

Autopsy case

Cervix carcinoma

67-year-old woman

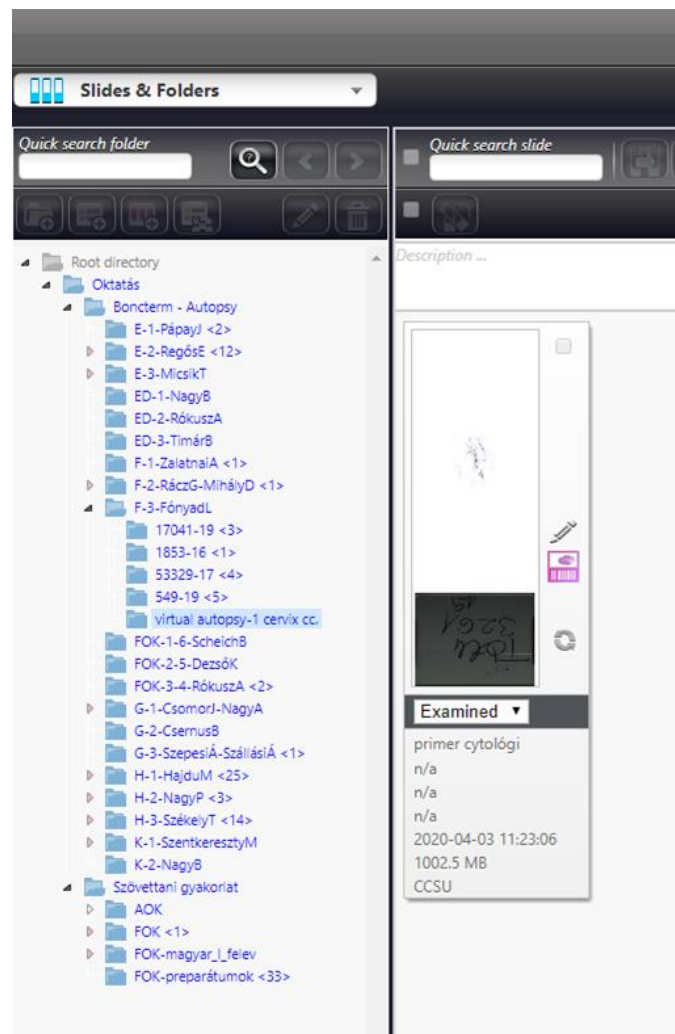
László Fónyad MD, PhD

András Rókusz MD

Eszter Regős MD

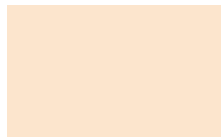
Content

- The smears and slides have been scanned.
- Representative pictures are provided in the presentation.
- The digitalised slides could be opened by clicking on the representative pictures or directly on the server for faster access.
- Server link:
 - [Http://casecenter.korb1.sote.hu/CaseCenter/](http://casecenter.korb1.sote.hu/CaseCenter/)
 - usn/pw: tanulo/korb1
 - oktatás/boncterem/F-3-FónyadL/virtual autopsy-1 cervix cc mappában találják (picture provided)



Content


- In the slides further homepages and suggested readings are provided. These links are NOT part of the pathology exam, but hopefully it helps the students to understand the topic.
- Due to the limited amount of autopsy gross pictures, international resources have been used with adequate source designation.
- Beside the autopsy case presentation the theoretical background is highlighted with peach-colored background.



67
AI 67é. nő kórboncolási esete - cervix rosszindulatú daganata

ANAMNÉZIS

- Általános anamnézis
 - 20 éve HT
 - Általános érlemeszesedés
 - 61 évesen [TIA](#) kapcsán felfedezett [pitvarfibrilláció](#) (PM beültetés)
 - Dohányzás - 40 [pack-year](#)
- Alapbetegsége
 - 64 évesen cytológiai vizsgálattal felfedezett méhnyak-folyamat: Cervix invazív laphámcarcinómája
 - Komplex onkológiai ellátás (l.d. később)
 - Ismert multiplex [metastasisok](#)

A screenshot of a medical record page. The page has a blue header with the text "Egyesített elektronikus betegazonosító". Below the header, there is a section titled "Egyesített elektronikus betegazonosító" with a search bar and a list of results. The first result is "Cervix invazív laphámcarcinómája" with a date of "2023.01.10". The page also shows a "Kórtörténet" section with a list of diagnoses and dates.

Content

- Last hospital admission before death
 - Medical history, Symptoms, Treatment
- Clinical course:
 - On set of cervical cancer and primary treatment
 - Examination: cytology- HSIL (Etiology of cervical cancer, Bethesda system)
 - Surgical treatment: Conization, Invasive squamous cell carcinoma (Staging system of cervical cancer)
 - 1st Tumorboard: Clinical staging (Surgical treatment options for cervical cancer)
 - Operation: RH-BSO-PLND/Wertheim (Grossing technique of hysterectomies)
 - 2nd Tumorboard: Adjuvant therapy (Radiotherapy treatment options for cervical cancer)
 - Progression of cancer
 - 3rd Tumorboard: Clinical restaging: metastasis (General treatment options for cervical cancer)
- Death:
 - Autopsy results and report

Medical history

- General medical history
 - Hypertension for 20 years
 - General atherosclerosis
 - At the age of 61: TIA due to, atrial fibrillation (AF), Pacemaker implantation
 - Smoking: 40 pack-year (PY)
- Basic disease:
 - At age of 64: squamous cell carcinoma diagnosed by cytology
 - Oncology treatment (see later)
 - Known multiplex metastasis

COVID-19 Resources
Mayo Clinic is using its expertise to address the COVID-19 pandemic.

COVID-19 Information

MAYO CLINIC

Search Mayo Clinic

Request an Appointment
Find a Doctor
Find a Job
Give Now

Log in to Patient Account
English

Patient Care & Health Info | Departments & Centers | Research | Education | For Medical Professionals | Products & Services | Giving to Mayo Clinic

Patient Care & Health Information > Diseases & Conditions

Transient ischemic attack (TIA)

[Request an Appointment](#)

Symptoms & causes | Diagnosis & treatment | Doctors & departments | Care at Mayo Clinic

Overview

A transient ischemic attack (TIA) is a temporary period of symptoms similar to those of a stroke. A TIA usually lasts only a few minutes and doesn't cause permanent damage.

Often called a ministroke, a transient ischemic attack may be a warning. About 1 in 3 people who has a transient ischemic attack will eventually have a stroke, with about half occurring within a year after the transient ischemic attack.

A transient ischemic attack can serve as both a warning of a future stroke and an opportunity to prevent it.

Symptoms

Transient ischemic attacks usually last a few minutes. Most signs and symptoms disappear within an hour, though rarely symptoms may last up to 24 hours. The signs and symptoms of a TIA resemble those found early in a stroke and may include sudden onset of

Advertisement

Mayo Clinic does not endorse companies or products. Advertising revenue supports our not-for-profit mission.

Advertising & Sponsorship
[Policy](#) | [Opportunities](#) | [Ad Choices](#)

Mayo Clinic Marketplace
Check out these best-sellers and special offers on books and newsletters from Mayo Clinic.

[Coronavirus - Free Special Report](#)

[Mayo Clinic A to Z Health Guide](#)

[Simple, effective home remedies](#)

[Guide to raising a healthy child](#)

[Live stronger and healthier at any age](#)

Medical history

- First period: age 13
- Pregnancy: 4
 - 2: vaginal delivery (PVN, per vias naturales)
 - 1: miscarriage
 - 1: abortion
- Last period: age 51
- Last cervical screening: age 45, negative
- Contraception: hormonal treatment for 6 years, IUD before menopause

Symptoms

- Hospital admission:
 - End-stage cancer patient with dyspnoea and weakness
- Status:
 - Cachexia
 - Dull percussion sound on the chest wall
 - Confused state of consciousness

Examination, treatment, death

- Lab tests:
 - Elevated inflammatory parameters
 - Elevated CA-125 (Tumormarker)
- Radiolgy:
 - Chest X-ray:
Bronchopneumonia,
Progression of known
metastastatic lesions



Examination, treatment, death

- Due to the end-stage disease:
 - BSC (best supportive care)
 - Treating cancer pain
 - No active oncology treatment
- Death on the second day

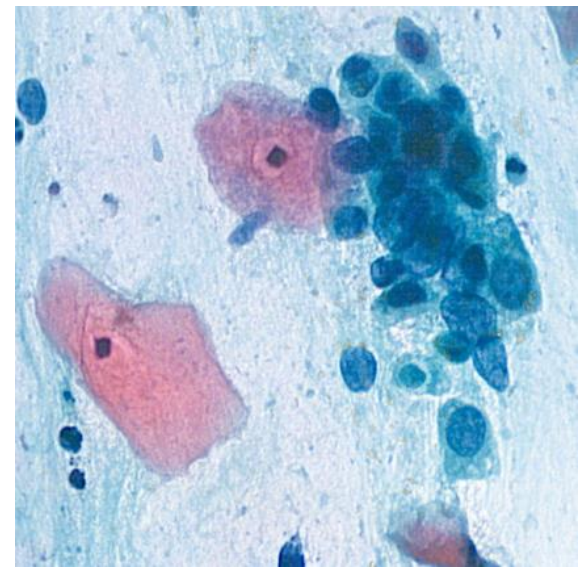
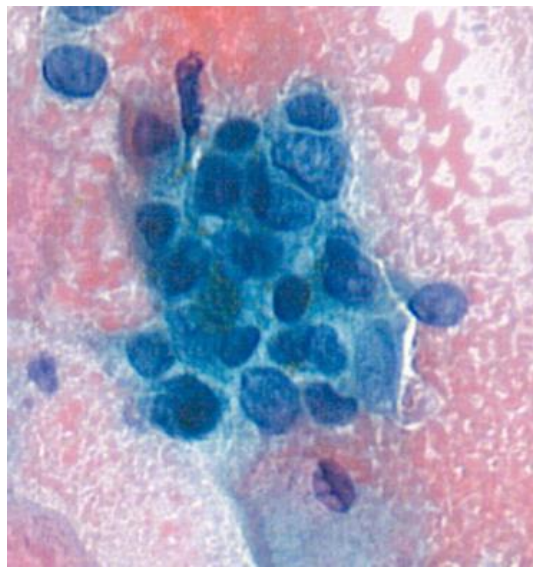
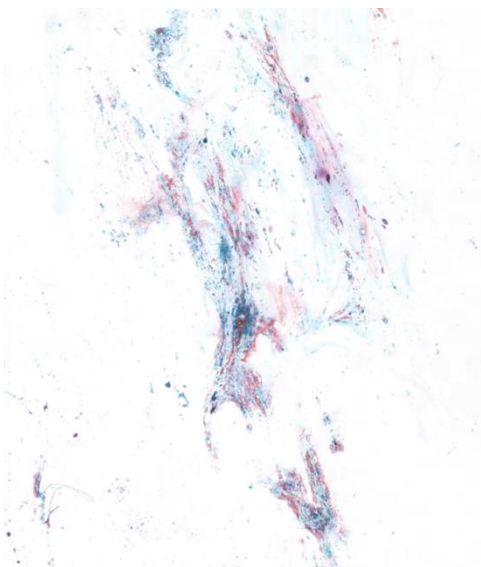
Clinical course

