



UICC
HPV and
CERVICAL
CANCER
CURRICULUM

Chapter 6.b.

Methods of treatment – Loop Electrosurgical Excision Procedure (LEEP)

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Loop Electrosurgical Excision Procedure (LEEP or LLETZ)

- Most widely used excision treatment method for cervical intraepithelial neoplasia (CIN) in the developed world
- Use of method in developing countries:
 - Large ectocervical CIN lesions not covered by largest cryoprobe
 - Lesions extending into endocervical canal
 - Suspected glandular precursor lesions
 - Excising a large chunk of lesion for detailed histopathology examination when occult or early cervical cancer is suspected

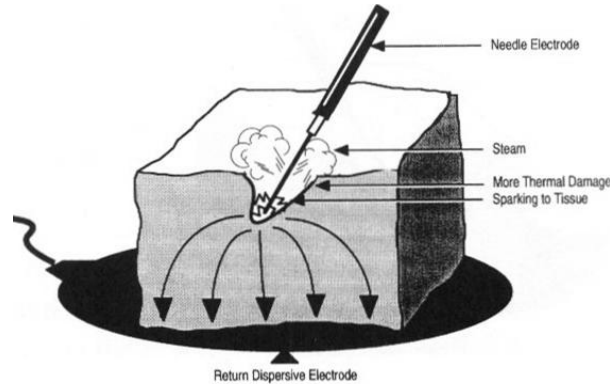
Electrosurgery (1)

- Electrosurgery: use of radio frequency electric current to cut tissue or achieve haemostasis
- Electrical energy in electrosurgery is transformed into heat and light

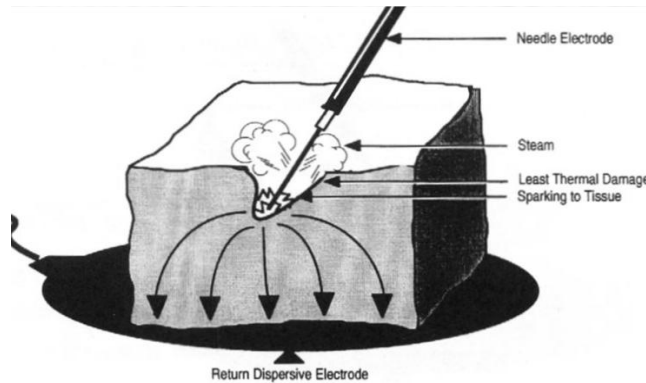
Electrosurgery (2)

Temperature (°C)	Tissue effect
Up to 40	No significant effect
>70	Coagulate
<100	Fulgurate
100	Flash boiling, vaporisation
>100	Desiccate, puncture coagulation
>200	Carbonisation
1000	Cut tissue

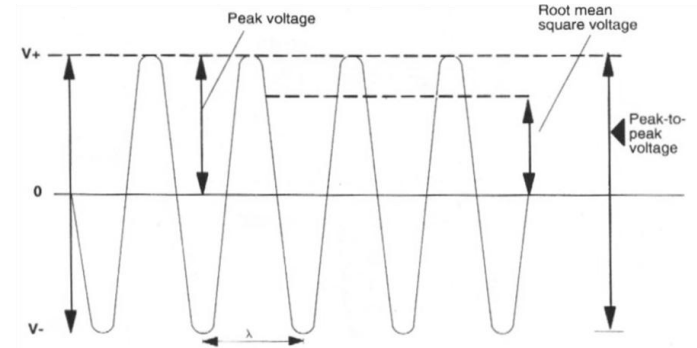
Sine waves (1)



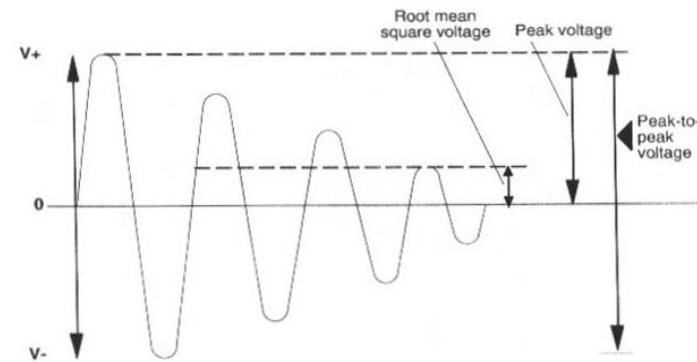
**ELECTROSURGICAL CUTTING
(Higher Crest Factor)**



