Received: 24 July 2018 | Revised: 5 November 2018 | Accepted: 20 December 2018

DOI: 10.1002/ijgo.12749

FIGO COMMITTEE REPORT

WILEY International Journal of Gynecology & Obstetrics FIGO

Revised FIGO staging for carcinoma of the cervix uteri☆

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☆This study was presented as an abstract (no. S020.2) at the XXII FIGO World Congress of Gynecology and Obstetrics; October 14–19, 2018; Rio de Janeiro, Brazil. The abstract has been previously published: *Int J Gynecol Obstet*. 2018;143 (suppl 3):43–991. DOI:10.1002/ijgo.12584.

Abstract

Objective: To revise FIGO staging of carcinoma of the cervix uteri, allowing incorporation of imaging and/or pathological findings, and clinical assessment of tumor size and disease extent.

Methods: Review of literature and consensus view of the FIGO Gynecologic Oncology Committee and related societies and organizations.

Results: In stage I, revision of the definition of microinvasion and lesion size as follows. Stage IA: lateral extension measurement is removed; stage IB has three subgroups—stage IB1: invasive carcinomas ≥5 mm and <2 cm in greatest diameter; stage IB2: tumors 2–4 cm; stage IB3: tumors ≥4 cm. Imaging or pathology findings may be used to assess retroperitoneal lymph nodes; if metastatic, the case is assigned stage IIIC; if only pelvic lymph nodes, the case is assigned stage IIIC1; if para-aortic nodes are involved, the case is assigned stage IIIC2. Notations 'r' and 'p' will indicate the method used to derive the stage—i.e., imaging or pathology, respectively—and should be recorded. Routine investigations and other methods (e.g., examination under anesthesia, cystoscopy, proctoscopy, etc.) are not mandatory and are to be recommended based on clinical findings and standard of care.

Conclusion: The revised cervical cancer staging is applicable to all resource levels. Data collection and publication will inform future revisions.

KEYWORDS

Cancer; Carcinoma; Cervix; FIGO; Imaging; Revised; Staging

1 | INTRODUCTION

According to the latest data from GLOBOCAN 2018, cervical cancer is the fourth most common cancer in women worldwide, and the second most common in low- and middle-income countries (LMICs).[1] It is thus a major cause of morbidity and mortality from cancer. In 2018, there were an estimated 569 847 new cases and 311 365 deaths worldwide annually.[1] More than 85% of these cases occur in developing countries.

The hallmark of a good staging system is the ability to define anatomical extent of disease and differentiate survival outcomes. The prognostic groups thus generated guide treatment allocation. The staging system also allows comparison of patients and their outcomes between centers. Cancer staging is an evolving process that responds to developments in technology that improve diagnosis and treatment, new information about prognostic factors, and outcomes data.

Since publication of the last FIGO cervical cancer staging in 2009, considerable progress has been made in the use of imaging modalities to evaluate women with cervical cancer.[2] Although FIGO moved to a surgicopathological system of staging for ovarian and endometrial cancer, this was not as simple for cervical cancer, a disease mainly of under-resourced regions. Although the availability and quality of imaging has increased substantially, not only in high-resource countries but also in some LMICs, the capability to assess the abdomen, pelvis, and the retroperitoneal areas by some imaging modality varies considerably. Moreover, unlike ovary and endometrium, treatment options for cervical cancer include both surgery and radiation depending on the extent of the disease. Advances in minimally invasive surgery (MIS) have led to an increase in para-aortic sampling in advanced cases to determine the need for extended field radiation. Interestingly, even in some less resourced countries such as Sri Lanka, retrieval of para-aortic nodes by laparotomy or laparoscopy is the standard of care in such cases. Thus, although staging continued to be clinical, clinicians in all parts of the world began using new technologies to guide treatment.

Despite concern that surgicopathological documentation of disease extent may not be feasible where there is poor access to MIS techniques and adequate pathological facilities, the FIGO Gynecologic Oncology Committee determined that the staging classification needed revision to maintain unanimity worldwide, incorporate new technology where feasible, and thereby improve its utility and applicability. Imaging and pathological assessment of the pelvis and evaluation of pelvic and para-aortic lymph nodes should be formally incorporated into the staging of cervical cancer while giving the clinician the flexibility to use it according to available resources.