Cervical cancer onset

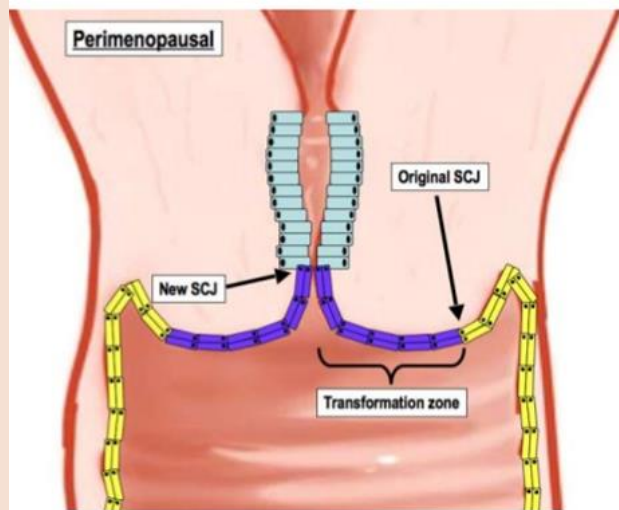
Primary treatment

Clinical course- Onset, primary treatment

- Age 64: heavy vaginal discharge, gynecology examination
- Cytology: HSIL - cervicalis high grade squamous intraepithelialis lesio



Bethesda system



- TZ: transformation zone: columnar epithelial- metaplastic epithelial layer
- SCJ: squamo-columnar junction
 - Precursor lesion

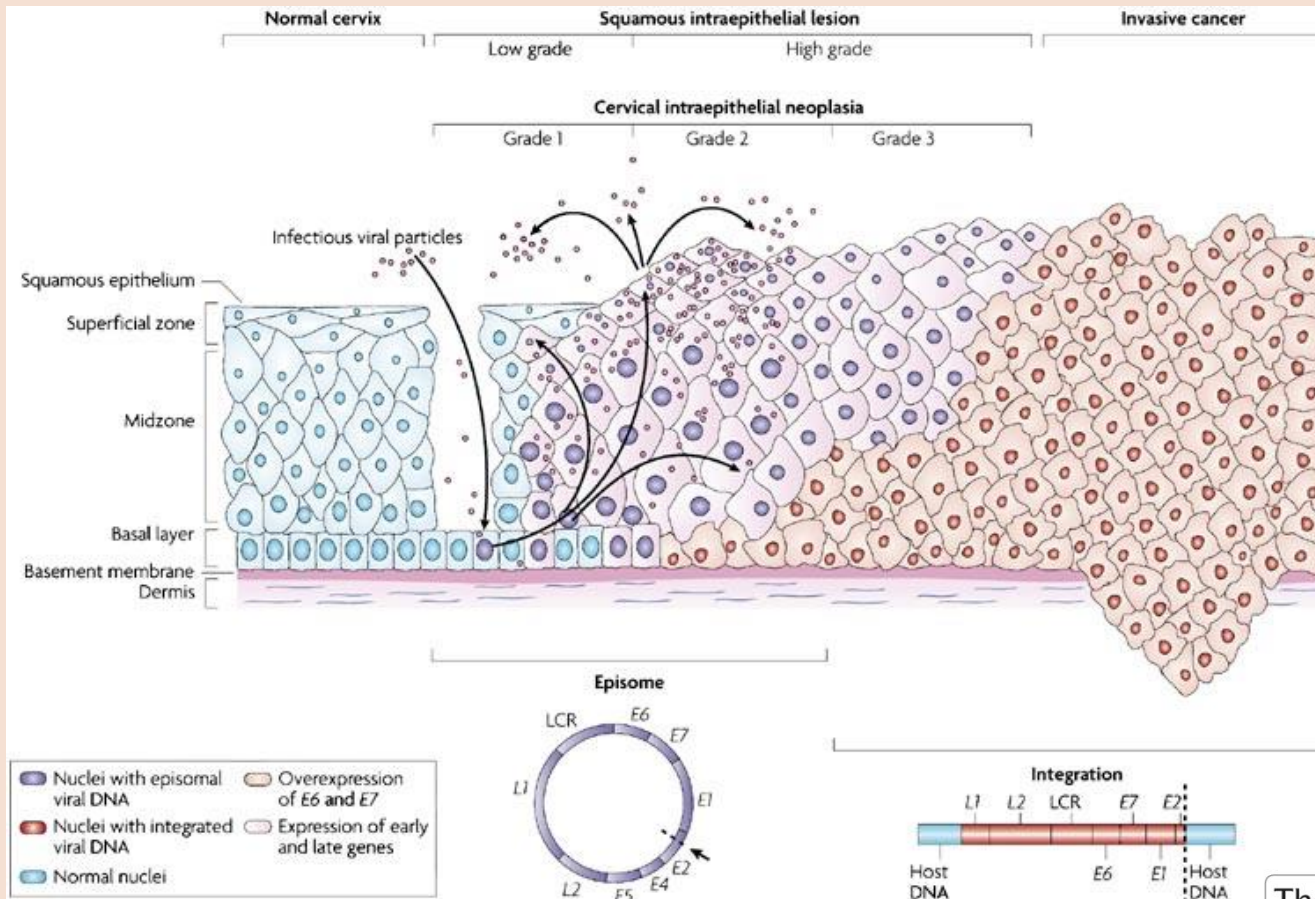
A discrete population of squamocolumnar junction cells implicated in the pathogenesis of cervical cancer

Michael Herfs^{a,b}, Yusuke Yamamoto^c, Anna Laury^d, Xia Wang^e, Marisa R. Nucci^f, Margaret E. McLaughlin-Drubin^g, Karl Mürger^h, Sarah Feldman^g, Frank D. McKeon^{e,h,1,2}, Wa Xian^{a,h,1,2}, and Christopher P. Crum^{a,1,2}

^aDivision of Women's and Perinatal Pathology, Department of Pathology, Brigham and Women's Hospital, Boston, MA 02115; ^bDepartment of Pathology, Groupe Interdisciplinaire de Génomique Appliquée (GIGA)-Cancer, University of Liège, Liège, Belgium; ^cGenome Institute of Singapore, Agency for Science, Technology and Research (A*STAR), Singapore 138672; ^dDepartment of Pathology, School of Medicine, University of California, Los Angeles, CA 90095; ^eDepartment of Cell Biology, Harvard Medical School, Boston, MA 02115; ^fDepartment of Medicine, Channing Laboratory, Brigham and Women's Hospital, Boston, MA 02115; ^gDepartment of Obstetrics and Gynecology and Reproductive Biology, Brigham and Women's Hospital, Boston, MA 02115; and ^hInstitute of Medical Biology, A*STAR, Singapore 138648

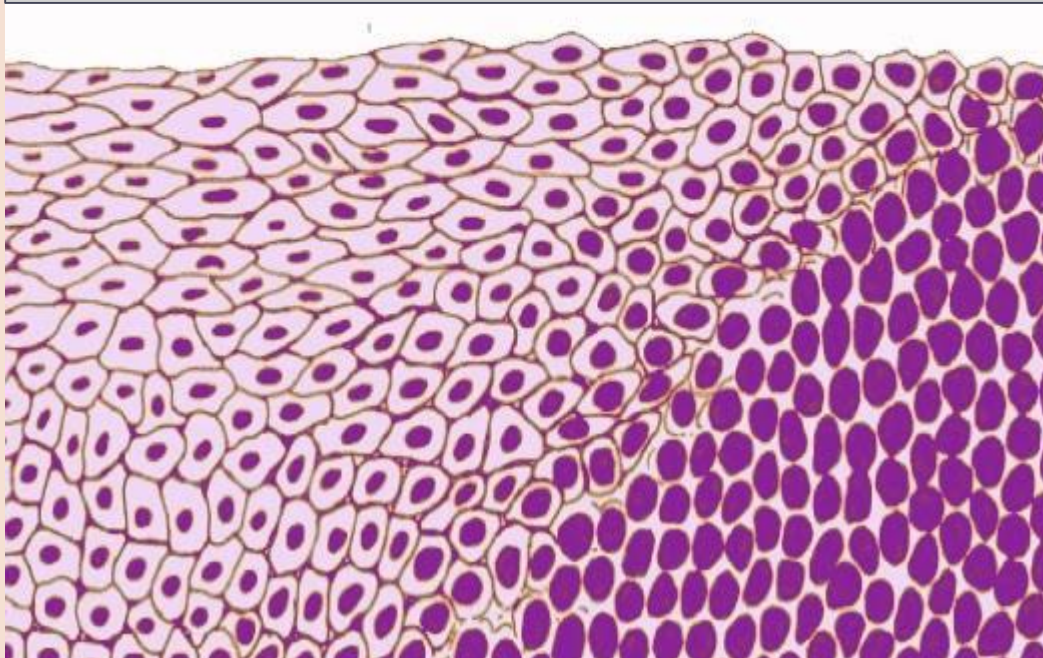
Edited by Douglas R. Lowy, National Cancer Institute, Bethesda, MD, and approved May 8, 2012 (received for review February 19, 2012)

Bethesda system



The natural history of cervical HPV infection: unresolved issues

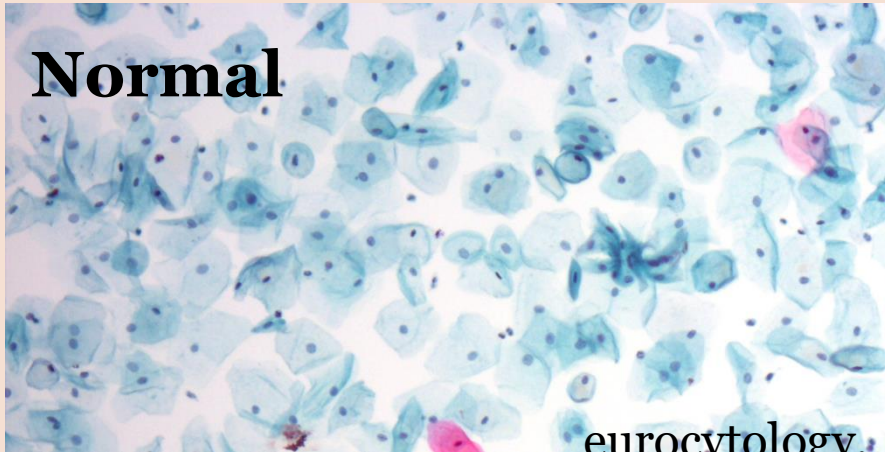
Bethesda system

LSIL	HSIL
Condyloma, CIN-1	CIN-2 CIN-3
	

- Morphological spectrum not evolution!