**ELECTROSURGICAL CUTTING
(Lowest Crest Factor)**

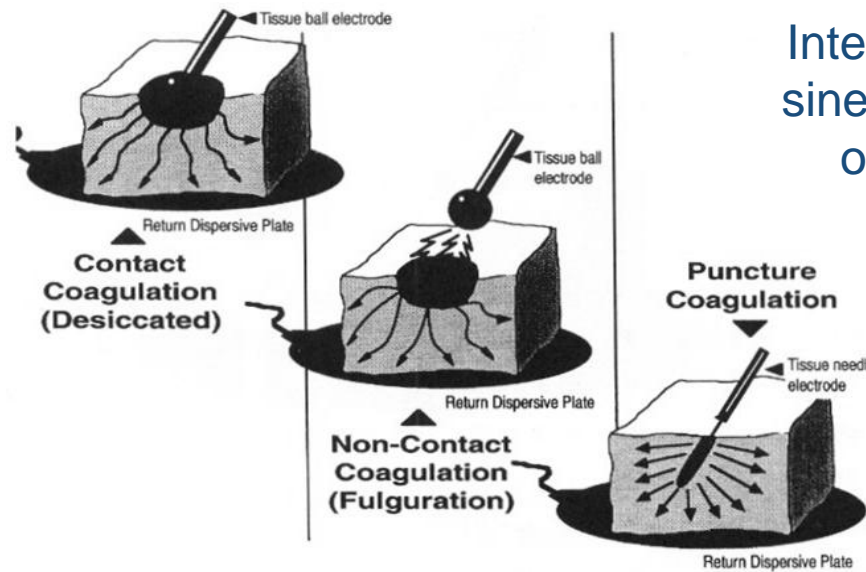


Unmodulated sine wave

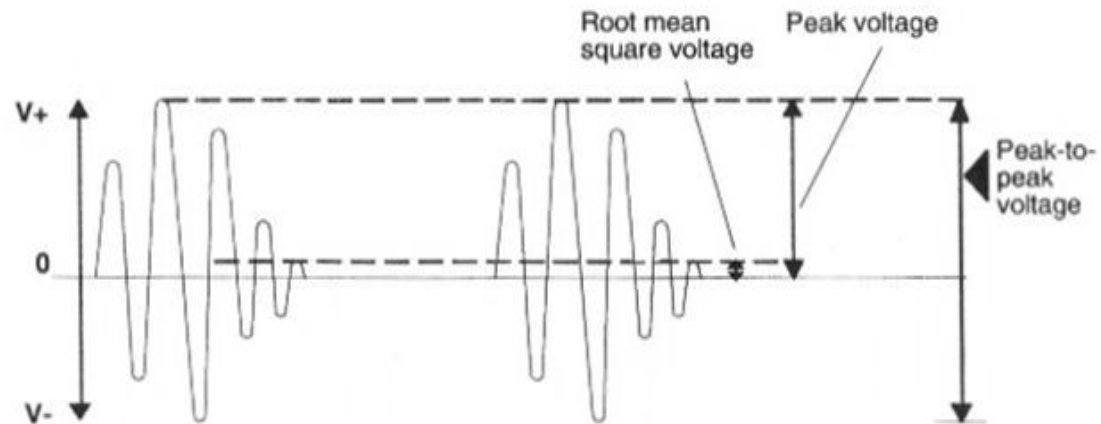


Dampened sine wave

Sine waves (2)



Intermittent modulated sine wave (coagulation output waveform)



LEEP: recommended use

- CIN confirmed by histology
- Histologically confirmed CIN lesions extending into the end cervical canal (not more than 1 cm)
- Histologically confirmed large ectocervical CIN lesions that cannot be covered adequately by the largest cryo probe
- No evidence of invasive cancer
- No evidence of pelvic inflammatory disease (PID), cervicitis, vaginal trichomoniasis, bacterial vaginosis, anogenital ulcer or bleeding disorder
- No evidence of pregnancy

