# Inguinal Lymphadenectomy in Vulvar Cancer

Anatomy, indication, and how much groin surgery the evidence actually supports

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# DECLARATION OF INTERESTS

## Nothing to declare

# What we'll cover

## I. Anatomy of the groin

vulvar planes · femoral triangle · nodal drainage · operative steps

## II. Why the groin decides outcome — and what it costs

node status and survival · the morbidity we inherited

## III. Sentinel node — evidence and limits

validation trials · laterality · the 2 mm threshold

## IV. NCCN in practice

groin evaluation · SLN management · minimally invasive · algorithm

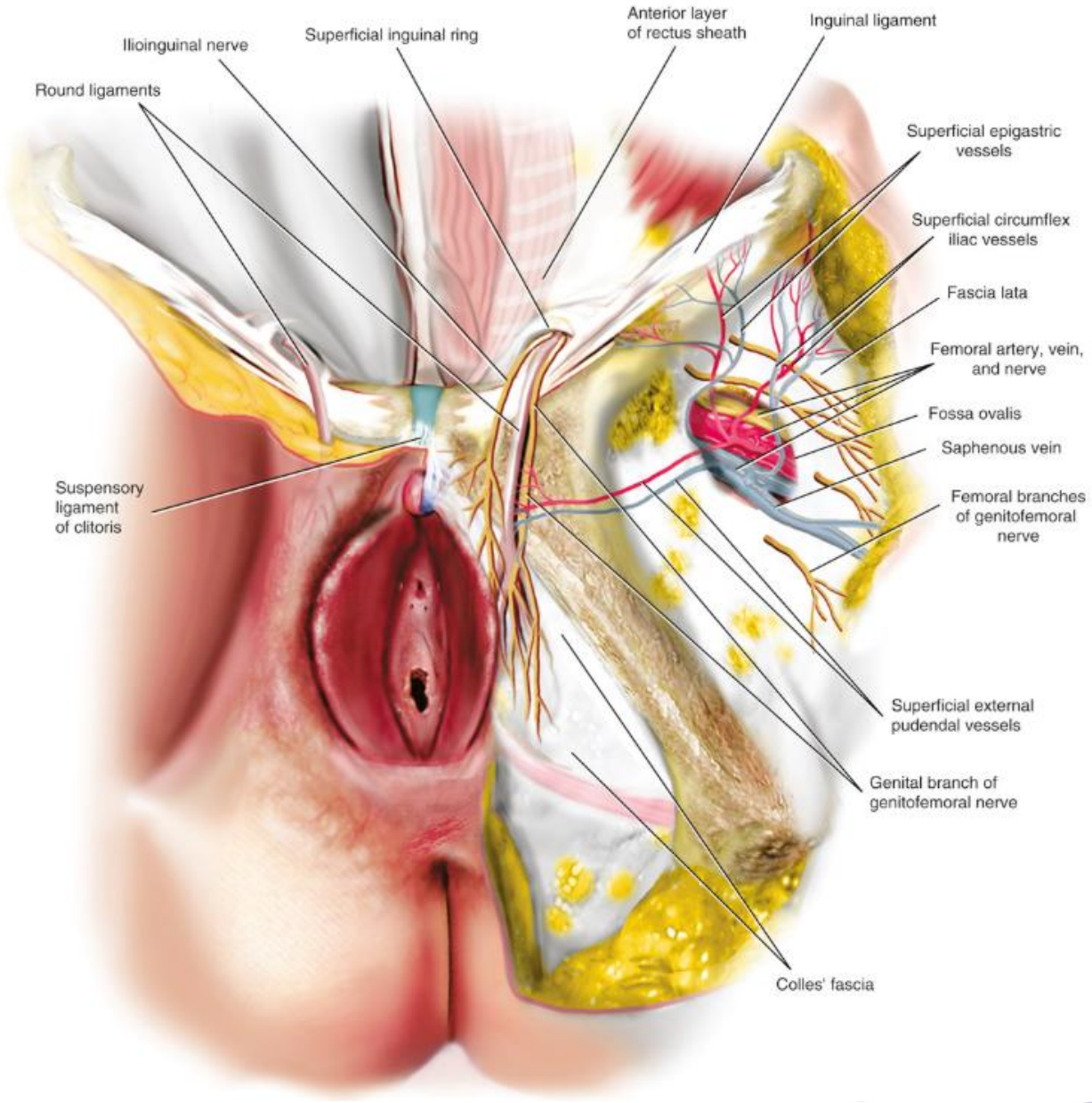
*Two operative videos: open groin dissection in Section I · endoscopic (VEIL) in Section IV*