2 | METHODS

The process of staging revision began in 2016 under the leadership of Professor Neerja Bhatla, Chair of FIGO's Committee for Gynecologic Oncology. The draft proposal was discussed with a number of gynecologic oncology organizations and societies worldwide, as well as the Union for International Cancer Control (UICC) and the American Joint Committee on Cancer (AJCC).

Extensive inputs received via email were collated, and the literature was reviewed and evaluated, and eventually formulated into the staging that is presented here. Additionally, presentations, face-to-face meetings, and discussions and teleconferences were held on the sidelines of the European Society of Gynecologic Oncology meeting in Vienna, Austria (2017); the African Organization for Research and Training in Cancer conference in Kigali, Rwanda (2017); the Asian Society of Gynecologic Oncology in Tokyo, Japan (2017); and the Society of Gynecologic Oncology annual meeting in New Orleans, USA (2018). The new staging was reached by consensus at the FIGO Regional Meeting in Dubai on April 10, 2018. It was presented to the FIGO Executive Board on April 14, 2018, and subsequently approved. The staging was presented to AJCC and UICC, the latter at the Annual TNM Meeting in Geneva on May 3, 2018.

The new criteria for staging classification of cancer of the cervix uteri, with a commentary on controversial issues and recommendations, are presented here. Box 1 presents a summary of the new staging.

3 | KEY AMENDMENTS TO STAGING OF CANCER OF THE CERVIX UTERI

The following amendments to the staging classification of carcinoma of the cervix uteri were made by the FIGO Committee for Gynecologic Oncology in 2018:

1. Allowing the use of any imaging modality and/or pathological findings for allocating the stage.
2. In stage I, amendments to microscopic pathological findings and to size designations, allowing the use of imaging and/or pathological assessment of the size of the cervical tumor.
3. In stage II, allowing the use of imaging and/or pathological assessment of size and extent of the cervical tumor.
4. In stages I through III, allowing assessment of retroperitoneal lymph nodes by imaging and/or pathological findings and, if deemed metastatic, the case is designated as stage IIIC (with notation of method used for stage allocation).
5. No recommendations for routine investigations, which are to be decided on the basis of clinical findings and standard of care.

4 | GENERAL RECOMMENDATIONS

1. The revised staging system does not mandate the use of a specific imaging technique, lymph node biopsy, or surgical assessment of the extent of tumor. In low-resourced conditions, clinicians can continue to assess the patient clinically as before.
    a. The size of the primary tumor can be assessed by clinical evaluation (pre- or intraoperative), imaging, and/or pathological measurement.

Box 1 FIGO staging of carcinoma of the cervix uteri (2018).

Stage I:

The carcinoma is strictly confined to the cervix uteri (extension to the corpus should be disregarded)

- **IA** Invasive carcinoma that can be diagnosed only by microscopy, with maximum depth of invasion <5 mm[a]
  - **IA1** Measured stromal invasion <3 mm in depth
  - **IA2** Measured stromal invasion ≥3 mm and <5 mm in depth
- **IB** Invasive carcinoma with measured deepest invasion ≥5 mm (greater than stage IA), lesion limited to the cervix uteri[b]
  - **IB1** Invasive carcinoma ≥5 mm depth of stromal invasion and <2 cm in greatest dimension
  - **IB2** Invasive carcinoma ≥2 cm and <4 cm in greatest dimension
  - **IB3** Invasive carcinoma ≥4 cm in greatest dimension

Stage II:

The carcinoma invades beyond the uterus, but has not extended onto the lower third of the vagina or to the pelvic wall

- **IIA** Involvement limited to the upper two-thirds of the vagina without parametrial involvement
  - **IIA1** Invasive carcinoma <4 cm in greatest dimension
  - **IIA2** Invasive carcinoma ≥4 cm in greatest dimension
- **IIB** With parametrial involvement but not up to the pelvic wall

Stage III:

The carcinoma involves the lower third of the vagina and/or extends to the pelvic wall and/or causes hydronephrosis or non-functioning kidney and/or involves pelvic and/or paraaortic lymph nodes[c]

- **IIIA** Carcinoma involves the lower third of the vagina, with no extension to the pelvic wall
- **IIIB** Extension to the pelvic wall and/or hydronephrosis or non-functioning kidney (unless known to be due to another cause)
- **IIIC** Involvement of pelvic and/or paraaortic lymph nodes, irrespective of tumor size and extent (with r and p notations)[c]
  - **IIIC1** Pelvic lymph node metastasis only
  - **IIIC2** Paraaortic lymph node metastasis

Stage IV**:**

The carcinoma has extended beyond the true pelvis or has involved (biopsy proven) the mucosa of the bladder or rectum. A bullous edema, as such, does not permit a case to be allotted to stage IV

- **IVA** Spread of the growth to adjacent organs
- **IVB** Spread to distant organs

[a]Imaging and pathology can be used, when available, to supplement clinical findings with respect to tumor size and extent, in all stages.