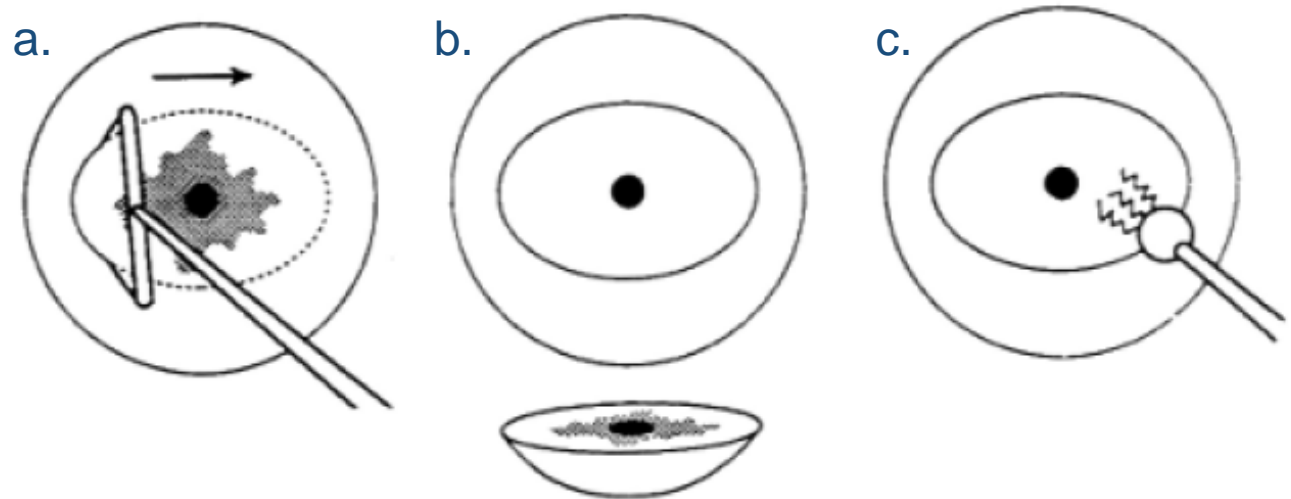
LEEP and CIN

- CIN can extend into underlying cervical crypts regardless of histological grade or location
- Average crypt extension: between 1.24 and 1.6 mm
- 95% of cervical crypts extend less than 2.9 mm
- Higher grade CIN more frequently found extending in cervical crypts with greater depth than lower grade CIN

LEEP: surgical approaches

- Removal of ectocervical dysplasia with one pass of the loop
- Removal of ectocervical dysplasia with multiple passes
- Excision of ecto- and endocervical disease with “cowboy hat” excision procedure
- Excision of endocervical disease with a long needle cylindrical resection