SECTION I · 

# The Femoral Triangle

*Part of the thigh — functionally vulvar surgery*

- **Saphenous vein** — to fossa ovalis, into the femoral vein
- **Femoral vessels** — artery & nerve lateral; canal medial
- **Round ligament** — through the canal to th e labium majus



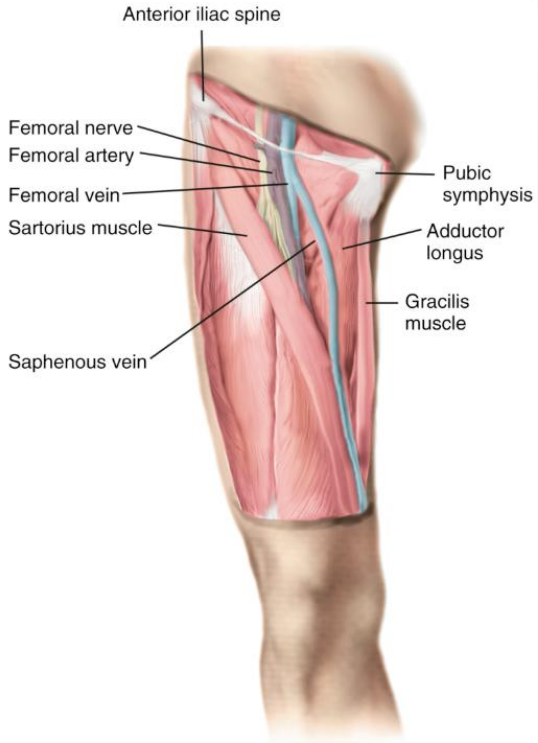

*Adapted from: Baggish & Karram. Atlas of Pelvic Anatomy and Gynecologic Surgery, 5th ed.*

