History of the FIGO cancer staging system

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Abstract

The main objectives of any good staging system – essential to an evidence-based approach to cancer – are: to aid the clinician in planning treatment; to provide indication of prognosis; to assist the physician in evaluating the results of treatment; to facilitate the exchange of information between treatment centers, thus disseminating knowledge; and to contribute to continuing investigations into human malignancies. A good staging system must have 3 basic characteristics: it must be valid, reliable, and practical. The first staging system for gynecological cancers appeared around the turn of the 20th century and applied to the carcinoma of the cervix uteri – the most common cancer affecting women in high income countries at that time. The classification and staging of the other gynecological malignancies was not put forward until the 1950s. Over the years, these staging classifications – with the exception of cervical cancer and gestational trophoblastic neoplasia – have shifted from a clinical to a surgical–pathological basis. This paper reviews the history of the International Federation of Gynecology and Obstetrics (FIGO) cancer staging system, how it was developed, and why.

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KEYWORDS
FIGO; Gynecological cancer staging system; History

1. Introduction

Cancer staging is one of the fundamental activities in oncology and is of pivotal importance to the modern management of cancer patients. It is structured to represent a major prognostic factor in predicting patients’ outcome and lending order to the complex dynamic behavior of a cancer [1].

To optimally manage any malignant disease, certain factors must be taken into consideration: the site of origin of the disease, its biology, and the extent of the disease at the time of presentation, i.e., the stage of the tumor [2]. Tumor classification is generally conceived so that the clinical and/or pathological spread is stratified into 4 stages: Stage I refers to a tumor strictly confined to the organ of origin, hence of relatively small size; Stage II describes disease that has extended locally beyond the site of origin to involve adjacent organs or structures; Stage III describes disease that has extended locally beyond the site of origin to involve adjacent organs or structures; Stage IV represents more extensive involvement, i.e., wide infiltration reaching neighboring organs; and Stage IV represents clearly distant metastatic...
disease [3]. These 4 basic stages are then classified into sub-
stages, as a reflection of specific clinical, pathological, or
biological prognostic factors within a given stage [4].

One of the major purposes of cancer staging, agreed upon
internationally, is to offer a classification of a cancer’s extent
in order to provide a method of conveying one’s clinical
experience to others for the comparison of treatment meth-
ods without ambiguity.

To achieve this objective, staging systems should be
evidence-based and user-friendly [5]. They should also be
based on and updated according to the latest available
knowledge, thus implying that cancer staging systems should
be responsive and adaptive to scientific development [1,6].
However, the contrary also applies in that knowledge and
developments in the field of oncology inevitably benefit from
staging, which helps produce new data on similar groups of
patients as well as to facilitate clinical research [7].

Over the years, all staging systems for gynecological mal-
ignancies – with the exception of cervical cancer and
gestational trophoblastic neoplasia – have shifted from a
clinical to a surgical–pathological basis [8,9].

In addition, it should be remembered that staging was not
proposed as a means for determining therapy, and certainly
in many situations it has been used to guide therapy by
individual investigators, although a certain modality might
not be agreeable to all [9].

2. History of the staging system

2.1. The early years

The rules for classification and staging of malignant tumors
of the female genital tract adopted by the International
Federation of Gynecology and Obstetrics (FIGO) originated
in the work carried out by the Radiological Sub-Commission
of the Cancer Commission of the Health Organization of the
League of Nations. In 1928, the Radiological Sub-Commission
assigned the task of exploring the possibility of producing
uniform statistical information on the results of radio-
therapeutic treatment methods for uterine cervical cancer
to Professor J. Heyman (the Radiumhemmet, Stockholm,
Sweden), Dr A. Lacassagne (Radium Institute of the
University of Paris, France) and Professor F. Voltz (Munich,
Germany) [10,11]. This group of experts recommended that the
task could only be accomplished if various institutions could
produce statistical information collected in a consistent
manner for analysis and evaluation. They also stressed the
absolute necessity of a uniform method to describe the ex-
tent of the disease [12,2]. This led to an international clas-
sification system for grouping cervical cancer patients based
on clinical examination and on the anatomic extent of the
disease. This staging classification was designed to mimic the
natural history of the disease, i.e., the different stages rep-
resenting the progressive growth of the tumor.

Such recommendations – adopted by the Sub-Commission
with minor modifications – were published in 1929 and
became known as the League of Nations Classification for
Cervical Cancer [13]. Although the recommendations for
collecting and analyzing materials were subsequently adopt-
ed in several countries, their acceptance and widespread use
did not immediately occur.