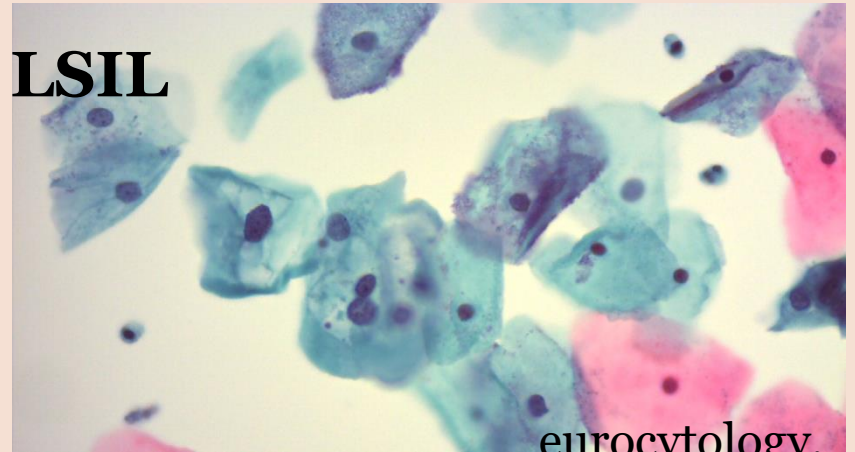
Bethesda system

Normal



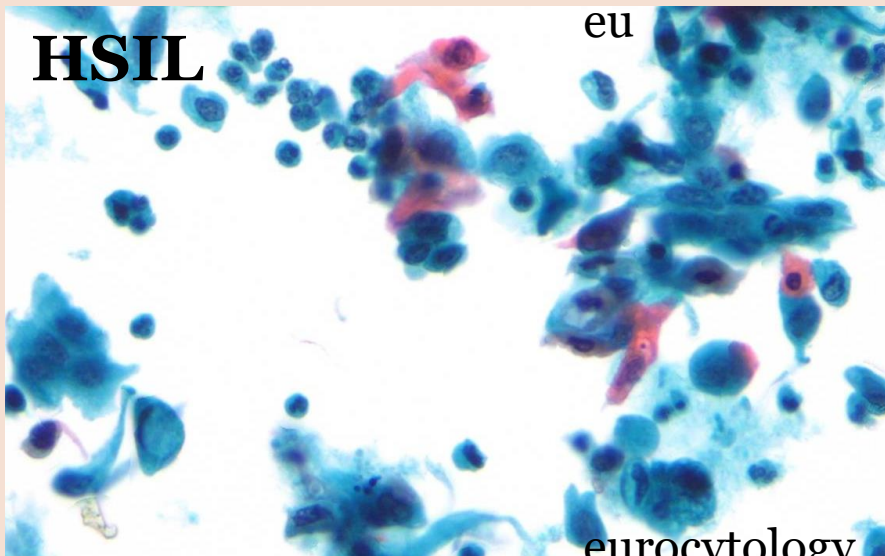
eurocytology.

LSIL



eurocytology.

HSIL



eu

eurocytology.

CINtec Plus pozite



eu

Bethesda system

- Bethesda system:
 - Standard reporting system
 - Uncertainty

BETHESDA 2001 CYTOLÓGIAI VIZSGÁLATI LAP

Név:	AZONOSÍTÓSZÁM: <div style="border: 1px solid black; width: 150px; height: 30px; float: right;"></div>
Lakcím:	
TAJ szám: Szül. idő: év hó nap	Kenetnevő védőnő Sorszáma:
Utolsó menstruáció:	Telefonszáma:

Kenetvétel ideje:

*Kolposzkópos dg: normál ☐ kóros ☐ éspedig:

Jelenleg terhes: nem ☐ igen ☐ laktál ☐

Fogamzásgátlás: nem ☐ igen ☐ éspedig: IUD: ☐ hormon ☐ egyéb ☐

*Előzmény:

*cytológia: nem ☐ igen ☐ hol: mikor eredmény

*szövetten: nem ☐ igen ☐ Dg.:

*műtét: nem ☐ igen ☐ éspedig:

kezelés: hormon nem ☐ igen ☐ éspedig:

egyéb: nem ☐ igen ☐ éspedig:

*Eszközös vétel: nem ☐ igen ☐

Kenet ☐ Pap. ☐ L.B. ☐ Automatikus

Kenet értékelhetősége

☐ Feldolgozott ☐ Nem feldolgozott

☐ de ☐ Endocervicalis/transformatív

☐ Értékelhető ☐ zóna hiányzik

☐ Nem értékelhető ☐ Nem azonosítható kenet

☐ Elégtelen fixálás

☐ mert ☐ Sejtsejény

☐ Zavaró mértékű vér

☐ Zavaró mértékű lob

☐ Egyéb:

Kiegészítő tesztek

☐ A kenet általános minősítése

☐ Negatív, kóros, neoplastikus hámlváltozásokra

☐ Kóros, neoplastikus hámlváltozás

☐ Egyéb

Részletes vélemény

Kórokozók

☐ Trichomonas ☐ Actinomyces

☐ Gomba ☐ Herpes simplex vírus

☐ Vegyes baktérium ☐ Egyéb:

Egyéb, nem neoplastikus elváltozások

☐ Reaktív sejteltváltozásokkal járó

☐ Gyulladás (reparatio)

☐ Sugárhátas

☐ (IUD) Mechanikus hatás

☐ Atrophia

☐ Endometrium sejt ≥ 40 éves kor

☐ Egyéb:

Védőnő teendői:

☐ Negatív: 3 év múlva szűrés javasolt

☐ Gyulladás miatt nőgyógyászati vizsgálat javasolt

☐ Daganat gyanúja miatt nőgyógyászati vizsgálat kötelező

☐ Ismétlés szükséges a kenet technikai hibája miatt

Kóros neoplastikus hámlváltozások

Laphámsejtek

☐ Atypusos laphámsejtek (ASC)

☐ Nem meghatározható okból (ASC-US)

☐ Nem zárható ki HSIL (ASC-H)

☐ Enyhe fokú intraepithelialis laphám laesio (LSIL)

☐ HPV ☐ CIN 1

☐ Kifejezett fokú intraepithelialis laphám laesio (HSIL)

☐ CIN 2 ☐ CIN 3

☐ Invasio gyanúja

☐ Laphámsejtes carcinoma

Mirigyhámsejtek

☐ Atypusos mirigyhámsejtek (AGC-NOS)

☐ Endocervicalis sejtek

☐ Endometrialis sejtek

☐ Mirigyhámsejtek - NOS

☐ Atypusos mirigyhámsejtek, inkább neoplastikus (AGC)

☐ Endocervicalis sejtek

☐ Mirigyhámsejtek - NOS

☐ Endocervicalis adenocarcinoma in situ (AIS)

☐ Adenocarcinoma

☐ Endocervicalis

☐ Endometrialis

☐ Extrautein

☐ NOS

☐ Egyéb malignus tumor

Javaslat

☐ Ismétlés klinikai megítélés szerint

☐ Ismétlés kezelés után

☐ lobellens ☐ hormonális

☐ Ismétlés 3-6 hónap múlva

☐ HPV tipizálás

☐ Szövettenai vizsgálat

☐ Egyéb:

* Papanicolaou dg.: BNO-kód:

Beérkezés ideje: Lelet kelte: P.H.

cytológus először
szakasziszens

cytopathológus
szakorvos

*A kiöltés nem kötelező

Bethesda system

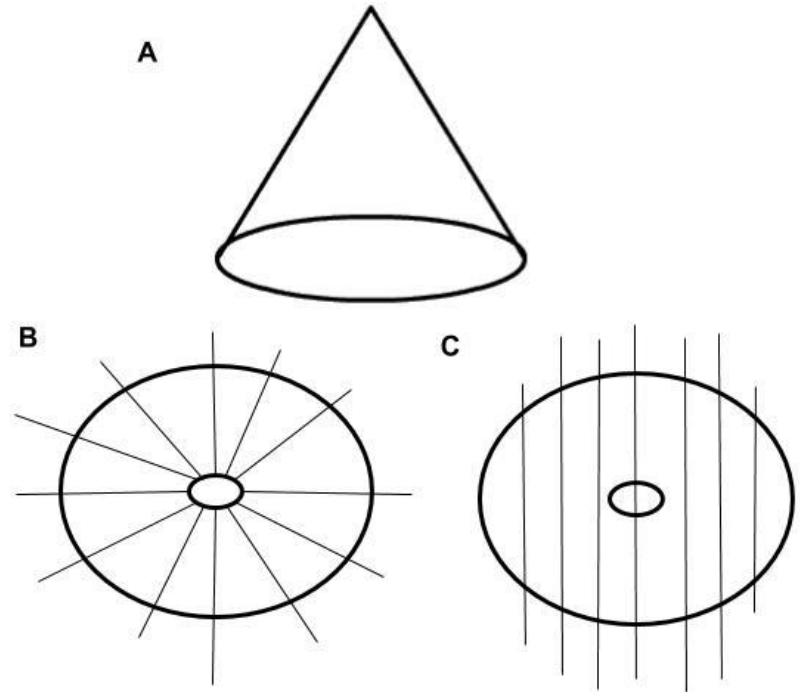
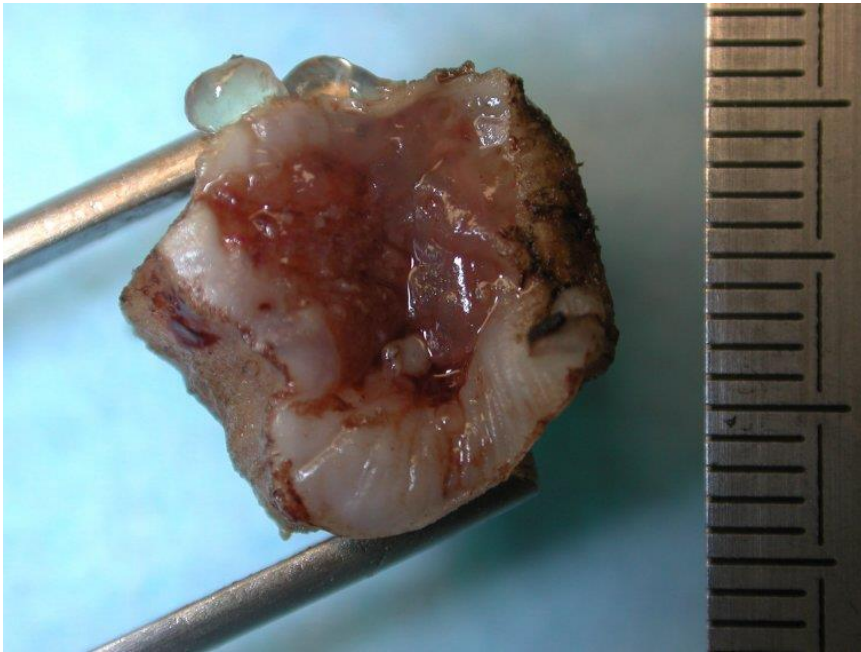
- Suggested readings
 - [Bethesda system](#)
 - Standardised cytology report
 - [British Society for Colposcopy and Cervical Pathology](#)
 - Educational resource and videos about cervical cancer
 - [Eurocytology](#)
 - Broad review on gynecology cytology with pictures