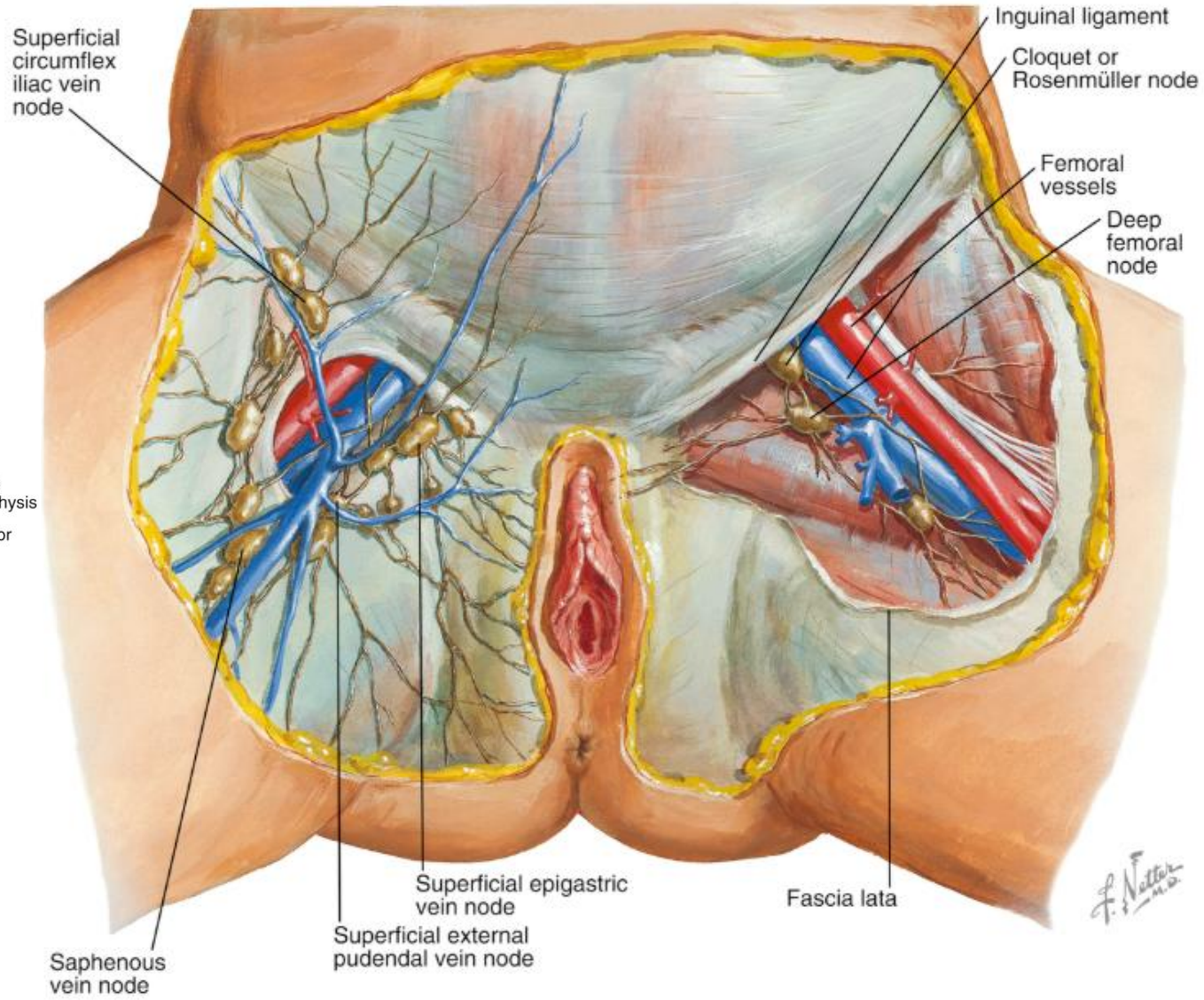
*Where vulvar lymph drains*

**Vulva → Superficial → Deep → External iliac**

- **Superficial inguinal** — over the fossa ovalis
- **Deep inguinal (femoral)** — highest = Cloquet's
- **External iliac** — above the inguinal ligament