One-pass loop excision

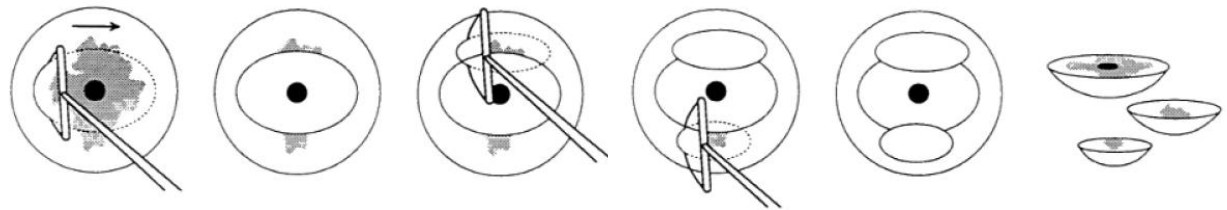
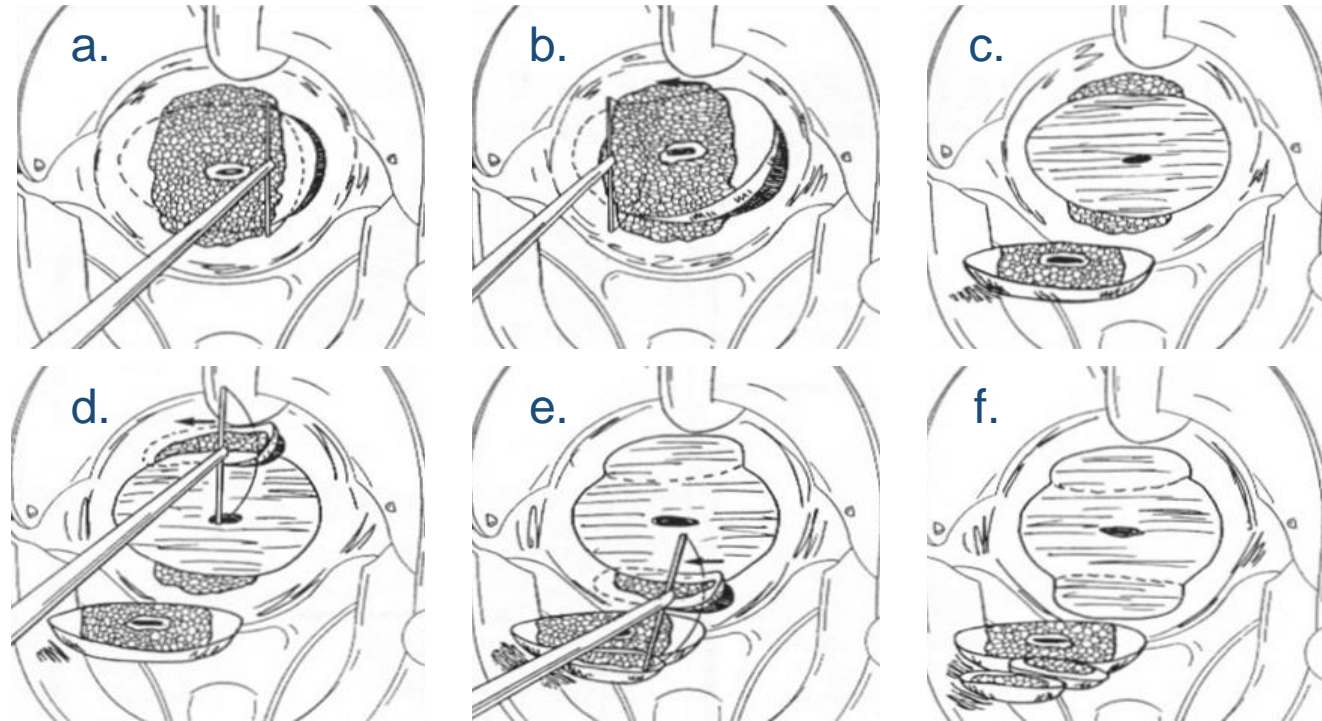


Source: Colposcopy and treatment of cervical intraepithelial neoplasia: a beginner's manual. Edited by J.W. Sellors and R. Sankaranarayanan, 2003/2004, Lyon

Excision of ectocervical lesion with multiple passes (1)

- Lesion wider than the width of largest loop: multiple passes using one or more sizes of loop
- Same procedure for each pass
- Remove the lesion completely
- Label and preserve specimens for pathological examination

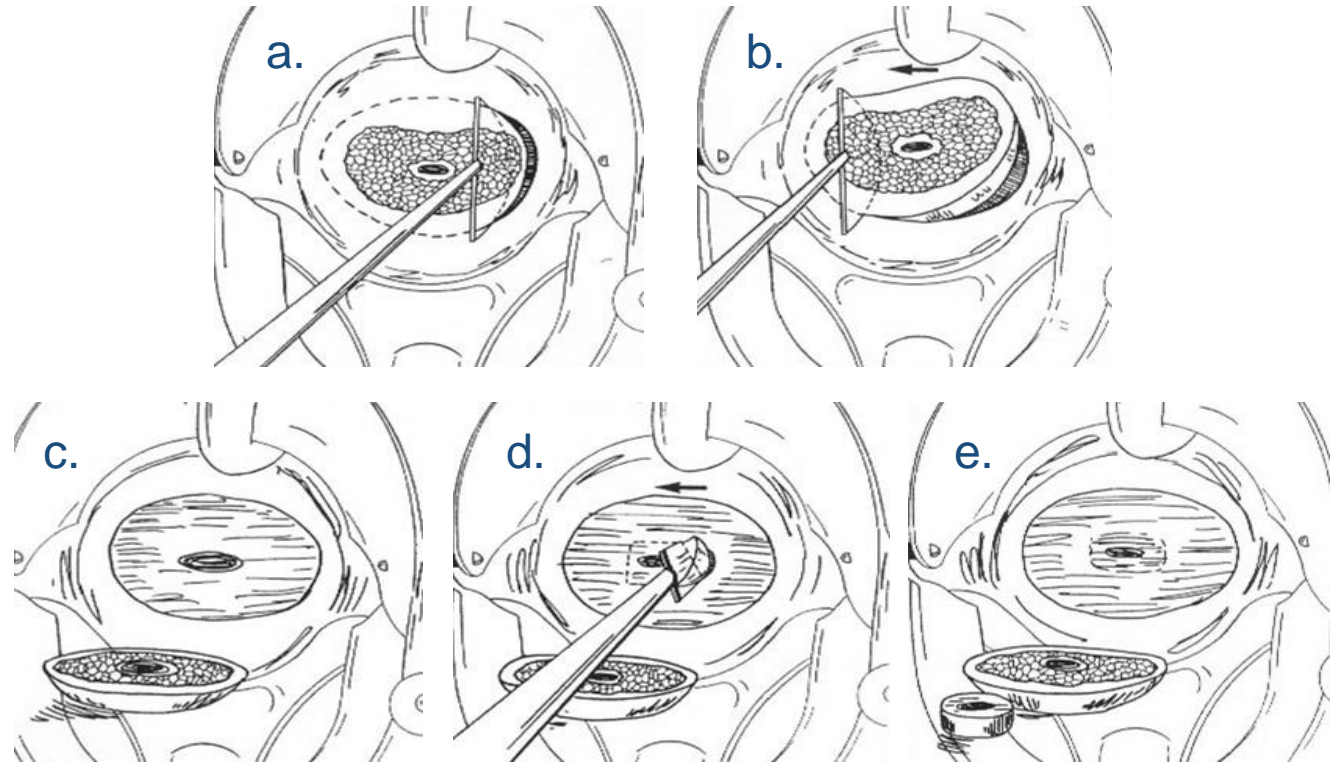
Excision of ectocervical lesion with multiple passes (2)