In 1934 the Health Organization held a conference in
Zurich, attended by former members of the Sub-Commission
and other international experts, to discuss what further ac-
tion might be pursued to facilitate wider endorsement and
adoption of these principles. This conference recommended
that a publication in the form of a medical report should be
issued annually by the Health Organization analyzing the
results of treatment with radiotherapy in cervical cancer
patients, estimated after an observation of 5 or more years.
The recommendations of the Zurich conference were
adopted by the Health Committee in 1935 and subsequently
an Advisory Committee, chaired by Professor Heyman, was
appointed to carry out this task. The first 3 volumes ap-
ppeared in 1937, 1938, and 1939 with the title “Annual
Report” and were published by the Health Organization of
the League of Nations, which also bore the financial respon-
sibility. These volumes contained only the results of cervical
cancer patients treated with radiotherapy, but indicated the
hope that future reports would be expanded to include ma-
terial relating to cases of carcinoma of the corpus uteri and
of the vagina [14]. The main objective of the Annual Report
was to provide the greatest possible comparability between
therapeutic statistics in order to ensure reliable evaluation
of the different treatment methods employed [15].

In 1938, in an attempt to promote more uniform grouping
of cases, to minimize variation, and to secure comparabil-
ities and statistics for the Annual Report, Heyman and M
Strandquist (Radiumhemmet) published the first “Atlas on
Cervical Cancer Staging,” a pocket-sized booklet with defi-
nitions, staging diagrams, and with descriptive text in Eng-
ish, French, and German [15].

The second Annual Report, published in 1938, contained
changes to the wording and definitions for the various stages
of cervical cancer and, as such, represented the first re-
corded changes made to the cervical cancer staging system.

In 1949 Heyman outlined the following requirements
needed to provide acceptable tumor classifications: (1) the
definition of the different stage groups should be as simple
and precise as possible; (2) the rules for allocating cases to
their appropriate stages should be easily interpreted so that
they could be applied in a uniform way by the examining
clinicians; (3) each stage should be differentiated from the
other by characteristics easily recognized on clinical exam-
ination, even by a less experienced examiner; and (4) the
system of stage grouping should be sufficiently complete to
include every possible type of cancer case [15,16]. Further
changes were made in 1950 when the Editorial Committee
met in New York (with 9 American representatives) at the
International Gynecological Congress and Fourth American
Congress of Obstetrics and Gynecology. This joint group
agreed on several modifications to the classification adopted
by the Health Organization of the League of Nations. It re-
commended that the new classification should be called ”The
International Classification of the Stages of Carcinoma of the
Uterine Cervix” and that all organizations concerned with this
problem should be approached to consider its adoption.

Since then, 7 changes have been made to the staging system
for cervical cancer, with the most recent in 1994. Almost all of
these changes were relevant to Stage I cervical cancer [17].

With the outbreak of World War II work on the Annual Report
came to a standstill until 1945, when Heyman established the
In 1953 Volume 8 of the Annual Report presented, for the first time, the results of treatment on the carcinoma of the corpus uteri. Volume 13, published in 1964, contained the first data on vaginal cancer. Subsequently, similar statistics on ovarian and vulvar cancer were first published in Volume 15 (1973) and Volume 17 (1979), respectively. Since its inception, the Annual Report has been inevitably entwined with the development and changes of gynecological cancer classification and staging.

### 2.2. The FIGO years

In 1958 FIGO became the official patron of the Annual Report. Volume 12, issued in 1961, became the first report published under its auspices. However, the collection and publication of the report’s data continued to be primarily dependent on generous financial support from a variety of international cancer organizations and institutions, particularly the Radiumhemmet — where the Editorial Office was located until 1994. In that year Professor Folke Pettersson (the third Editor of the Annual Report) retired and the FIGO Executive Board appointed Professor Sergio Pecorelli as the new Editor. The Editorial Office was then transferred to the European Institute of Oncology in Milan, Italy.