*Crosses in the mons → drains to either groin*



SECTION I · 

# Open Groin Dissection — Operative Steps

*The open dissection, step by step*

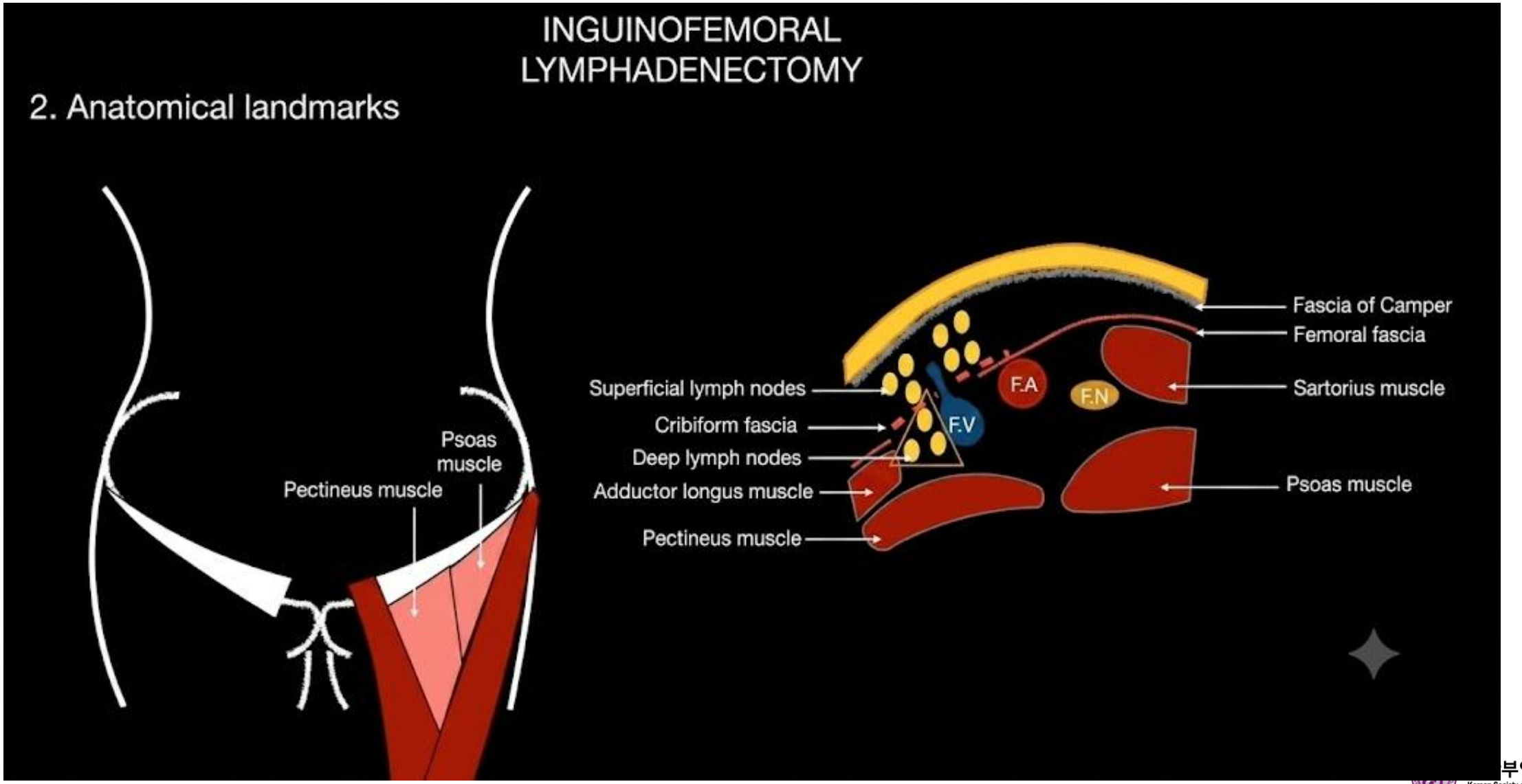
- **Incision** — 2 cm below and parallel to the inguinal ligament
- **Flaps** — divide Camper fascia, then raise superior and inferior skin flaps
- **Borders** — inguinal ligament above · adductor longus medially · sartorius laterally
- **Superficial packet** — clear the nodal bundle lying over the fossa ovalis
- **Fascia lata** — identify the fossa ovalis and open the fascia vertically
- **Deep packet** — femoral nodes and Cloquet node off the medial side of the femoral vein
- **Closure** — hemostasis · suction drains through separate stabs · layered subcutaneous, then skin

*Where morbidity is decided — flap thickness and saphenous vein preservation*

*Adapted from: Kushner & Spencer. Te Linde's Operative Gynecology, 12th ed., Ch. 23 — Box 23.4*