Clinical course- Onset, primary treatment

- Age 64: heavy vaginal discharge, gynecology examination
- Cytology: HSIL - cervicalis high grade squamousus intraepithelialis lesio
- HPV genotyping: HPV-16 positive
- Conization

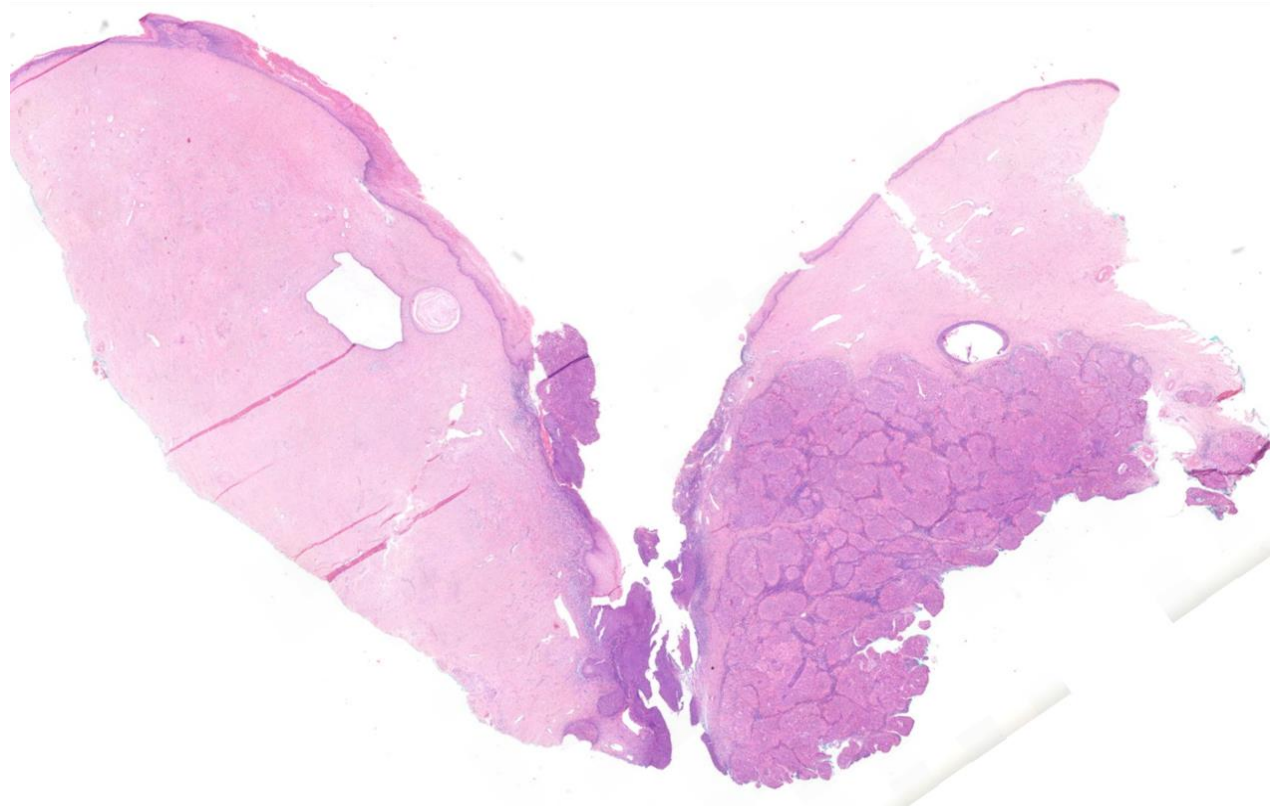
Clinical course- Onset, primary treatment

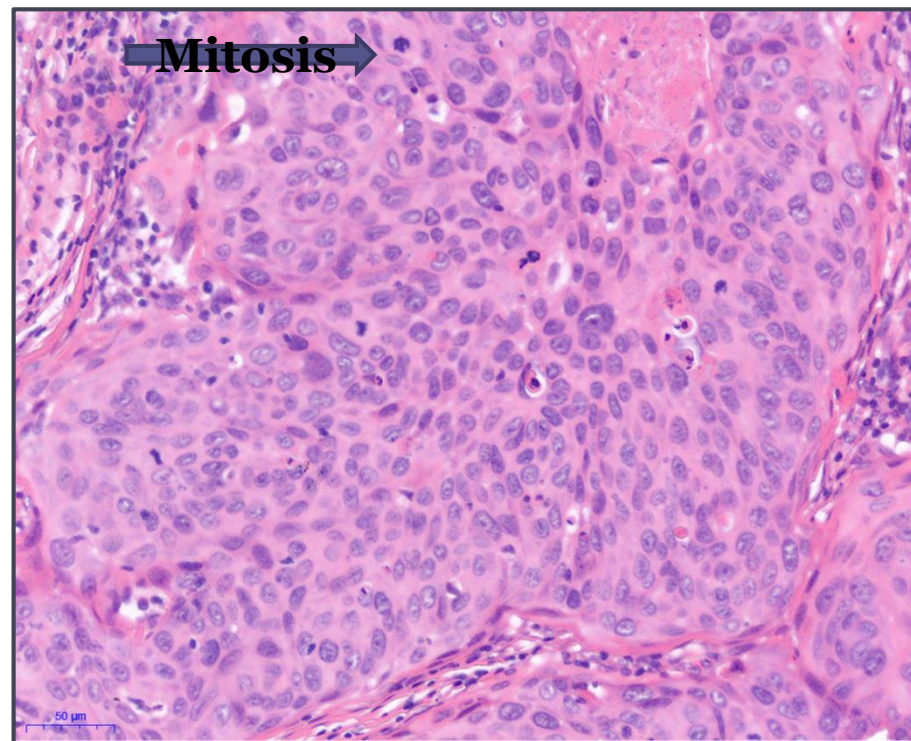
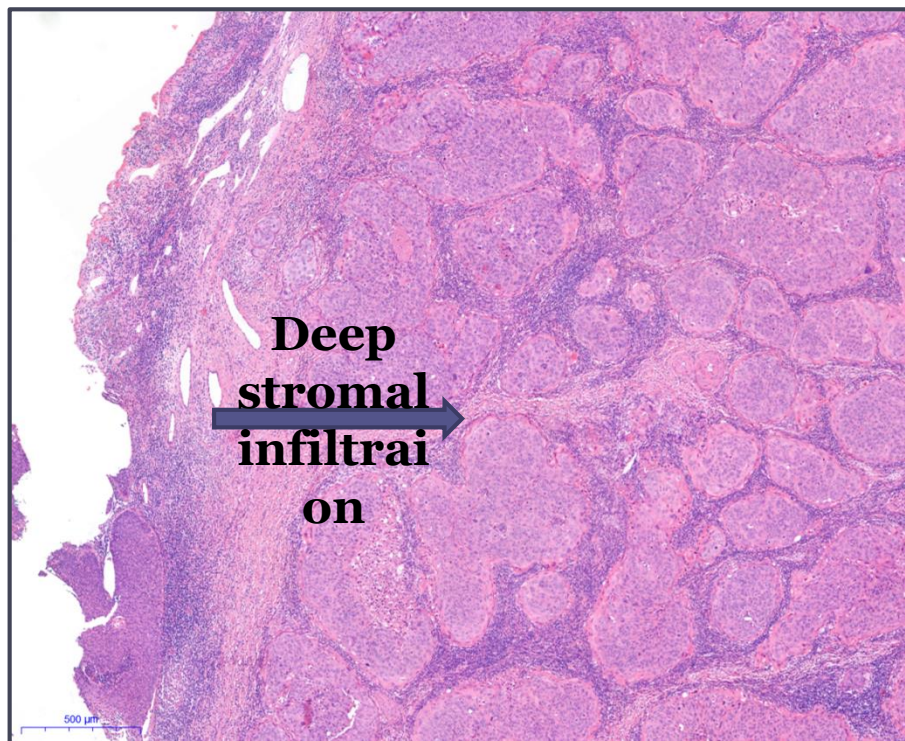
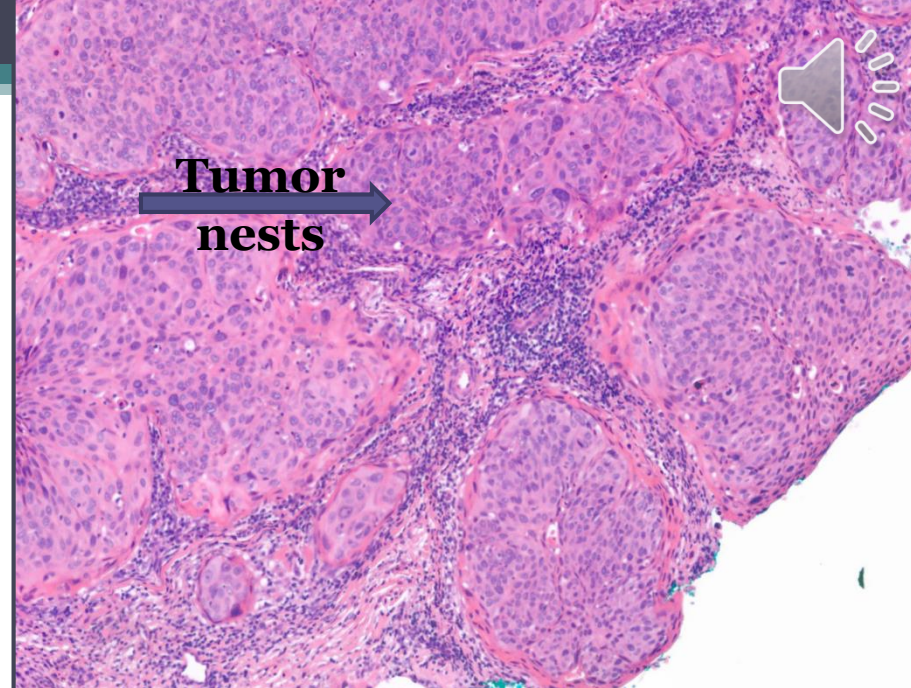
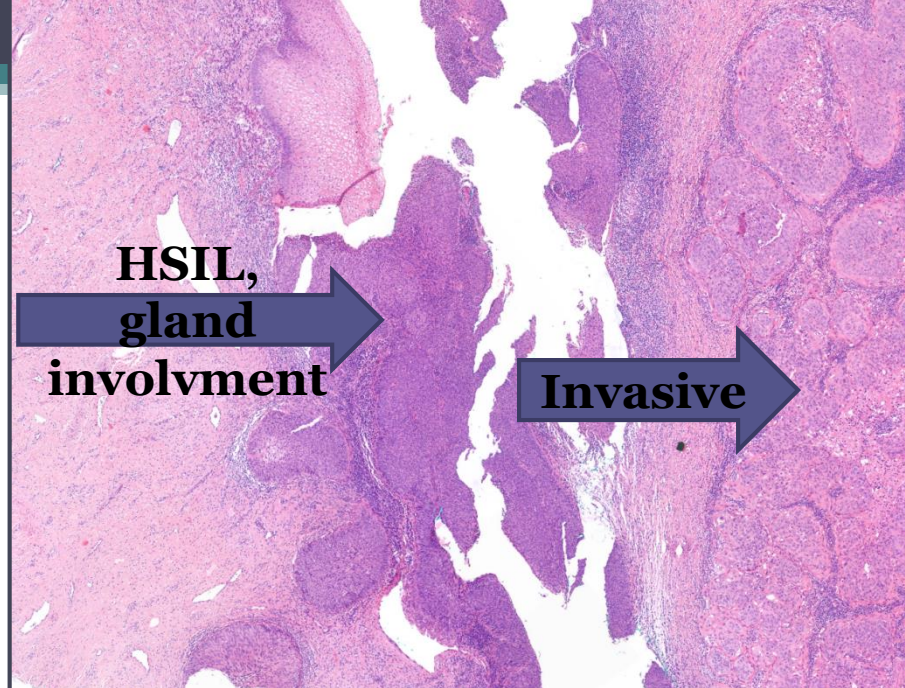
- Conization