#### Table 1 Carcinoma of the vulva: FIGO nomenclature

<table>
<thead>
<tr>
<th>Stage</th>
<th>Lesion Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Carcinoma in situ, intraepithelial neoplasia Grade III.</td>
</tr>
<tr>
<td>Stage I</td>
<td>Lesions ≤ 2 cm in size, confined to the vulva or perineum, no nodal metastasis</td>
</tr>
<tr>
<td>Stage II</td>
<td>Tumor confined to the vulva and/or perineum; &gt; 2 cm in greatest dimension, no nodal metastasis</td>
</tr>
<tr>
<td>Stage III</td>
<td>Tumor of any size with adjacent spread of the lower urethra and/or the vagina, or the anus, and/or unilateral regional lymph node metastasis</td>
</tr>
<tr>
<td>Stage IV</td>
<td>Any distant metastasis including pelvic lymph nodes</td>
</tr>
</tbody>
</table>

#### Table 2 Carcinoma of the vagina: FIGO nomenclature

<table>
<thead>
<tr>
<th>Stage</th>
<th>Lesion Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Carcinoma in situ, intraepithelial neoplasia Grade III.</td>
</tr>
<tr>
<td>Stage I</td>
<td>The carcinoma is limited to the vaginal wall</td>
</tr>
<tr>
<td>Stage II</td>
<td>The carcinoma has involved the subvaginal tissue but has not extended to the pelvic wall</td>
</tr>
<tr>
<td>Stage III</td>
<td>The carcinoma has extended to the pelvic wall</td>
</tr>
<tr>
<td>Stage IV</td>
<td>The carcinoma has extended beyond the true pelvis or has involved the mucosa of the bladder or rectum; bullous edema as such does not permit a case to be allotted to Stage IV</td>
</tr>
</tbody>
</table>


#### Table 3 Carcinoma of the cervix uteri: FIGO nomenclature (Montreal, 1994)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Lesion Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0</td>
<td>Carcinoma in situ, cervical intraepithelial neoplasia Grade III.</td>
</tr>
<tr>
<td>Stage I</td>
<td>The carcinoma is strictly confined to the cervix (extension to the corpus would be disregarded).</td>
</tr>
<tr>
<td>Stage II</td>
<td>Cervical carcinoma invades beyond uterus, but not to the pelvic wall or to the lower third of vagina</td>
</tr>
<tr>
<td>Stage III</td>
<td>The carcinoma has extended to the pelvic wall.</td>
</tr>
</tbody>
</table>


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In 1958 FIGO became the official patron of the Annual Report. Volume 12, issued in 1961, became the first report published under its auspices. However, the collection and publication of the report’s data continued to be primarily dependent on generous financial support from a variety of international cancer organizations and institutions, particularly the Radiumhemmet — where the Editorial Office was located until 1994. In that year Professor Folke Pettersson (the third Editor of the Annual Report) retired and the FIGO Executive Board appointed Professor Sergio Pecorelli as the new Editor. The Editorial Office was then transferred to the European Institute of Oncology in Milan, Italy.
The first 3 volumes were published annually. Subsequent volumes were issued at irregular intervals, although an attempt was made to publish the report annually between 1951 and 1955. Since 1973 the "Annual Report on the Results of Treatment in Gynecological Cancer" has been published every 3 years to coincide with the FIGO World Congress. It is published under the supervision of the FIGO Committee on Gynecologic Oncology, which deals with all questions concerning rules for classification and stage grouping, thus promoting and periodically revising cancer staging [12].

From the initial group of 6 institutions contributing to the Annual Report (the Center for Tumors at the University of Brussels, Belgium; Liverpool Radium Institute, UK; London Marie Curie Hospital, UK; the Radium Centre for Carcinoma of the Uterus, London, UK; the Institute of Radium at the University of Paris, France; and the Radiumhemmet, Sweden), the number of contributing institutions and centers has been constantly growing. By Volume 26, published in October 2006, there were 108 centers with a total of 34,414 cases for the descriptive analysis [18].

In 1954 the International Union Against Cancer (UICC) appointed a committee with the task of establishing the rules for classification and clinical staging of malignant tumors and the presentation of therapeutic results. A tumor-node-metastasis (TNM) classification for carcinoma of the cervix uteri was proposed by this Committee in 1966, which took into great consideration the experience gained by the FIGO stage grouping.

In the United States the American Joint Committee for Cancer Staging and End Results Reporting (today known as the American Joint Committee on Cancer, AJCC) was organized in 1959 with the aim of developing a system of clinical staging of cancer by site acceptable to the US medical profession. In 1976 the AJCC accepted the FIGO stage grouping for gynecological cancers [19].

