

been applied to all organ system, including genitourinary. Although as urologists, we are in the kidney preservation business, the overall survival of the patient should not be compromised in order to save the kidney. In other words, do not kill the patient trying to save the kidney. In trauma circles, the way to damage control injures organs is to quickly control bleeding and fecal and urinary soiling. To control bleeding the organ can be packed, quickly repaired or removed. To control urinary spillage, the ureter can be exteriorized, ligated or quickly repaired. The use of damage control to urology was popularized (1). To the trauma surgeons, since most trauma patients are young healthy adults with 2 normal kidneys and a normal creatinine, the kidney can be removed without too much overall kidney function compromise. Velmahos et al., puts up a good argument in the above article, but I would argue a different conclusion. The authors are trying to support the high 50-60% nephrectomy rates of yester-year. I would argue that the nephrectomy rate does not have to be higher the 20% and we can still follow a damage control method. Furthermore, palpating for a normal feeling contralateral kidney can be unreliable. I have personally seen 2 cases of trauma patients with a nonfunctioning contralateral multi-cystic dysplastic kidney and one hypertrophied psoas muscle that was thought to be palpably normal kidney by the trauma service. In the stable blunt trauma patient, all grade 1-4 renal injuries should managed conservatively if possible. In the blunt trauma patient who is explored, a stable, nonpulsatile, nonexpanding, contained perinephric hematoma should be left alone. In the penetrating trauma patient who is explored and the kidney does not have much blast injury and not really bleeding, I would just cover the gunshot holes with a surgi-cell and place a drain. The kidney can also be packed. Once resuscitated on a staged celiotomy, the kidney can be reexamined and a more definitive repair can be performed.

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## **PATHOLOGY**

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### **Update on the Gleason Grading System for Prostate Cancer: Results of an International Consensus Conference of Urologic Pathologists**

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The Gleason system for prostate cancer was based on a study of 270 patients from the Minneapolis Veterans Administration Hospital in 1966-1967. In 1974, Gleason and the Veterans Administrative Cooperative Urological Research Group expanded this study to 1032 men. These studies formed the basis of the Gleason grading system, which is now endorsed as the primary grading system for prostate cancer by the World Health Organization, the Armed Forces Institute of Pathology Fascicle on prostate cancer, the Association of Directors of Anatomic and Surgical Pathology, and the College of American Pathologists. In the nearly 40 years since its

inception, several aspects about prostate cancer and its management have changed, most notably serum prostate-specific antigen, transrectal ultrasonography, 18-gauge needle biopsy sampling, immunohistochemistry for the diagnosis of cancer, and radical prostatectomy and radiation therapy as primary treatment modalities. Several aspects of the disease, and consequently the reporting needs, have changed such as reporting cancer on multiple cases in needle biopsies, multiple nodules in prostatectomy, tertiary patterns, variants and variations in prostate cancer. The application of the Gleason system, therefore, has varied considerably in contemporary surgical pathology practice. An International Consensus Conference attended by 80 urologic pathologists from 20 countries was convened to discuss clarifications and modifications to the Gleason system. This article serves as a brief overview and summary of the proceedings that have been published in detail in recent literature.

### Editorial Comment

In 2005 during the USCAP (United States and Canadian Academy of Pathology) meeting in San Antonio, Texas, there was a Consensus Conference on Gleason grading system sponsored by the International Society of Urological Pathology (ISUP). The results were published in the November issue of the *American Journal of Surgical Pathology* (1). There are several arguments favoring a need for a consensus on Gleason grading: 1) In the 1960s, there was no screening for prostate cancer other than by digital rectal examination; 2) The use of 18-gauge thin biopsy needles and the concept of sextant needle biopsies to more extensively sample the prostate were not developed until the 1980s; 3) Tertiary patterns were not addressed within the original Gleason system; 4) The Gleason system predated the use of immunohistochemistry (it is likely that many of Gleason's original 1 + 1 = 2 adenocarcinomas would today be regarded as adenosis); 5) The original Gleason grading system was not applied to newly described variants of adenocarcinoma of the prostate; and, 6) The Gleason system varies considerably in contemporary surgical pathology practice and has led to several recent attempts to achieve consensus on Gleason grading.

Some of the recommendations of the consensus conference are the following: 1) Cribriform pattern 3 should only be diagnosed for well circumscribed glands of the same size of normal glands; 2) Ill-defined glands with poorly formed glandular lumina also warrant the diagnosis of Gleason pattern 4; 3) In high-grade cancer, lower grade patterns should be ignored if they occupy less than 5% of the area of the tumor; and 4) For tertiary Gleason patterns, both the primary and the highest grade are recorded.

A recent study described the impact of the consensus recommendations on a series of 172 consecutive needle prostatic biopsies of patients subsequently submitted to radical prostatectomy previously graded according to the standard Gleason system (2). There was a grading concordance in 83.14%, 63.37%, and 68.02% biopsies for Gleason primary pattern, Gleason secondary pattern, and Gleason score, respectively. There was a change of prognostic Gleason grading groups in 2.33% and 26.74% biopsies toward a lower group and toward a higher group, respectively. There was a change in 15.7%, 9.88%, 0.58% and 0.58% biopsies from group 5-6 toward group 7, 7 toward 8-10, 5-6 toward 8-10, and 2-4 toward 5-6, respectively. The conclusion was that the highest impact of the consensus recommendations was seen on the secondary pattern that had the lowest percentage of concordance. It reflected in a change toward a higher Gleason grading group in 46/172 (26.74%) of the cases. A further study is warranted to show how different are these 46 cases according to several clinicopathologic variables: preoperative PSA, positive surgical margins, tumor extent, pathologic staging and biochemical progression following radical prostatectomy.