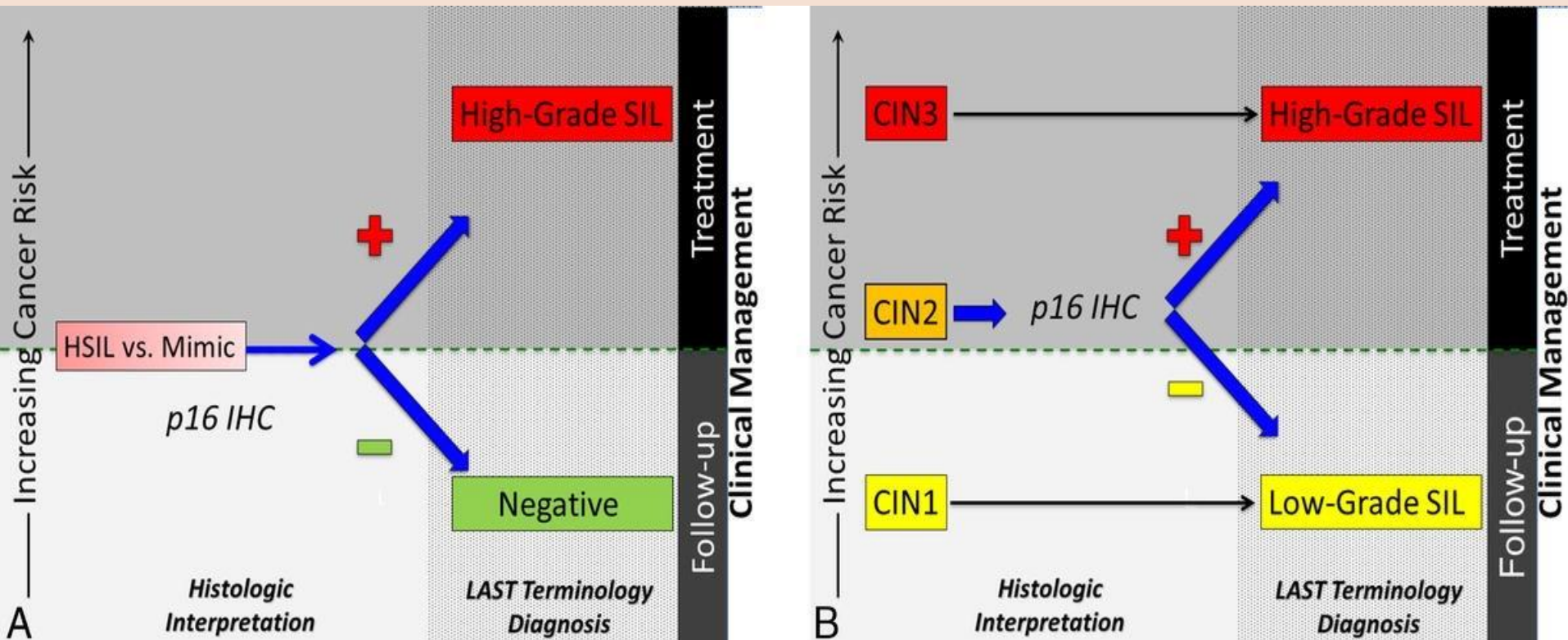
Clinical course- Onset, primary treatment

- Conization

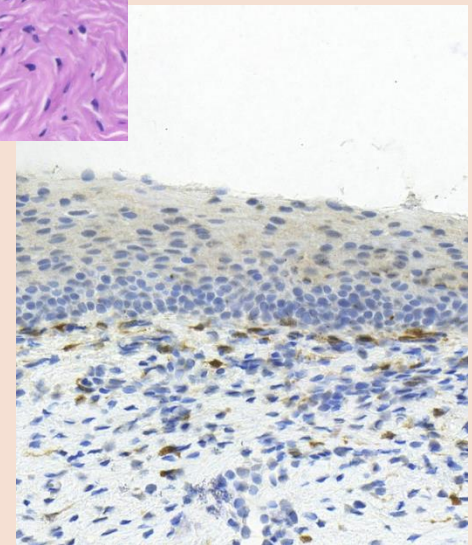
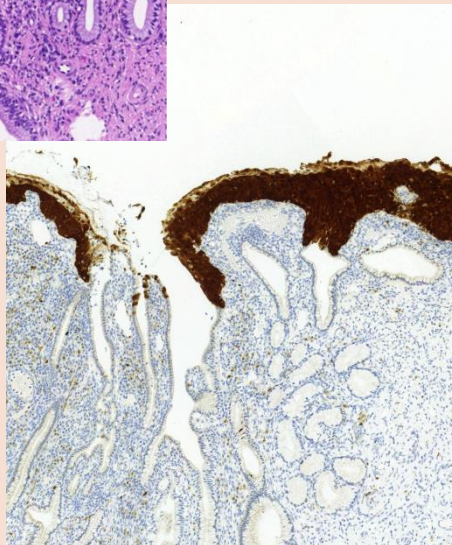
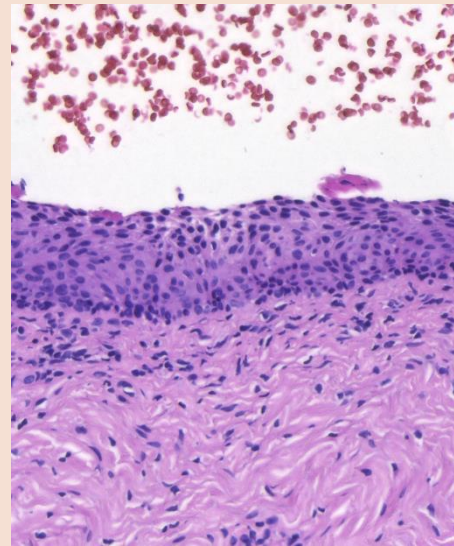
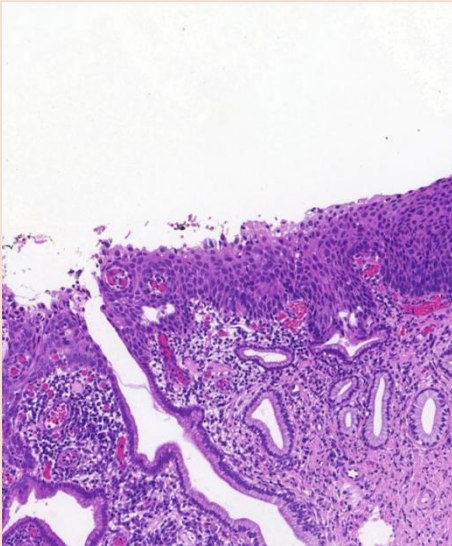