Excision of endocervical lesion (1)

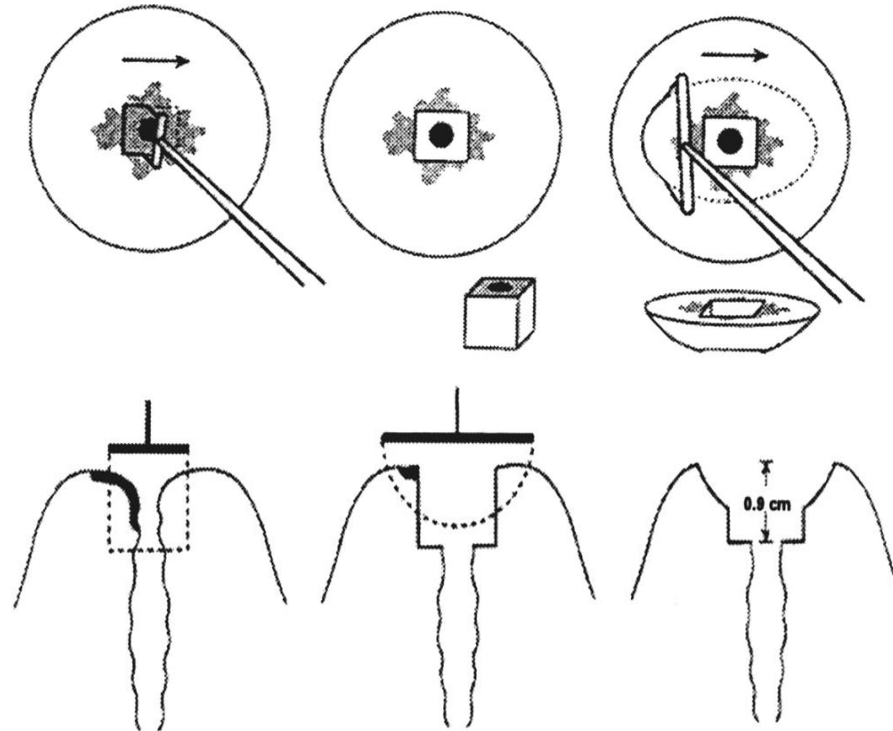
- Lesion in endocervical canal: less likely that single layer loop pass will be sufficient
- Majority of CIN III lesions and some low-grade lesions extend for a linear length of 1 cm or less into the canal
- Older women and women with CIN III: likely to have longer lesions and require a second layer for complete excision

Excision of endocervical lesion (2)

