



## Ovarian Cysts and Tumors

Ovarian masses or neoplasms can be cystic or solid. A cyst is fluid-filled and a tumor or “mass” is solid. Ovarian neoplasms can also have a combination of cystic and solid features. Cysts and tumors may be benign or malignant.

In a normally ovulating woman, the ovary forms a follicular cyst every month. The egg is released from this follicle mid-cycle which results in a menstrual period about 14 days later if the egg is not fertilized. Women are born with approximately 300,000 functional eggs. Each month with ovulation, several eggs are “recruited” and one will eventually develop to be released. Ultrasounds frequently show multiple small cysts in the ovary representing follicles at various stages of development. Once the egg reaches maturity, ovulation occurs and the follicular cyst ruptures, releasing the egg. After ovulation, the follicle undergoes a transformation and becomes the corpus luteum. If the egg is fertilized, a corpus luteum cyst is formed which produces progesterone for the pregnancy during the first trimester.

If something goes wrong with the ovulatory process, this orderly maturation of the follicle is disrupted. As a result, numerous problems can develop. Although the problems may appear different, they all share a common thread - something has thrown the normal ovulatory process off track. That something may be a one time episode - no woman ovulates normally every month. It may also be an indicator of some underlying chronic hormonal problem that requires further evaluation.

If a woman does not ovulate at all or ovulates very infrequently, she may be diagnosed with Polycystic Ovary Syndrome (PCOS).

Conversely, when the ovulatory process is disrupted for any reason, sometimes the follicle never develops properly, the egg never fully matures, and the follicle begins to accumulate more fluid than it should. It continues to grow beyond its normal size and becomes a "follicular cyst". In a normally menstruating woman, the follicle never gets bigger than 30 mm. in diameter. Any follicle that is larger than 30 mm. is termed a follicular cyst.

In some women, particularly those with endometriosis, sometimes the ovulatory process is disrupted such that the follicle wall never ruptures and the egg is never expelled. However, the hormonal changes are still occurring so that the follicle still undergoes a transformation to the corpus luteum. Because the egg is not expelled, the fluid is not expelled as well. It is retained within the ovary and is easily visible on ultrasound following the time that ovulation should have occurred.

In a normally ovulating woman, when ovulation occurs and the follicle is transformed into the corpus luteum, a small amount of bleeding occurs. Usually the amount of blood is very small and is of no significance. Occasionally, however, there can be more than the average amount of bleeding. This blood is then trapped inside the corpus luteum and because blood is a liquid, it becomes visible on ultrasound. This is called a hemorrhagic corpus luteum. If the hemorrhagic corpus luteum remains for awhile, the body will eventually break down the red blood cells but the other liquid (the serum) remains. Eventually, the fluid inside the hemorrhagic corpus luteum is transformed from blood to a yellowish fluid. We call this a luteal cyst.

All of the problems that we have just discussed describe the cause of what we call "functional cysts". By this term, we mean that they are cysts that develop as a result of the abnormal functioning of the ovary. They simply represent the ovulatory process that has been thrown off track for whatever reason. Functional cysts will usually disappear with simple observation, although the process may take several months. All other types of cysts within the ovary represent true pathology. They are cystic tumors. These cystic tumors, particularly in younger women, are almost always benign.

There is one type of cyst that is not functional but is not, strictly speaking, a cystic tumor either. These are endometriosis cysts of the ovary. Endometriosis cysts form when an implant of endometriosis on the surface of the ovary burrows its way into the ovarian tissue. As the endometrium in the endometriosis implant goes through a "menstrual cycle" each month and bleeding occurs, that blood begins to accumulate within the ovary. As that blood persists for an extended period of time, it eventually turns brown and takes on an appearance that is almost identical to Hershey's chocolate syrup. As a result, these cysts are called "chocolate cysts".