LSIL/ HSIL- histology



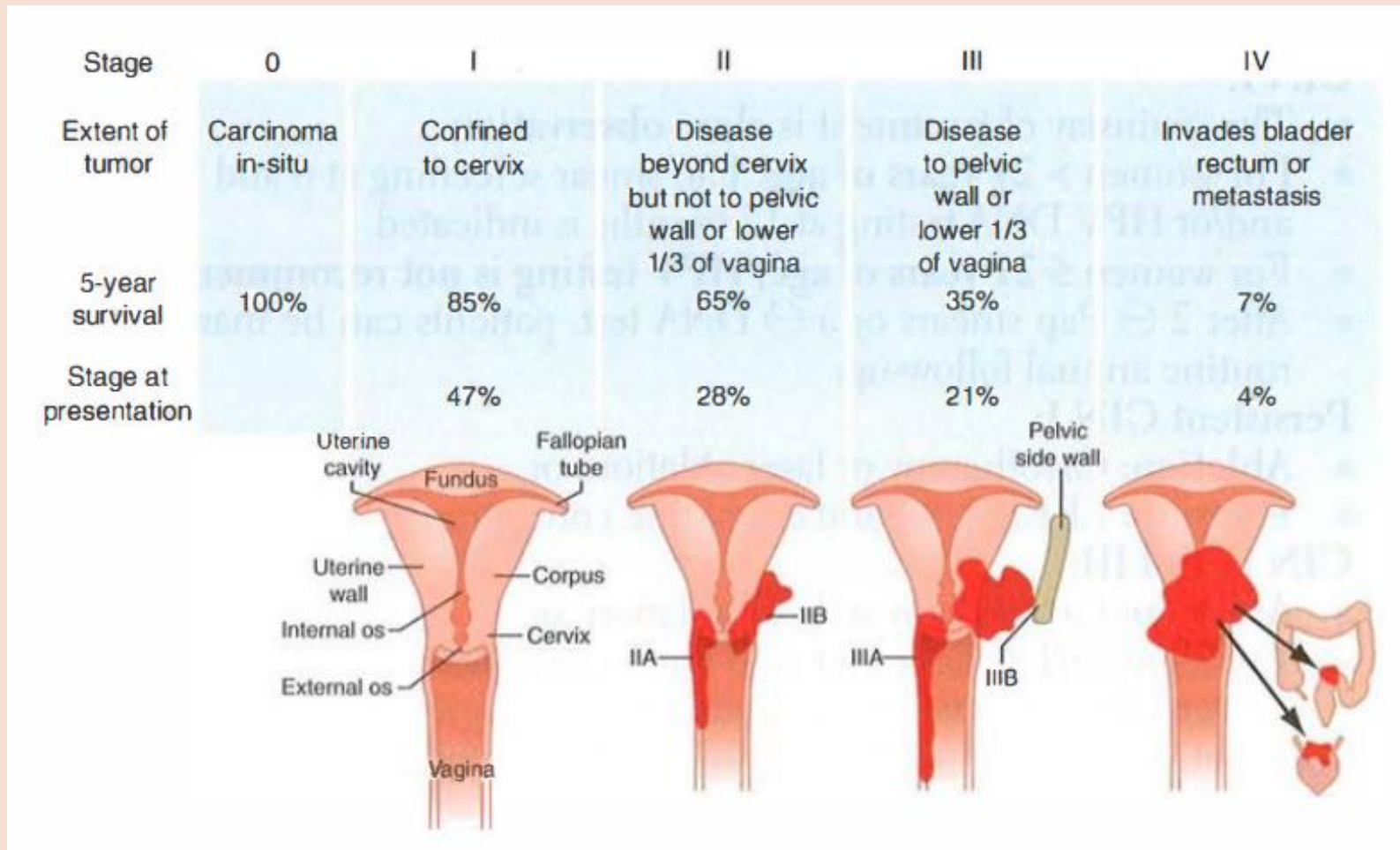
LSIL/ HSIL histology



Staging

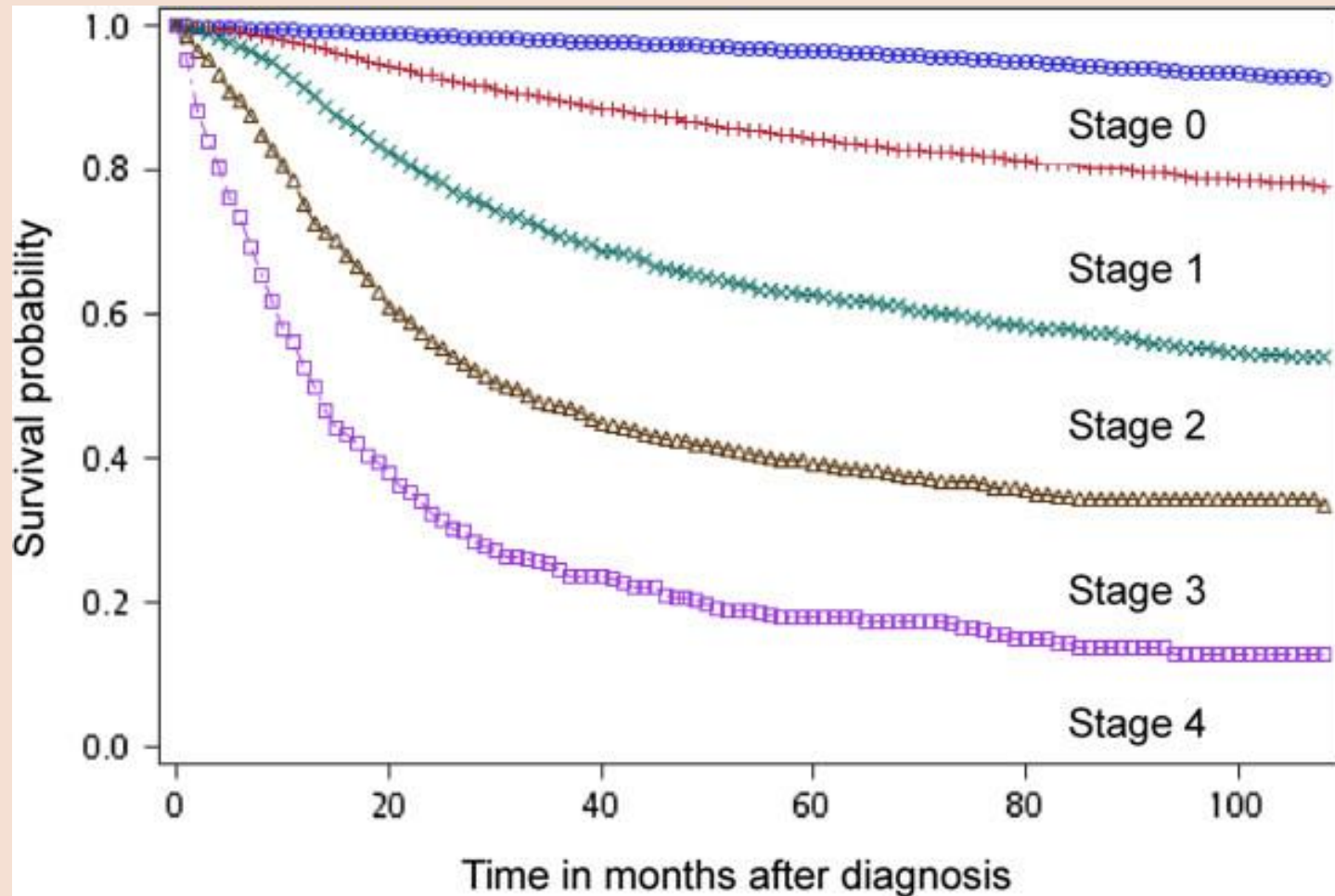
- Before oncological treatment proper examination should be performed in order to assess the expansivity of the tumor (stage)
- General staging system: TNM and TNM based clinical system (I-IV)
- Staging:
 - Before operation and pathological examinations
 - Inoperability
 - Check-up
 - Radiology examination

Staging



<https://www.medicinembbs.org/2015/08/staging-of-cervical-cancer.html>

Staging



Staging

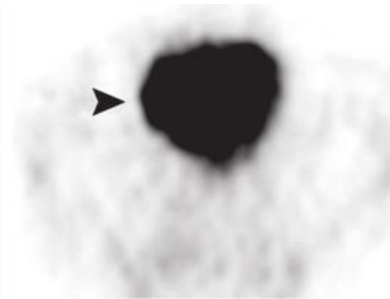
- Suggested readings:
 - [Cervix cc. stage \(TNM és FIGO\)](#)
 - Review: [Imaging in Cervical Cancer](#)
 - [PET-CT indication](#)

Clinical course- Onset, primary treatment

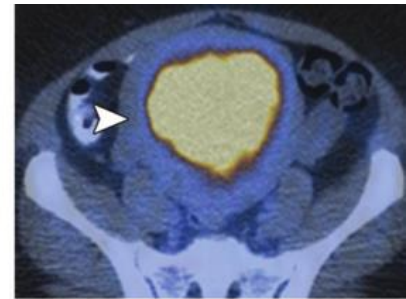
- 1st Tumorboard
 - Clinical staging
 - MRI
 - PET-CT



a.



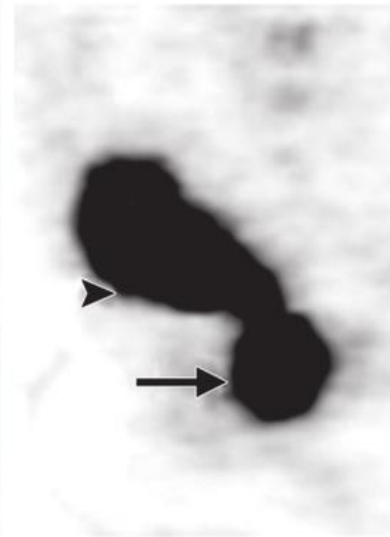
b.



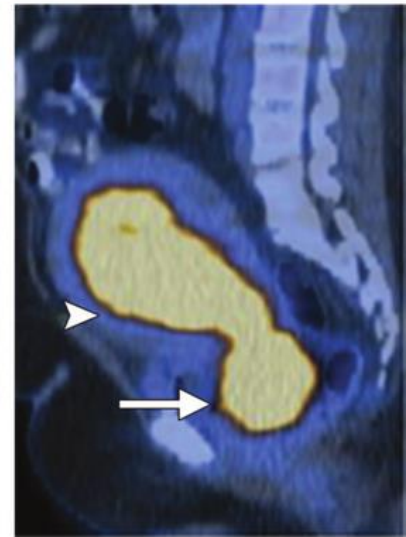
c.



d.



e.



f.

Son, Hongju & Kositwattananerak, Arpakorn & Prasad-Hayes, Monica & Chuang, Linus & Rahaman, Jamal & Heiba, Sherif & Machac, Josef & Zakashansky, Konstantin & Kostakoglu, Lale. (2010). PET/CT Evaluation of Cervical Cancer: Spectrum of Disease. Radiographics : a review publication of the Radiological Society of North America, Inc. 30. 1251-68. 10.1148/rg.305105703.