SECTION I · 

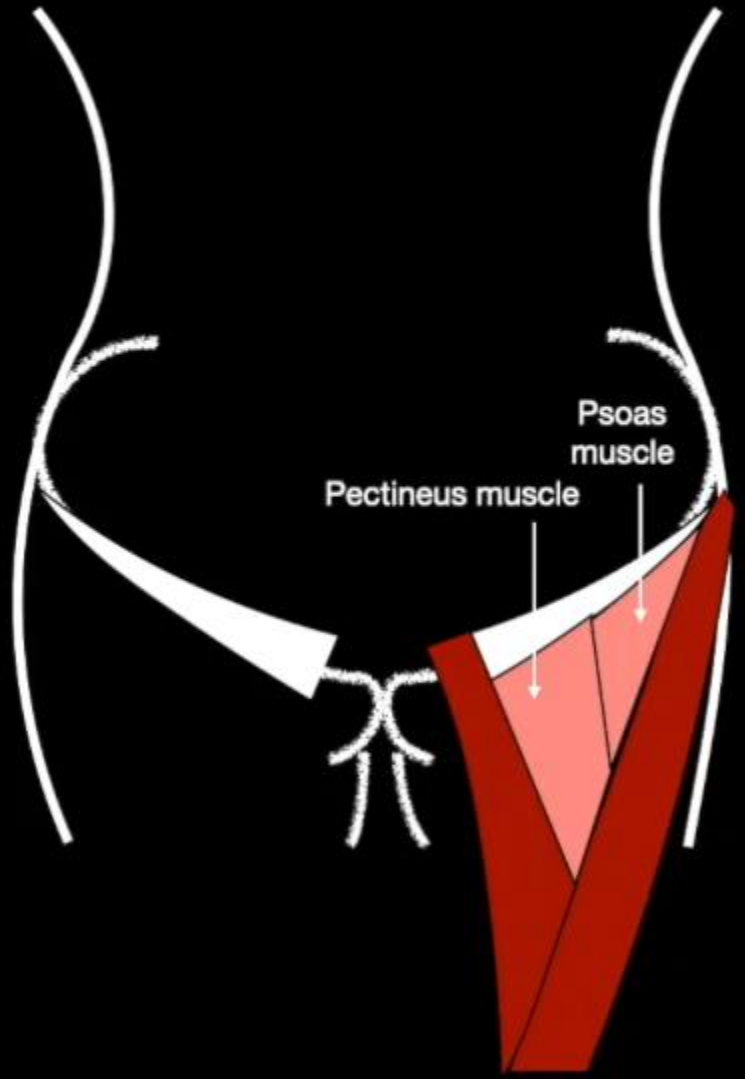
# The Groin in Cross-Section

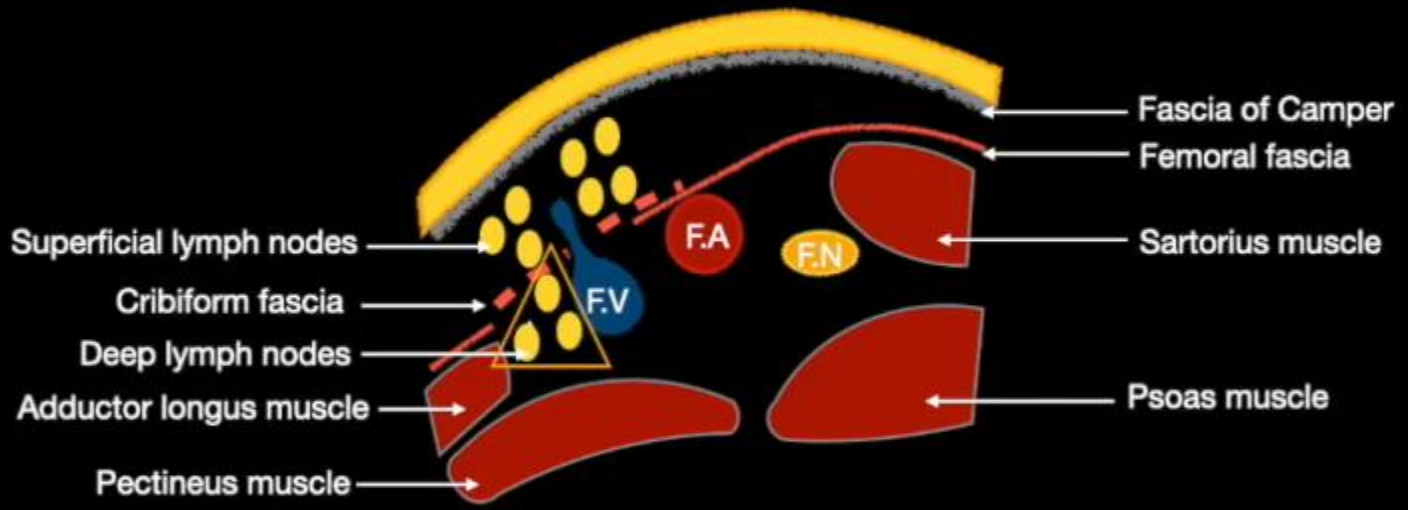


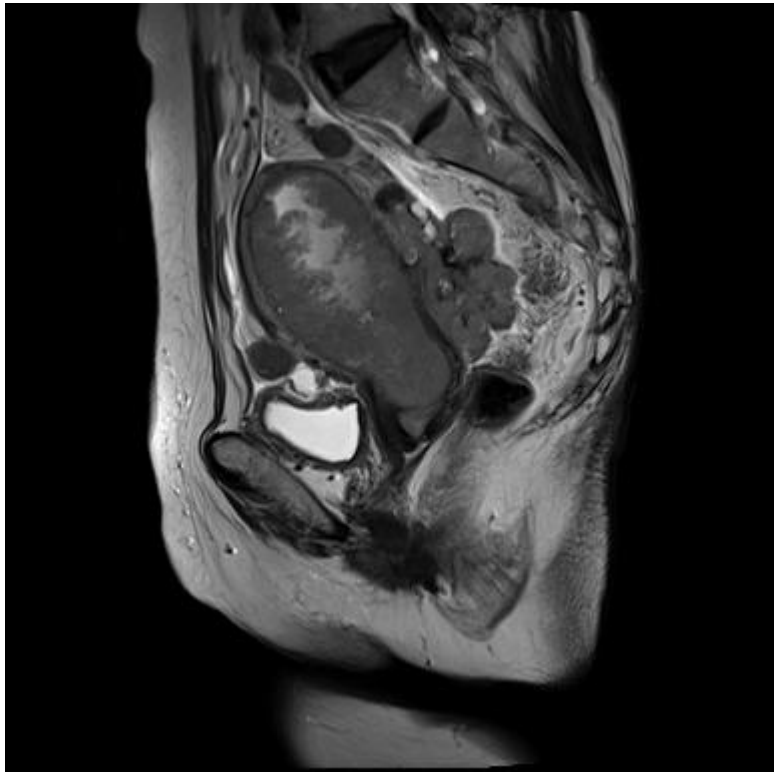