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### Table 4  Carcinoma of the corpus uteri: surgical staging classification (FIGO nomenclature, Rio de Janeiro, 1988)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>Tumor limited to the endometrium</td>
</tr>
<tr>
<td>Ib</td>
<td>Invasion to less than half of the myometrium</td>
</tr>
<tr>
<td>Ic</td>
<td>Invasion equal to or more than half of the myometrium</td>
</tr>
<tr>
<td>IIa</td>
<td>Endocervical glandular involvement only</td>
</tr>
<tr>
<td>IIb</td>
<td>Cervical stromal invasion</td>
</tr>
<tr>
<td>IIla</td>
<td>Tumor invades the serosa of the corpus uteri and/or adnexae and/or positive cytological findings</td>
</tr>
<tr>
<td>IIlb</td>
<td>Vaginal metastases</td>
</tr>
<tr>
<td>IIIC</td>
<td>Metastases to pelvic and/or para-aortic lymph nodes</td>
</tr>
<tr>
<td>IVa</td>
<td>Tumor invasion of bladder and/or bowel mucosa</td>
</tr>
<tr>
<td>IVb</td>
<td>Distant metastases, including intra-abdominal metastasis and/or inguinal lymph nodes</td>
</tr>
</tbody>
</table>


### Table 5  Carcinoma of the Fallopian tube: FIGO nomenclature (Singapore, 1991)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Carcinoma in situ (limited to tubal mucosa)</td>
</tr>
<tr>
<td>Ia</td>
<td>Growth limited to the Fallopian tubes</td>
</tr>
<tr>
<td>Ib</td>
<td>Growth is limited to both tubes, with extension into the submucosa and/or muscularis, but not penetrating the serosal surface; no ascites</td>
</tr>
<tr>
<td>Ic</td>
<td>Tumor either Stage Ia or Ib, but with tumor extension through or onto the tubal serosa, or with ascites present containing malignant cells, or with positive peritoneal washings</td>
</tr>
<tr>
<td>IIa</td>
<td>Extension and/or metastasis to the uterus and/or ovaries</td>
</tr>
<tr>
<td>IIb</td>
<td>Extension to other pelvic tissues</td>
</tr>
<tr>
<td>IIc</td>
<td>Tumor either Stage IIa or IIb and with ascites present containing malignant cells or with positive peritoneal washings</td>
</tr>
<tr>
<td>IIIa</td>
<td>Tumor involves one or both Fallopian tubes, with peritoneal implants outside the pelvis and/or positive retroperitoneal or inguinal nodes. Superficial liver metastasis equals Stage III. Tumor appears limited to the true pelvis, but with histologically-proven malignant extension to the small bowel or omentum</td>
</tr>
<tr>
<td>IIIb</td>
<td>Tumor involving one or both tubes, with histologically-confirmed implants of abdominal peritoneal surfaces, none exceeding &gt;2 cm in diameter. Lymph nodes are negative</td>
</tr>
<tr>
<td>IIIc</td>
<td>Abdominal implants &gt;2 cm in diameter and/or positive retroperitoneal or inguinal nodes</td>
</tr>
<tr>
<td>IVa</td>
<td>Growth involving one or both Fallopian tubes with distant metastases. If pleural effusion is present, there must be positive cytology to be Stage IV. Parenchymal liver metastases equals Stage IV</td>
</tr>
</tbody>
</table>

Over the past 70 years the system for gynecologic cancer staging has gradually been modified to cope with the explosive growth in medical research and practice, particularly in the field of oncology [20]. Over the last 30 years all changes to the FIGO classification and staging system have been extensively discussed by the FIGO Committee on Gynecologic Oncology and put forward in agreement with and approved by the UICC TNM Committee, the AJCC, and the World Health Organization. Tables 1–7 provide the current FIGO staging classifications published in the Twenty-sixth Volume of the FIGO Annual Report [21]. Over the years the UICC, AJCC, and FIGO have modified their
staging systems for gynecological cancers so that all 3 systems are virtually identical [2]. Currently, an agreement between the 3 bodies ensures comparability of staging classifications for gynecologic malignancies and their representatives meet annually. The interaction among these bodies has led to the creation of uniform information shared within the scientific community [22], thereby promoting continuous uniformity between all bodies. Further and joint efforts are constantly made to unify the FIGO and TNM classifications. Future efforts should focus on major issues such as the possible inclusion of residual tumor into classifications since we know that, in several neoplasias, the residual tumor status is one of the strongest outcome predictors after treatment; the possible inclusion in classifications of new concepts regarding tumor spread such as the detection of isolated tumor cells in regional lymph nodes, blood, bone marrow, or biopsies; and the classification of findings in sentinel node biopsies [23].

