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My name is Katherine LaVigne Mager. I'm one of the gynecologic oncologists at Roswell Park Comprehensive Cancer Center. Endometrial cancer is the fourth most common cancer in women. And it is the most common gynecologic cancer diagnosed in women. There are over 61,000 new cases diagnosed in 2019. And this represents 3.5% of all new cancer diagnoses in the United States.

The peak incidence of endometrial cancer in women is age 60 to 70, with the majority of cases in women who have already gone through menopause. The most common symptom at presentation is postmenopausal bleeding. So it is very important for any women experiencing postmenopausal bleeding to be evaluated by their gynecologist. Endometrial cancer can occur in younger women, meaning many women younger than 50. And this represents about 5% of endometrial cancer cases. But the incidence has been rising in recent years.

Because endometrial cancer typically causes symptoms of abnormal bleeding, it's frequently diagnosed at an early stage. And women with this diagnosis usually do very well. The five year overall survival for early stage endometrial cancer is over 90%. In early stage disease, the standard treatment is surgery.

Although, in carefully selected younger women who desire fertility, fertility-sparing options can be considered instead of surgical options. These involve medical treatment with progesterone. Disease that has spread outside of the uterus is typically treated with a combination of approaches, including surgery, radiation, and/or chemotherapy. .

The uterus has many different cell types, and cancer can arise in different areas of the uterus. This track addresses endometrial cancer specifically, which is a type of uterine cancer arising from the lining of the uterus or the endometrium.

A complete surgical staging for endometrial cancer includes a total hysterectomy, which is removal of the uterus and cervix, bilateral salpingo-oophorectomy, or removal of the fallopian tubes and ovaries, and lymph node assessment. Removal of lymph nodes alone has not been shown to be therapeutic in and of itself. But it is important for determining both prognosis and post-operative or adjuvant treatment.

Sentinel lymph node mapping is an approach to lymph node assessment that allows for removal of fewer lymph nodes. In sentinel lymph node mapping, you inject a tracer, either technetium or dye, into an organ in order to determine the first lymph node draining that organ. The first node that shows the tracer will be the first lymph node that cancer will typically go to. This was pioneered in melanoma and breast cancers, but it is now in use in many other solid tumor types. In gynecologic cancer it's used in vulvar, cervical, and endometriosis cancers.

So why do sentinel lymph node mapping? It was found to be safe and effective for lymph node assessment in any endometrial cancer. This was shown in two large prospective trials, the FIRES trial and the SENTI-ENDO trial. Sentinel lymph node detection improves the detection of lymph node metastases when compared to full lymph node dissection. It also decreases the risk of complications, including a decreased rate of lymphedema. And the decrease is very significant.

The rate of lymphedema in full lymph node dissection is approximately 18% and in sentinel lymph node dissection is only 1%. Sentinel lymph node mapping in endometrial cancer is typically performed with either blue dye or indocyanine green or ICG. Use of ICG requires the ability to use near infrared imaging. This is available through specialized equipment that can be used in open, laparoscopic, or robotic cases.

When injecting for endometrial cancer, a total of 4cc of dye is injected into the cervix typically at the 3:00 and 9:00 positions. 1cc is injected superficially. And 1cc is injected deeper into the cervical stroma. Lymph node basins are then inspected for the presence of dye. And the sentinel lymph node is removed.

These images show the approach to sentinel lymph node mapping and are courtesy of the NCCN guidelines. At the top, you see the options for sites of injection of the cervix. As mentioned, 3:00 and 9:00 are the most typically injected sites. Below, you see the drainage patterns that can be seen. The first is the pelvic nodal basin, and the second is the presacral and para-aortic nodes.

This figure is from the FIRES trial. And it shows the most common distribution where sentinel lymph nodes were detected. As you can see, sentinel lymph nodes were most commonly found in the external iliac or obturator nodal packets. But they can also be seen in the para-aortic or presacral areas.

When doing sentinel lymph node mapping, it is important to have a standardized approach to the process. This is the most commonly used algorithm for sentinel lymph node mapping. You start by removing any identified sentinel lymph nodes. You then remove any suspicious nodes.

If sentinel lymph node mapping is not successful, a side-specific full pelvic lymph node dissection should be performed. Para-aortic lymph node dissection can be performed at the surgeon's discretion if sentinel lymph node mapping is not successful. This is typically performed in cases that are at high risk for nodal metastases or high risk disease.

This shows an image of how sentinel lymph nodes appear when using near-infrared imaging. The green traces both the lymphatic channels as well as the lymph nodes. This is a lymph node that has been removed, and it still shows fluorescence.

Blue dyes were the most common dyes used to identify SLNs. But with the advent of increasing access to near-infrared fluorescence imaging for laparoscopic, robotic, and open platforms, ICG has become increasingly popular. It has been shown to have equivalent or better detection rates for sentinel lymph nodes and uterine cancer.

A very important part of sentinel lymph node assessment is the process for examining them by pathology. This approach is called ultrastaging, and it involves very close examination of multiple sections of the lymph node with additional staining to detect tumor cells when initial examination is negative. This allows for more in-depth assessment of the lymph node and detection of smaller metastases.

So to summarize, sentinel lymph node biopsy is a safe and effective method of evaluating lymph nodes in endometrial cancer. There is an increased detection rate of lymph node metastases with the use of sentinel lymph node dissection. You see decreased complications, including lymphedema, which is very important in a population that has excellent survival. The use of ICG for detection of sentinel lymph nodes is preferred.

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