Clinical course- Onset, primary treatment

- 1st Tumorboard:
 - Clinical stage: Stage IIA
 - Suggested treatment:
 - **RH-BSO-PLND**
 - **Radical hysterectomy**
 - **Bilateral salpingo-oophorectomy**
 - **Pelvic lymphnode dissection**

Surgical treatment option

- Locoregional treatment
 - Radiotherapy (See later)
 - Surgical treatment
- Surgical treatment options are determined by the anatomical situation, invasivity of the tumor, general condition of the patient, etc.
- Types of surgical treatment:
 - Conization
 - Trachelectomia
 - Hysterecomy:
 - + Abdominal/ vaginal/ laparoscop
 - Radical hysterectomy
 - Pelvic exenteriation

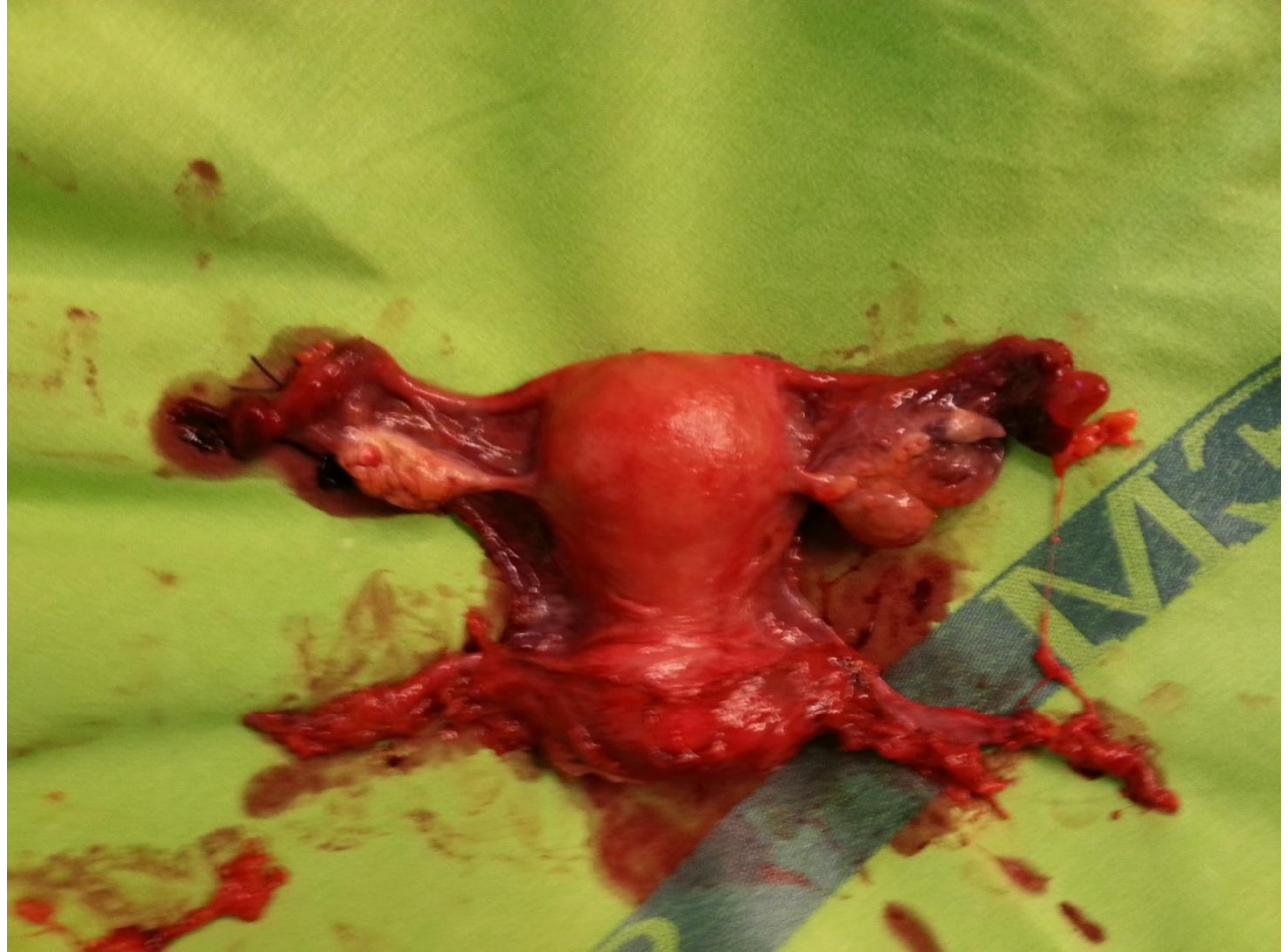
+/- lymphadenectomy (pelvic and/or paraaortic)

Surgical treatment options

- Suggested readings:
 - [Cervical cancer treatment strategies based on stage](#)
 - [Surgical treatment options in cervical cancer](#)

Clinical course- Onset, primary treatment

- Tumor resection



Case courtesy of Dr Szabolcs Máté (Semmelweis Univ.)

Clinical course- Onset, primary treatment

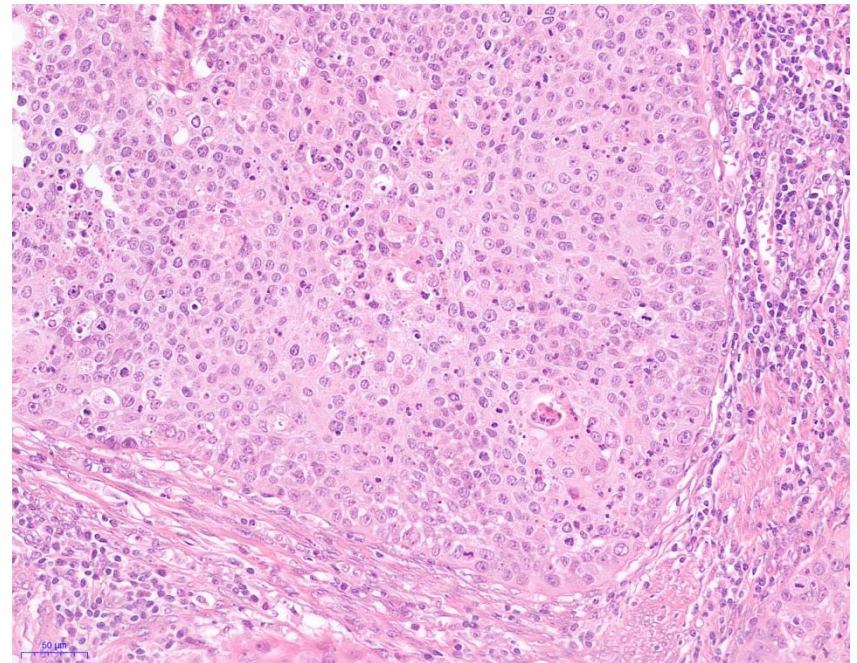
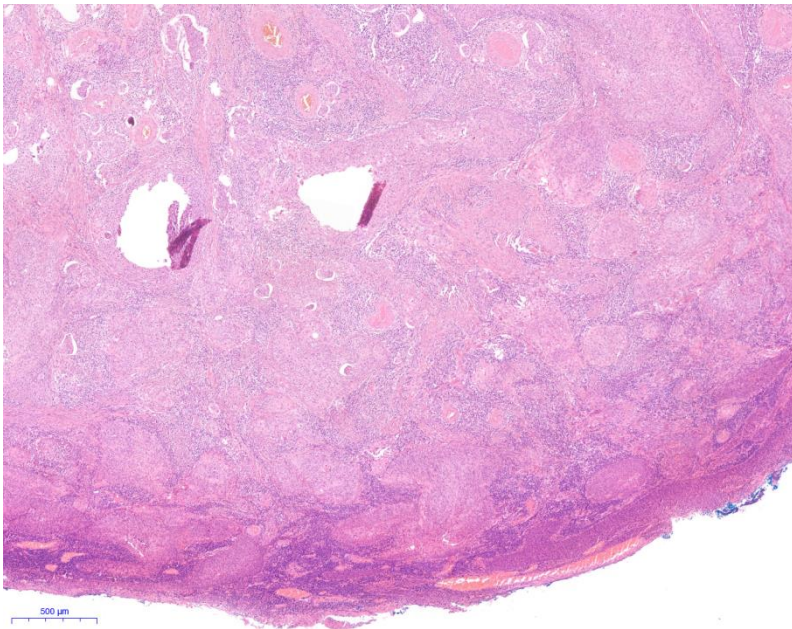
- Pathological examination



2000 μ m

Clinical course- Onset, primary treatment

- Histology



Pathological examination of gynecology specimen

- The aim of histological examination of surgical specimens is the diagnose the specific tumor:
 - Type
 - Degree of differentiation
 - Stage
 - Resection margins
- Beside the above mentioned parameters the pathology report also gives other characteristics of the tumor (e.g. vascular invasion), and with biomarker investigation predictis the clinical behavior and response to certain therapies.
(Prognostic and predictive biomarkers.)

Pathological examination of gynecology specimen

- The pathology report is based on check-lists
- Cervix cc template (CAP)

CAP Approved

Female Reproductive • Uterine Cervix • Resection • 4.3.0.0

Histologic Type (Note C)

- ☐ Squamous cell carcinoma, NOS
- ☐ Squamous cell carcinoma, keratinizing
- ☐ Squamous cell carcinoma, nonkeratinizing
- ☐ Squamous cell carcinoma, basaloid
- ☐ Squamous cell carcinoma, verrucous
- ☐ Squamous cell carcinoma, warty
- ☐ Squamous cell carcinoma, papillary
- ☐ Squamous cell carcinoma, lymphoepithelioma-like
- ☐ Squamous cell carcinoma, squamotransitional
- ☐ Endocervical adenocarcinoma, usual type
- ☐ Mucinous carcinoma, NOS
- ☐ Mucinous carcinoma, intestinal type
- ☐ Mucinous carcinoma, signet-ring cell type
- ☐ Mucinous carcinoma, gastric type
- ☐ Villoglandular carcinoma
- ☐ Endometrioid carcinoma
- ☐ Clear cell carcinoma
- ☐ Serous carcinoma
- ☐ Mesonephric carcinoma
- ☐ Adenocarcinoma admixed with neuroendocrine carcinoma
- ☐ Adenosquamous carcinoma
- ☐ Adenosquamous carcinoma, glassy cell variant
- ☐ Adenoid cystic carcinoma
- ☐ Adenoid basal carcinoma
- ☐ Small cell neuroendocrine carcinoma
- ☐ Large cell neuroendocrine carcinoma
- ☐ Undifferentiated carcinoma
- ☐ Carcinosarcoma
- ☐ Other histologic type not listed (specify): _____
- ☐ Carcinoma, type cannot be determined

Histologic Grade (Note D)

- ☐ G1: Well differentiated
- ☐ G2: Moderately differentiated
- ☐ G3: Poorly differentiated
- ☐ GX: Cannot be assessed
- ☐ Not applicable

Stromal Invasion (Note B)

Depth of Stromal Invasion (millimeters):

- ☐ Specify ____ mm
- ☐ At least ____ mm
- ☐ Cannot be determined (explain): _____

+ Depth of Stromal Invasion

- + ☐ Superficial one-third
- + ☐ Middle one-third
- + ☐ Deep one-third

Horizontal Extent of Stromal Invasion*

- ☐ Not applicable
- ☐ Specify ____ mm
- ☐ Estimated as less than or equal to 7 mm
- ☐ Specify Number of Block(s) Involved: _____

* Data elements preceded by this symbol are not required for accreditation purposes. These optional elements may be clinically important but are not yet validated or regularly used in patient management.