[b]The involvement of vascular/lymphatic spaces does not change the staging. The lateral extent of the lesion is no longer considered.

[c]Adding notation of r (imaging) and p (pathology) to indicate the findings that are used to allocate the case to stage IIIC. For example, if imaging indicates pelvic lymph node metastasis, the stage allocation would be stage IIIC1r and, if confirmed by pathological findings, it would be Stage IIIc1p. The type of imaging modality or pathology technique used should always be documented. When in doubt, the lower staging should be assigned.

b. Identification of lymph node metastasis should be accomplished using any imaging technique(s) and/or pathological assessment methods available to the provider, and the choice of technique is theirs.

2. It is recommended that the method used for imaging (e.g., ultrasound, computed tomography [CT], magnetic resonance imaging [MRI], positron emission tomography [PET], PET-CT, MRI-PET, etc.) and/or the pathological technique used (e.g., evaluation of the operative specimen, lymph node biopsy, or fine needle aspiration cytology), and the results thereof, should be recorded, so that subsequent data analysis can be performed. The imaging method can be used:
   a. for measurement of the primary tumor size;
   b. for assessment of extension into the surrounding tissues and adjacent organs;
   c. for assessment of location and characteristics of the retroperitoneal lymph nodes;
3. It is recognized that there will be limitations for imaging findings in low- and lower-middle-income countries as a result of paucity, non-availability, or inadequate access to extensive imaging services.

As in the previous staging, when in doubt, the lower staging should be assigned.

5 | STAGE I CLASSIFICATION

The carcinoma is strictly confined to the cervix uteri (extension to the corpus should be disregarded).

- IA: Invasive carcinoma that can be diagnosed only by microscopy with measured deepest invasion <5.0 mm (involvement of vascular/lymphatic spaces does not change the staging)
  - IA1: Measured stromal invasion <3.0 mm
  - IA2: Measured stromal invasion ≥3.0 mm and <5.0 mm
- IB: Invasive carcinoma with measured deepest invasion ≥5.0 mm, limited to the cervix uteri
  - IB1: Invasive carcinoma ≥5.0 mm depth of invasion and <2.0 cm in greatest dimension
  - IB2: Invasive carcinoma ≥2.0 cm and <4.0 cm in greatest dimension
  - IB3: Invasive carcinoma ≥4.0 cm in greatest dimension

5.1 | Comment

Stage I cervical cancer is limited to the cervix. If there is only microscopic invasion less than 5.0 mm, it is assigned stage IA, further subdivided as stage IA1, and IA2 at a cutoff of 3.0 mm. The lateral extent of the lesion is no longer taken into consideration.

In stage IB, an additional cutoff at 2.0 cm has been introduced, based on oncological data from fertility-sparing operations including conization in stage IA and radical trachelectomy in early stage IB. Recurrence rates are significantly lower in patients whose primary stage I tumors are less than 2.0 cm compared with those who have tumors measuring 2.0–4.0 cm in their greatest dimension.[3–13] In the previous staging system, lymph node involvement did not change the stage but, in this revision, any patient with positive lymph nodes immediately gets upstaged to stage IIIC.

5.2 | Controversial issues

- Presence of vascular/lymph space invasion: lymphovascular space invasion does not change the stage.
- Extension to the uterine corpus: involvement of the uterine body does not change the stage.

5.3 | Recommendations

- The size and extent of the primary tumor can be assessed by clinical evaluation (pre- or intraoperative), imaging, and/or pathological measurement.
- Methods of imaging may include ultrasound, CT, MRI, PET, PET-CT, MRI-PET, etc., based on local resources.[14–16] MRI has been shown to have the best sensitivity and specificity in assessing the size of the lesion.[17,18] However, ultrasound has been shown to provide comparable information for staging in the hands of experienced operators.[19–21]
- In operated patients, the histopathological examination will provide information about size and extent of lesion.
- The final stage is to be assigned after receiving all reports. The method of recording the size and assigning stage should be noted.