### 3. Conclusion

A good staging system must have 3 basic characteristics: it must be valid, reliable, and practical. A valid staging system should make suggestions on the setting up of patients’ groups experiencing similar outcomes and must reflect the full range of possible clinical manifestations for each type of cancer. In order to retain its validity, the staging system must be flexible and adaptable to significant scientific changes. A reliable staging system should ensure that identical cases are always assigned to the same stage category. It should not be ambiguous and must respond to the necessary changes when

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**Table 6** Carcinoma of the ovary: FIGO nomenclature (Rio de Janeiro 1988)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Growth Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>Growth limited to one ovary: no ascites present</td>
</tr>
<tr>
<td>Ib</td>
<td>Growth limited to both ovaries: no ascites present</td>
</tr>
<tr>
<td>Ic</td>
<td>Either stage Ia or Ib, but with tumor on surface</td>
</tr>
<tr>
<td>IIa</td>
<td>Extension and/or metastases to the uterus and/or</td>
</tr>
<tr>
<td>IIb</td>
<td>Extension to other pelvic tissues</td>
</tr>
<tr>
<td>IIc</td>
<td>Tumor either Stage IIa or IIb, but with tumor on</td>
</tr>
<tr>
<td>IIIa</td>
<td>Tumor grossly limited to the true pelvis, with</td>
</tr>
<tr>
<td>IIIb</td>
<td>Tumor of one or both ovaries with histologically-</td>
</tr>
<tr>
<td>IIIc</td>
<td>Peritoneal metastasis beyond the pelvis &gt;2 cm in</td>
</tr>
<tr>
<td>IV</td>
<td>Growth involving one or both ovaries with</td>
</tr>
</tbody>
</table>

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**Table 7** GTN: FIGO staging and classification (Washington, 2000)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Disease confined to the uterus</td>
</tr>
<tr>
<td>II</td>
<td>GTN extends outside of the uterus, but is limited</td>
</tr>
<tr>
<td>III</td>
<td>GTN extends to the lungs, with or without known</td>
</tr>
<tr>
<td>IV</td>
<td>All other metastatic sites</td>
</tr>
</tbody>
</table>

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**Table 7** Modified WHO prognostic scoring system as adapted by FIGO

<table>
<thead>
<tr>
<th>Scores</th>
<th>Age</th>
<th>Antecedent pregnancy</th>
<th>Interval months from index pregnancy</th>
<th>Pretreatment serum hCG (IU/l)</th>
<th>Largest tumor size (including uterus)</th>
<th>Site of metastases</th>
<th>Number of metastases</th>
<th>Previous failed chemotherapy</th>
<th>Drug</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>&lt;44</td>
<td>Mole</td>
<td>&lt;4</td>
<td>&lt;10³</td>
<td>&lt;3</td>
<td>Lung</td>
<td>1–4</td>
<td>Single drug</td>
<td>5–8</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>≥40</td>
<td>Abortion</td>
<td>4–6</td>
<td>10³–10⁴</td>
<td>3–4 cm</td>
<td>Spleen, kidney</td>
<td>1–4</td>
<td>2 or more drugs</td>
<td>5–8</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>–</td>
<td>Term</td>
<td>7–12</td>
<td>10⁴–10⁵</td>
<td>≥5 cm</td>
<td>Gastro-intestinal</td>
<td>–</td>
<td>–</td>
<td>&gt;8</td>
<td>–</td>
</tr>
<tr>
<td>4</td>
<td>–</td>
<td>–</td>
<td>&gt;12</td>
<td>&gt;10⁵</td>
<td>–</td>
<td>Liver, brain</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

---

sufficient data and information are obtained to warrant them. A practical staging system must be user-friendly and suitable for use in different clinical environments. It should not require specific diagnostic procedures that are unavailable to most practitioners world-wide, or extraordinary expertise.

It is inevitable that changes will, of necessity, occur as more data and information emerge regarding molecular markers and mechanisms, as will a more precise understanding of the actual genetic factors and aberrations involved in cancer etiology and pathogenesis [24]. An increasing awareness of prognostic scoring systems and the incentive to adopt them is already evident and will play a major role in future classification systems [25]. As scientists responsible for maintaining, modifying, and proposing changes to the existing staging systems, we indeed feel we shoulder an enormous responsibility to make the appropriate changes timely, wisely, and based on sound scientific data.

Websites for further information

FIGO: www.figo.org
Global Call to Stop Cervical Cancer: www.cervicalcanceraction.org/home/home.php
International Union Against Cancer: www.uicc.org
American Joint Committee on Cancer: www.cancerstaging.org/
National Cancer Institute: www.cancer.gov/
American Cancer Society: www.cancer.org
European Society of Gynaecological Oncology (ESGO): www.esgo.org
Society of Gynecologic Oncologists (SGO): www.sgo.org
International Gynecologic Cancer Society (IGCS): www.igcs.org
International Society of Gynecological Pathologists (ISGYP): www.isgyp.com

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