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Understanding Your Pathology Report: Prostate Cancer

When your prostate was biopsied, the samples taken were studied under the microscope by a specialized doctor with many years of training called a pathologist. The pathologist sends your doctor a report that gives a diagnosis for each sample taken. Information in this report will be used to help manage your care. The questions and answers that follow are meant to help you understand medical language you might find in the pathology report from the biopsy.

What does it mean if my biopsy report mentions the word core?

The most common type of prostate biopsy is a core needle biopsy. For this procedure, the doctor inserts a thin, hollow needle into the prostate gland. When the needle is pulled out it removes a small cylinder of prostate tissue called a core. This is often repeated several times to sample different areas of the prostate.

Your pathology report will list each core separately by a number (or letter) assigned to it by the pathologist, with each core (biopsy sample) having its own diagnosis. If cancer or some other problem is found, it is often not in every core, so you need to look at the diagnoses for all of the cores to know what is going on with you.

What is adenocarcinoma?

Adenocarcinoma is the type of cancer that develops in gland cells. It is the most common type of cancer found in the prostate gland.

What is the Gleason grade or Gleason score? What do the numbers in the Gleason score mean, for example 3+4=7 or 3+3=6?

Pathologists grade prostate cancers using numbers from 1 to 5 based on how much the cells in the cancerous tissue look like normal prostate tissue under the microscope. This is called the *Gleason system*. Grades 1 and 2 are not often used for biopsies – most biopsy samples are grade 3 or higher.

- If the cancerous tissue looks much like normal prostate tissue, a grade of 1 is assigned.
- If the cancer cells and their growth patterns look very abnormal, a grade of 5 is assigned.
- Grades 2 through 4 have features in between these extremes.

Since prostate cancers often have areas with different grades, a grade is assigned to the 2 areas that make up most of the cancer. These 2 grades are added to yield the Gleason score (also called the *Gleason sum*). The first number assigned is the grade that is most common in the tumor. For example, if the Gleason score is written as 3+4=7, it means most of the tumor is grade 3 and less is grade 4 and they are added for a Gleason score of 7. The highest a Gleason score can be is 10.

Other ways that this Gleason score may be listed in your report are Gleason 7/10, Gleason 7 (3+4), or combined Gleason grade of 7.

Although most often the Gleason score is based on the 2 areas that make up most of the cancer, there are some

exceptions when on a core sample there is either a lot of high-grade cancer or there are 3 grades including high-grade cancer. In these cases, the Gleason score is modified to reflect the aggressive nature of the cancer. .

The higher the Gleason score, the more likely it is that your cancer will grow and spread quickly.

What does it mean to have a Gleason score of 6 or 7 or 8-10?

The lowest Gleason score of a cancer found on a prostate biopsy is 6. These cancers may be called well-differentiated or low-grade and are likely to be less aggressive – they tend to grow and spread slowly.

Cancers with Gleason scores of 8 to 10 may be called poorly differentiated or high grade. These cancers tend to be aggressive, meaning they are likely to grow and spread more quickly.

Cancers with a Gleason score of 7 may be called moderately differentiated or intermediate grade. The rate at which they grow and spread tends to be in between the other 2.

What does it mean when there are different core samples with different Gleason scores?

Cores may be samples from different areas of the same tumor or different tumors in the prostate. Because the grade may vary within the same tumor or between different tumors, different samples (cores) taken from your prostate may have different Gleason scores. Typically, the highest (largest number) Gleason score will be the one used by your doctor for predicting your prognosis and deciding treatment.

Can the Gleason score on my biopsy really tell what the cancer grade is in the entire prostate?

Because prostate biopsies are tissue samples from different areas of the prostate, the Gleason score on biopsy usually reflects your cancer's true grade. However, in about 20% of cases the biopsy grade is lower than the true grade because the biopsy misses a higher grade (more aggressive) area of the cancer. It can work the other way, too, with the true grade of the tumor being lower than what is seen on the biopsy.

How important is the Gleason score?

The Gleason score is very important in predicting the behavior of a prostate cancer. Still, other factors are also important, such as

- The PSA level,
- Findings on rectal exam,
- How much of each core is made up of cancer,
- The number of cores that contain cancer,
- Whether cancer was found in both sides of the prostate, and
- Whether the cancer has spread outside the prostate.

What does it mean if my biopsy report mentions special studies such as high molecular weight cytokeratin (HMWCK), ck903, ck5/6, p63, AMACR (racemase), 34BE12, or PIN4 cocktail?

These are special tests that the pathologist sometimes uses to help diagnose prostate cancer. Not all patients need these tests. Whether or not your report mentions these tests has no effect on the accuracy of your diagnosis.

What does it mean if my biopsy mentions that there is perineural invasion?

Perineural invasion means that cancer cells were seen surrounding or tracking along a nerve fiber within the prostate. When this is found on a biopsy, it means that there is a higher chance that the cancer has spread outside the prostate. Still, perineural invasion doesn't mean that the cancer has spread, and other factors, such as the Gleason score and amount of cancer in the cores are more important. In some cases, finding perineural invasion may affect treatment, so if your report mentions perineural invasion, you should discuss it with your doctor.

What does it mean if, in addition to cancer, my biopsy report also says high-grade prostatic intraepithelial neoplasia or high-grade PIN?

High-grade prostatic intraepithelial neoplasia (or high-grade PIN) is a pre-cancer of the prostate. It is not important in someone who already has cancer. In this case, the words high-grade refer to prostatic intraepithelial neoplasia and not the cancer, so it has nothing to do with the Gleason score or how aggressive your cancer is.

What does it mean if in addition to cancer my biopsy report also says acute inflammation (acute prostatitis) or chronic inflammation (chronic prostatitis)?

Inflammation of the prostate is called *prostatitis*. Most cases of prostatitis reported on biopsy are not caused by infection and do not need to be treated. In some cases, inflammation may increase your PSA level, but it is not linked to prostate cancer. The finding of prostatitis on a biopsy of someone with cancer does not affect their prognosis or the way the cancer is treated.

What does it mean if my biopsy report also says atrophy or adenosis or atypical adenomatous hyperplasia or seminal vesicle?

All of these are terms for things the pathologist sees under the microscope that are benign (not cancer), but that sometimes can look like cancer.

Atrophy is a term used to describe shrinkage of prostate tissue (when it is seen under the microscope). When it affects the entire prostate gland it is called *diffuse atrophy*. This is most often caused by hormones or radiation therapy to the prostate. When atrophy only affects certain areas of the prostate, it is called *focal*. Focal atrophy can sometimes look like prostate cancer under the microscope.

Atypical adenomatous hyperplasia (which is sometimes called *adenosis*) is another benign condition that can sometimes be seen on a prostate biopsy.

The seminal vesicles are glands that lie just behind the prostate. Sometimes part of a seminal vesicle is sampled during a biopsy. This is not a cause for concern.

What does it mean if, in addition to cancer, my biopsy report also says atypical glands or atypical small acinar proliferation (ASAP) or glandular atypia or atypical glandular proliferation?

All these terms mean that the pathologist saw something under the microscope that is worrisome for cancer, but he or she is not 100% sure that cancer is present. Finding any of these is not important if cancer is also present.

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