Pathological examination of gynecology specimen

- Suggested readings:
 - Check-lists for pathology report
 - [College of American Pathologist](#)
 - [Royal College of Pathologist](#)

Clinical course- Onset, primary treatment

- 2nd Tumor board
 - Adjuvant therapy
 - Postoperative radiotherapy

Radiotherapy treatment options for cervical cancer

- Radiotherapy treatment options:
 - Primary:
 - × Before surgery as neoadjuvant treatment with chemotherapy
 - × Only radiotherapy
 - After surgery: as adjuvant therapy
 - Locoregional recurrence: when the previously used radiotherapy didn't reach the maximum dose
 - Distant metastasis: pain management (palliative treatment, e.g. painful bone metastasis)

Radiotherapy treatment options for cervical cancer

- Suggested readings:
 - [General considerations in cervical cancer radiotherapy](#)
 - [Cervical cancer primary radiotherapy](#)
 - [Palliative radiotherapy](#)

Clinical course

Distant metastases

Clinical course- Progression

- Asymptomatic for 2 years
- 3. year bone pain
- Restaging:
 - Multiplex bone and liver metastasis



Case courtesy of Dr Natalie Yang, Radiopaedia.org, rID: 7121



Case courtesy of Dr Lawrence Oh, Radiopaedia.org, rID: 28869

Clinical course- Progression

- 3rd Tumorboard
 - First line treatment:
 - paclitaxel–ifosfamide–cisplatin (TIP)

Clinical course- Progression

- Despite first-line chemotherapy the disease progress:
 - Lung metastasis
- Second-line treatment
 - [Vinorelbin](#)
 - [Bevacizumab](#)



Cervical cancer treatment option

- Suggested readings:
 - [ESMO \(European Society for Medical Oncology\) guideline](#)
 - [Cervix cc. chemotherapy](#)
 - [Angiogenesis inhibition in advanced cervical cancer](#)

Clinical course

Last hospital admission

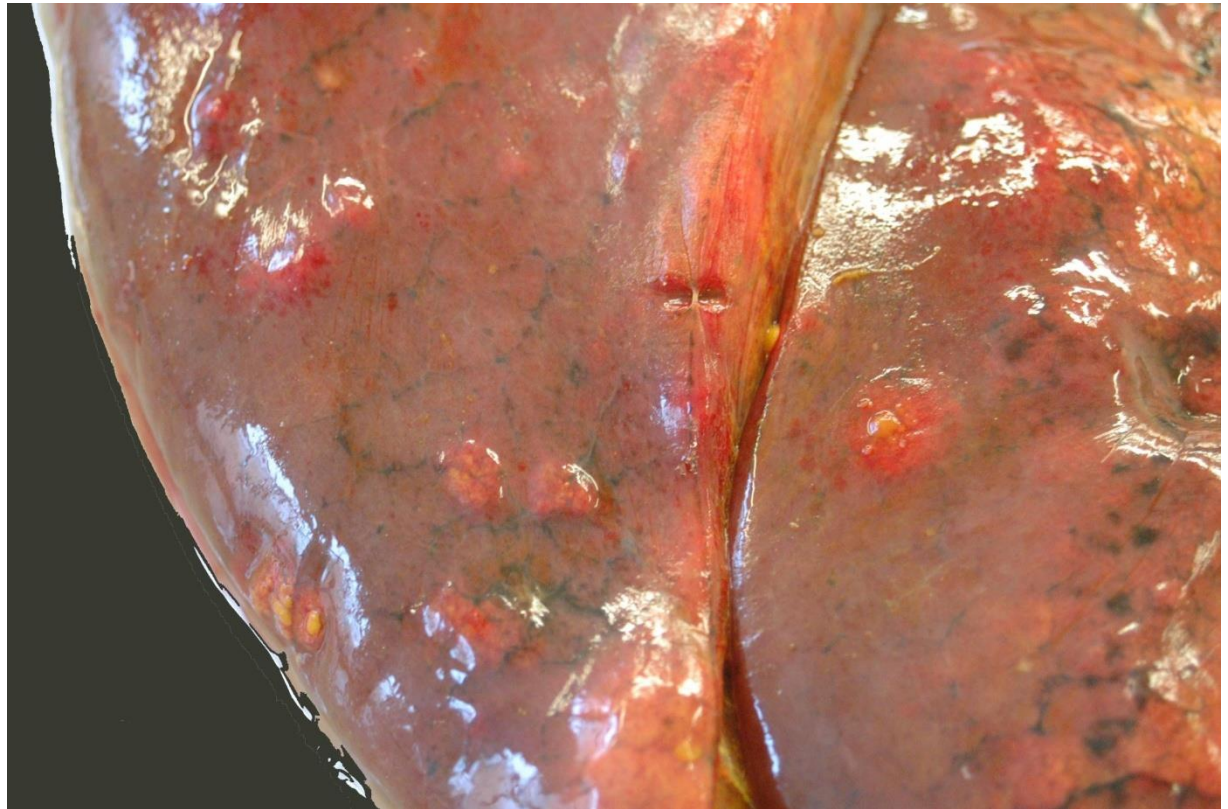
Symptoms

- Hospital admission:
 - End-stage cancer patient with dyspnoea and weakness
- Status:
 - Cachexia
 - Bronchopneumonia
- BSC
- Died on the 2nd day

Autopsy

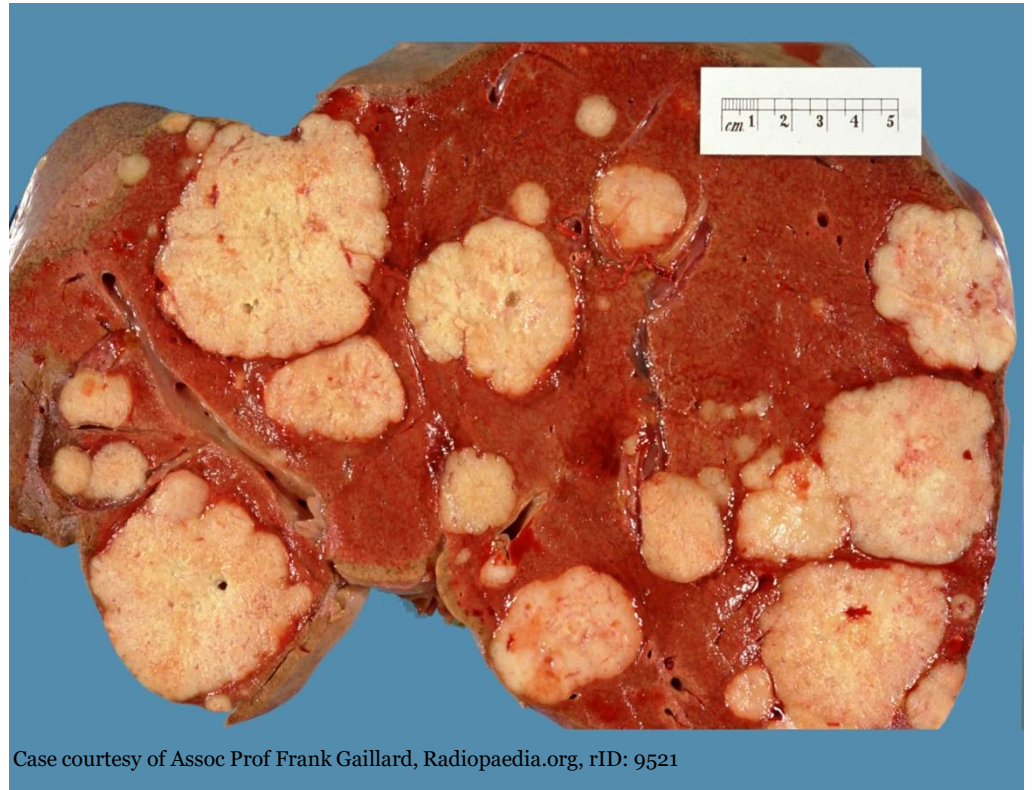
Autopsy

- Lung metastasis



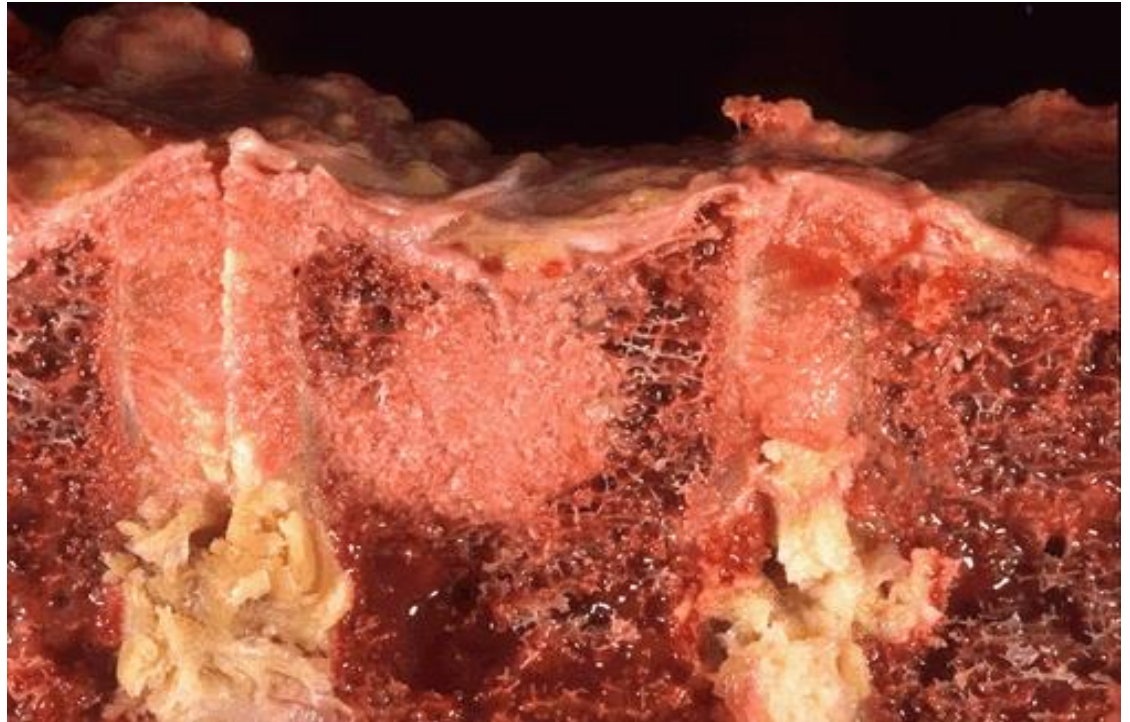
Autopsy

- Liver metastasis



Autopsy

- Bone metastasis



Autopsy- Report

- Basic disease:
 - Cervical cancer, Squamous cell carcinoma (Moderately differentiated)
- Complication:
 - Multiplex metastasis (liver, bone, lung)
- Pre-mortem condition:
 - Bronchopneumonia
- Cause of death:
 - Cachexia

Take home message

- Cervical cancer is preventable
 - Safe sex life
 - HPV-vaccination
- Premalignant lesions could be diagnosed in time
 - Screening
- Cervical cancer has a good prognosis with adequate treatment **in early stage**
 - **Preserved fertility!**

Thank you!