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### **Prostate Needle Biopsies Containing Prostatic Intraepithelial Neoplasia or Atypical Foci Suspicious For Carcinoma: Implications for Patient Care**

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**Purpose:** We identified information critical for patient treatment on prostate needle biopsies diagnosed with prostatic intraepithelial neoplasia or atypical foci suspicious for carcinoma.

**Materials and Methods:** A search was performed using the MEDLINE database and referenced lists of relevant studies to obtain articles addressing the significance of finding PIN or atypical foci suspicious for carcinoma on needle biopsy.

**Results:** There were certain results concerning PIN. 1) Low grade PIN should not be documented in pathology reports due to poor interobserver reproducibility and a relatively low risk of cancer following re-biopsy. 2) The expected incidence of HGPIN on needle biopsy is between 5% and 8%. 3) Although the diagnosis of HGPIN is subjective, interobserver reproducibility for its diagnosis is fairly high among urological pathologists, and yet only moderate among pathologists without special expertise in prostate pathology. 4) The median risk recorded in the literature for cancer following the diagnosis of HGPIN on needle biopsy is 24.1%, which is not much higher than the risk reported in the literature for repeat biopsy following a benign diagnosis. 5) The majority of publications that compared the risk of cancer in the same study following a needle biopsy diagnosis of HGPIN to the risk of cancer following a benign diagnosis on needle biopsy show no differences between the 2 groups. 6) Clinical and pathological parameters do not help stratify which men with HGPIN are at increased risk for a cancer diagnosis. 7) A major factor contributing to the decreased incidence of cancer following a diagnosis of HGPIN on needle biopsy in the contemporary era is related to increased needle biopsy core sampling, which detects many associated cancers on initial biopsy, such that re-biopsy, even with good sampling, does not detect many additional cancers. 8) It is recommended that men do not need routine repeat needle biopsy within the first year following the diagnosis of HGPIN, while further studies are needed to confirm whether routine repeat biopsies should be performed several years following a HGPIN diagnosis on needle biopsy. There were certain results concerning atypical glands suspicious for carcinoma. 1) An average of 5% of needle biopsy pathology reports are diagnosed as atypical glands suspicious for carcinoma. 2) Cases diagnosed as atypical have the highest likelihood of being changed upon expert review and urologists should consider sending such cases for consultation in an attempt to resolve the diagnosis as definitively benign or malignant before subjecting the patient to repeat biopsy. 3) Ancillary techniques using basal cell markers and AMACR (alpha-methyl-acyl-coenzyme A racemase) can decrease the number of atypical diagnoses, and yet one must use these techniques with caution since there are numerous false-positive and false-negative results. 4) The average risk of cancer following an atypical diagnosis is approximately 40%. 5) Clinical and pathological parameters do not help

predict which men with an atypical diagnosis have cancer on repeat biopsy. 6) Repeat biopsy should include increased sampling of the initial atypical site, and adjacent ipsilateral and contralateral sites with routine sampling of all sextant sites. Therefore, it is critical for urologists to submit needle biopsy specimens in a manner in which the sextant location of each core can be determined. 7) All men with an atypical diagnosis need re-biopsy within 3 to 6 months.

Conclusions: It is critical for urologists to distinguish between a diagnosis of HGPIN and that of atypical foci suspicious for cancer on needle biopsy. These 2 entities indicate different risks of carcinoma on re-biopsy and different recommendations for followup.

### Editorial Comment

This is an excellent review of two important diagnoses on needle prostatic biopsies. Urologists should clearly distinguish these two pathologic conditions. High-grade prostatic intraepithelial neoplasia (high-grade PIN) is diagnosed whenever acinar cells show nucleomegaly and conspicuous nucleoli. This finding is indistinguishable from prostate cancer, however, in high-grade PIN, there is no acinar architectural disarrangement and, very important, basal cells are present. High-grade PIN corresponds to grade 2 or 3 prostatic intraepithelial neoplasia. Low-grade PIN corresponds to grade 1 and should not be reported by the pathologist due to poor interobserver reproducibility and a relatively low risk of cancer following re-biopsy. On the other hand, high-grade PIN is associated with a moderate risk of cancer following re-biopsy, however, due to an increased needle biopsy core sampling, which detects many associated cancers on initial biopsy, there is a decreased incidence of cancer following a diagnosis of high-grade PIN. Due to these facts, it is recommended that men do not need routine repeat needle biopsy within the first year following the diagnosis of high-grade PIN.

Atypical foci suspicious for carcinoma are a completely different condition that urologists should not interpret as high-grade PIN, adenosis, or any other pathologic entity. It refers to a condition in which the pathologist is not able to make a diagnosis of adenocarcinoma with confidence. This happens in 3 main conditions: 1. the suspicious focus is very small; 2. the focus disappears in further sectioning of the paraffin block; and, 3. absence of cytologic criteria for the diagnosis of adenocarcinoma (1). Atypical focus suspicious for carcinoma was formerly known as ASAP (atypical small acinar proliferation). This term should not be used because may be erroneously interpreted by the urologist as a pathologic entity such as high-grade PIN, adenosis or any other one (2). Furthermore, not all suspicious foci for carcinoma show small acini; large acini may also be suspicious.

Differently from high-grade PIN, atypical foci suspicious for carcinoma have a high risk of cancer on a repeat biopsy. All men with a pathology report “suspicious but not diagnostic for adenocarcinoma” need re-biopsy within 3 to 6 months. Repeat biopsy should include increasing sampling from the suspicious site. This is very important and emphasizes the need for properly identifying the cores from the different regions biopsied, which must be sent in separate containers to the pathology laboratory.

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