usually does not contain skeletal muscle fibers because they are far too anterior, they can often be seen on apical biopsy.

Approximately 20%-26% of prostatic adenocarcinoma is found in the apical area, defined as the distal one-third of the prostate [2-4]. At times, it can be seen extending into the skeletal muscle in the distal or anterior apex (Fig. 1C and D). In prostatectomy specimens, positive apical margins can be seen in these areas where cancer is admixed with skeletal muscle at the inked margin (Fig. 1E) in contrast to more proximally or posteriorly where cancer extends to the inked margin without being admixed with skeletal muscle (Fig. 1F).

The significance of skeletal muscle involvement by prostatic adenocarcinoma on biopsy has only rarely been studied from the pathologic point of view and only in cases involving a limited amount of tumor on biopsy [5]. Consequently, most pathologists do not include this finding routinely on prostate biopsy reports. On the other hand, urologists have recognized the distal apical area as a challenging area in obtaining biopsies and in surgical dissection during prostatectomy. Biopsy of the distal apex especially anteriorly is associated with further advancement of the biopsy needle and more pain and discomfort [6]. Apical dissection during radical prostatectomy is challenging due to variation in the shapes of the prostate apex, the rich neurovascular supply, and the intermingling muscle layers [7], leading to a dilemma between risking positive margin by attempting to preserve the neurovascular bundle in this area or significant incontinence by doing more extensive apical dissection.

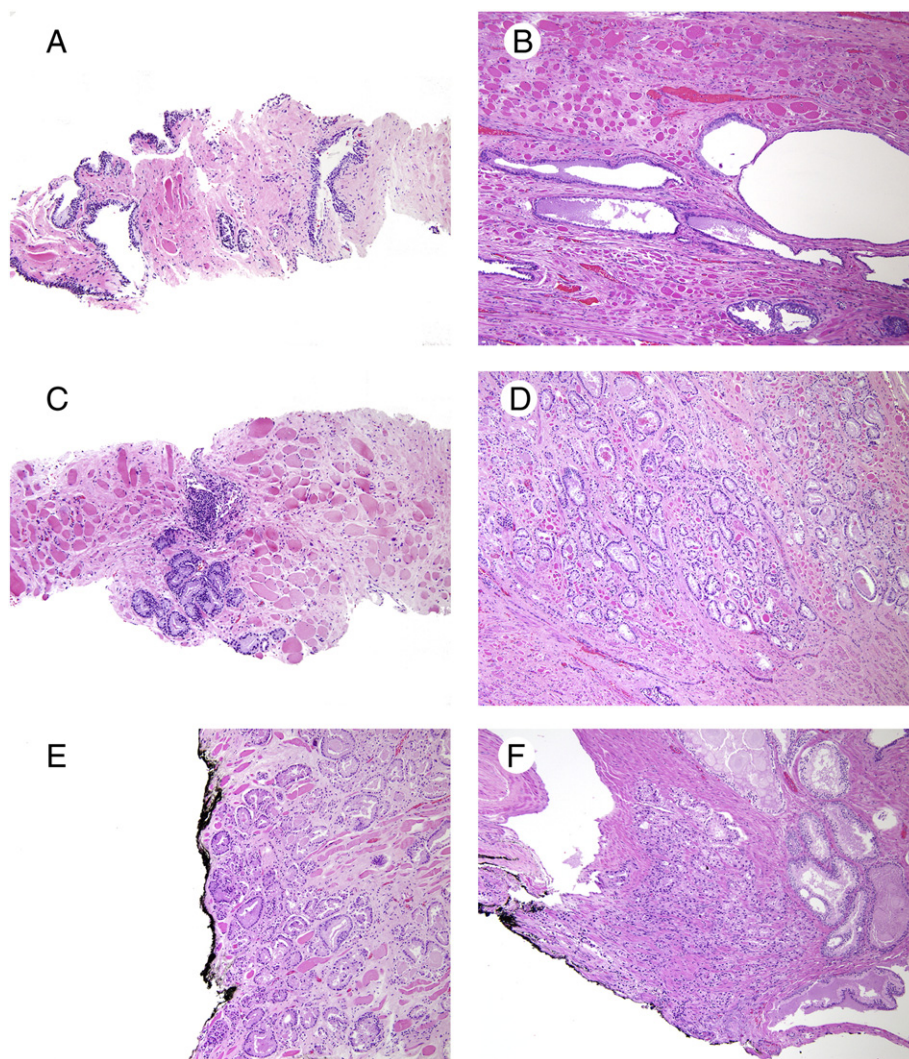


Fig. 1 Benign prostatic glands in skeletal muscle on core biopsy (A) and on prostatectomy (B) as part of normal anatomy and histology. Prostatic adenocarcinoma in skeletal muscle on core biopsy (C) and on prostatectomy (D). Positive apical margin at the anterior prostate involving skeletal muscle (E) and at the lateral prostate lacking skeletal muscles (F). Hematoxylin and eosin, original magnifications $\times 10$.

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