6 | STAGE II CLASSIFICATION

Cervical carcinoma invades beyond the uterus, but not to the lower third of the vagina or to the pelvic wall.

- IIA: Without parametrial invasion
  - IIA1: Invasive carcinoma <4.0 cm in greatest dimension
  - IIA2: Invasive carcinoma ≥4.0 cm in greatest dimension
- IIB: With parametrial invasion

6.1 | Comment

In stage II, the tumor has extended beyond the uterus into the vagina and parametrium but not to the lower third of the vagina and not reaching the pelvic wall. In the substages, the size of the lesion can be measured clinically, on imaging, or pathology, as in stage I. Also, as in stage I, any patient with positive lymph nodes immediately gets upstaged to stage IIIC.

6.2 | Controversial issues

- Use of imaging for assessment of parametrial involvement: The utility of imaging for evaluation of parametrium and upper vagina is less clear. MRI has been shown to perform better than CT scan for parametrial assessment.[14–16] False-negative as well as false-positive results have been reported especially when there is infection or with larger tumor size and stretching of the upper vagina by the growth.
- Involvement of ovary: Involvement of the ovary has been reported in <1% of cases of squamous cell carcinoma and in <5% of cases of non-squamous cell carcinoma in early stage cervical cancer.[22–24] Since it is often associated with the presence of other risk factors, there are limited data on its impact on survival as an independent risk factor. Presently, ovarian involvement does not change the stage.

6.3 | Recommendations

- Colposcopy may be used to assess the extent of vaginal involvement. Examination under anaesthesia may be useful to improve the accuracy of clinical assessment where imaging facilities are lacking
- As in stage I, the method used to assess tumor size and extent should be recorded.

7 | STAGE III CLASSIFICATION

The carcinoma involves the lower third of the vagina and/or extends to the pelvic wall and/or causes hydronephrosis or non-functioning kidney and/or involves pelvic and/or paraaortic lymph nodes.

- IIIA: Carcinoma involves the lower third of the vagina, with no extension to the pelvic wall.
- IIIB: Extension to the pelvic wall and/or hydronephrosis or non-functioning kidney.
- IIIC: Involvement of pelvic and/or paraaortic lymph nodes, irrespective of tumor size and extent (with r and p notations.)
    - IIIC1: Pelvic lymph node metastasis only
    - IIIC2: Para-aortic lymph node metastasis

7.1 | Comment

In stage III, the tumor has extended to the lower third of the vagina and/or reached the pelvic wall. Identification of hydronephrosis or a non-functioning kidney by any method assigns the case to stage IIIB regardless of other findings. Similarly, the presence of pelvic or para-aortic lymph node metastases assigns the case to stage IIIC regardless of other findings, as they have poorer survival compared to those who do not have lymph node metastases.[25–27] Pelvic and para-aortic lymph node involvement is allocated to stage IIIC1 and IIIC2, respectively. Imaging techniques, including MRI, CT, PET, PET-CT, PET-MRI, and transvaginal ultrasound, can detect lymph node involvement with cervical cancer, facilitate determination of spread to the retroperitoneum, and provide an opportunity to selectively biopsy the nodal tissues.

The sensitivity of these modalities for detecting nodal metastasis varies from 60% to 88%, with specificity as high as 97%.[28–30] The role of PET-CT to detect lymph nodal metastasis has been studied in various centers and the results are promising.[31–35]

In a case of radical surgery, pathological assessment of lymph nodes will be possible. Alternatively, there may be a practice/capability for imaging-guided fine needle aspiration cytology. A notation of 'r' or 'p' is to be given depending on whether the staging was assigned on the basis of imaging or pathology, respectively. An example is shown in Box 1. This will enable prospective data collection regarding each method. Absence of any notation indicates the use of clinical methods only.

7.2 | Controversial issues

- Presence of isolated tumor cells or micrometastases: Metastases in lymph nodes have been graded as isolated tumor cells (<0.2 mm), micrometastases (0.2–2.0 mm), or macrometastases (>2.0 mm). Presence of isolated tumor cells or micrometastases signifies low volume metastasis and their implication is not clear. The presence of micrometastases or isolated tumor cells may be recorded but their presence does not change the stage.
- Differentiating metastases from infection: In many countries with a high cervical cancer burden there is also a high burden of other infections (e.g., tuberculosis and HIV). In these endemic areas, there is a possibility of nodes being enlarged without metastases. The assessment of metastatic lymph nodes versus infected lymph nodes does not have clear radiological criteria.
- Sentinel lymph nodes: Sentinel lymph node dissection is commonly used in vulvar and endometrial cancer. In cervical cancer, good sensitivity and specificity has been reported with acceptable false negative rates.[36–40] Appropriate facilities and expertise should be available to validate and follow the protocol for the sentinel lymph node approach, which also requires good backup of pathology for ultrastaging and immunohistochemistry. Following the protocol is essential for this procedure.