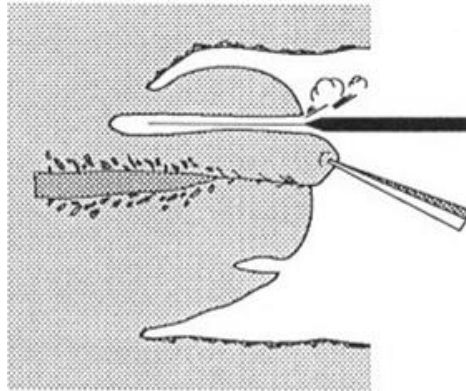


Endocervical tissue - excision

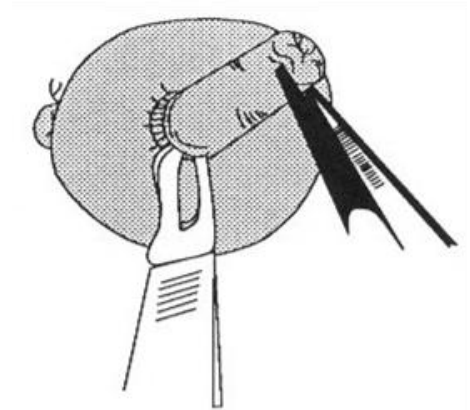
- Portion of lesion that extends to endocervical canal is excised by one pass of large loop
- Endocervical portion of lesion is excised by loop with width 10 mm and depth 10 mm



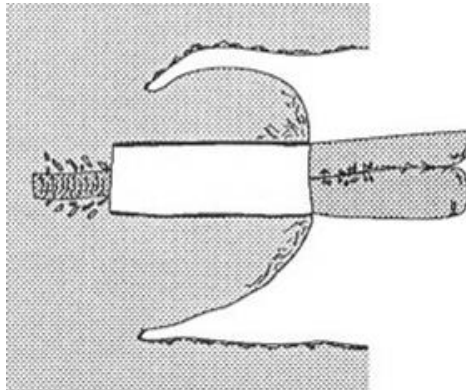
Long needle electrode electrosurgical cylindrical excision



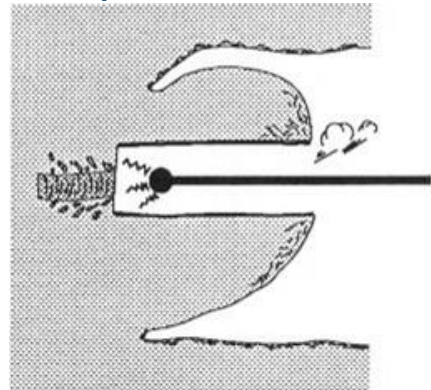
a. Incision line is parallel to endocervical canal



b. Apex is cut transversely by scalpel or tonsil snare



c. Cylindrical specimen is removed



d. Apex is fulgurated by ball electrode

Safety

- Deepest depth that can be excised safely is 16 mm
- Chances of bleeding are greatly increased with increasing depth
- Operator should have adequate training for the two-step procedure

Lesions with vaginal extension

- If a lesion extends onto the vagina:
 - Ball electrode is used for fulguration on the peripheral, vaginal part of the lesion
 - LEEP or cryotherapy on the central (cervical) part of the lesion

Adverse effects

- Transitory pain may be felt due to injection of local anesthetic
- Severe peri-operative bleeding is reported in 2% or less of patients
- Post-operative pain like cramps may occur
- Discharge may last for 1-2 weeks
- LEEP patients may face post-operative bleeding 4-6 days after treatment
- Chances of infection are less with aseptic precautions and antibiotic prophylaxis

Long term sequelae

- In 2% of cases the squamocolumnar junction is located in endocervical canal, creating problems in follow-up colposcopy and cytology sampling
- Cervical os stenosis in less than 1% of patients, more common in post menopausal women and women with high-grade lesion in endocervical canal
- If stenosis prevents sampling for Pap smear and depending on clinical judgment: hysterectomy may be offered

Follow-up

- Provide instructions on self-care and what symptoms to expect after treatment
- No vaginal douche, tampons or sexual intercourse for one month after treatment
- Follow-up visits:
 - 1 month after procedure if possible to check symptoms/wound healing
 - 1 year after last visit to ensure lesion has been cleared (repeat excision procedure if lesion persists)
 - 2 and 5 years after initial procedure for any recurrence and once every 5 years thereafter

Thank you

This presentation is available at
www.uicc.org/cervicalcancercurriculum