7.3 | Recommendations

- Surgicopathological assessment of lymph node involvement requires advanced surgical skills, whether performed by conventional or minimally invasive surgery. Since 85% of cases presently occur in low-resource settings, the required professional skills and infrastructure facilities are presently not widely available. Pathological confirmation is the gold standard but imaging can be used to interpret disease extent.
- The choice of imaging modality for nodal evaluation has not been fixed by FIGO. It depends upon the availability of the imaging modality and patients' affordability. Non-availability of an imaging modality should not be a reason for undue delay in initiation of treatment.
- FIGO does not define criteria to discriminate between malignancy and inflammation/infection on imaging, which is left to the discretion of the clinician. The clinician must opine on whether these look suspicious enough to upstage the case or not.
- The best available technology should be used for assessment, and the lowest appropriate stage should be assigned—i.e., when in doubt assign the lower stage.
- At the present time, lack of facilities universally is recognized and clinical assessment of staging with the use of other facilities as available is permissible. The method of assigning the stage is to be recorded and reported.

8 | STAGE IV CLASSIFICATION

The carcinoma has extended beyond the true pelvis or has involved (biopsy proven) the mucosa of the bladder or rectum. A bullous edema, as such, does not permit a case to be allotted to stage IV.

- IVA: Spread to adjacent organs
- IVB: Spread to distant organs

8.1 | Comment

Stage IV remains unchanged.

8.2 | Controversial issues

- Loss of fat planes at imaging may suggest involvement of bladder and rectum, but does not necessarily imply invasion by tumor.

8.3 | Recommendations

- Evaluation of the bladder and rectum by cystoscopy and proctosigmodoscopy, respectively, is recommended if the patient is symptomatic.
- Cystoscopy should be considered in cases with a barrel-shaped endocervical growth, extension of growth to the anterior vaginal wall.
- Histological confirmation should be done to assign the case to stage IV.

9 | CONCLUSIONS

Staging is an ongoing process informed by data on outcomes and survival. While treatment may broadly be dictated by stage, it has to be tailored according to the individual case, provider preferences and resources. Studies based on global data are vital for further clarity and advancement in the management. The next revision of the UICC and AJCC TNM classifications will incorporate these recommendations. FIGO recommends that all centers, and LMICs in particular, should prospectively collect and publish their data to inform future changes.

AUTHOR CONTRIBUTIONS

All authors are members of the FIGO Committee for Gynecologic Oncology and were involved in the design and planning of the staging revision from its inception. The subcommittee on cervical cancer staging comprised NB (Chair, FIGO Gynecologic Oncology Committee), JSB (Chair, Subcommittee on Cervical Cancer Staging), and LAD and RS, who contributed to the conduct, literature search, and formulation of the revised staging. The manuscript was written by NB and JSB and extensively reviewed and approved by all members of the Committee.

ACKNOWLEDGMENTS

The members of the FIGO Committee for Gynecologic Oncology were actively assisted by representatives of various societies whose help and contribution to the development of this revision is gratefully acknowledged: James Brierley, Union for International Cancer Control (UICC); David Mutch, American Joint Committee on Cancer (AJCC); Denis Querleu and David Cibula, European Society of Gynecologic Oncology (ESGO); Michael Quinn and Hennie Botha, International Gynecologic Cancer Society (IGCS); Lax Sigurd, International Society of Gynecologic Pathologists (ISGyP); Laurel Rice, Society of Gynecologic Oncologists (SGO); Hee-Sug Ryu and Hextan Ngan, Asian Society of Gynecologic Oncology (ASGO); Johanna Mäenpää, Nordic Society of Gynecologic Oncologists (NSGO); Andri Andrijono and Gatot Purwoto, Indonesian Society of Gynecologic Oncologists (INASGO); Amita Maheshwari and Uttam D Bafna, Association of Gynaecologic Oncologists of India (AGOI); Marie Plante, Cervical Cancer Research Network (CCRN). Jayashree Natarajan contributed to the review of literature.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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