*Anatomical landmarks of the femoral triangle — from the accompanying operative video*

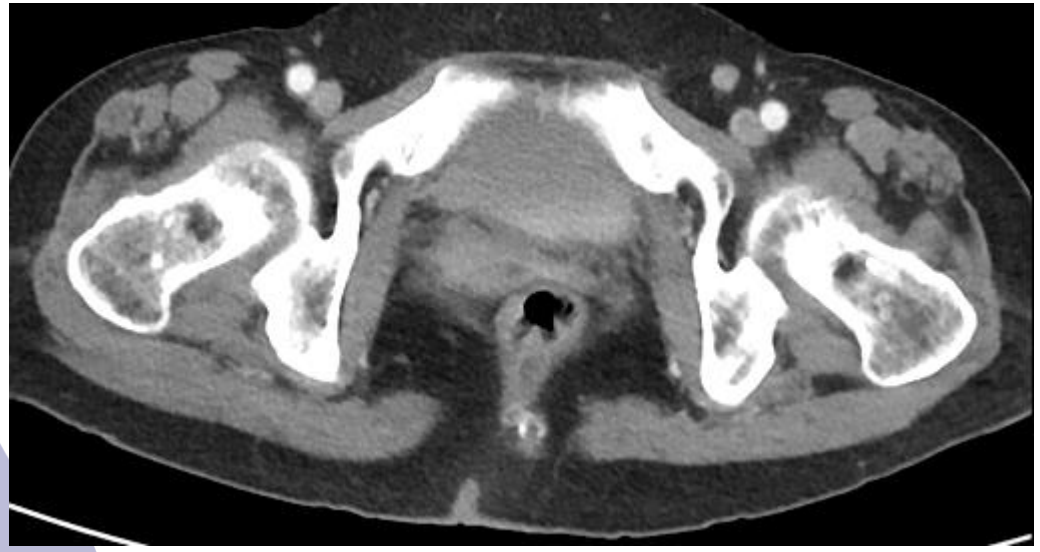
# INGUINOFEMORAL LYMPHADENECTOMY

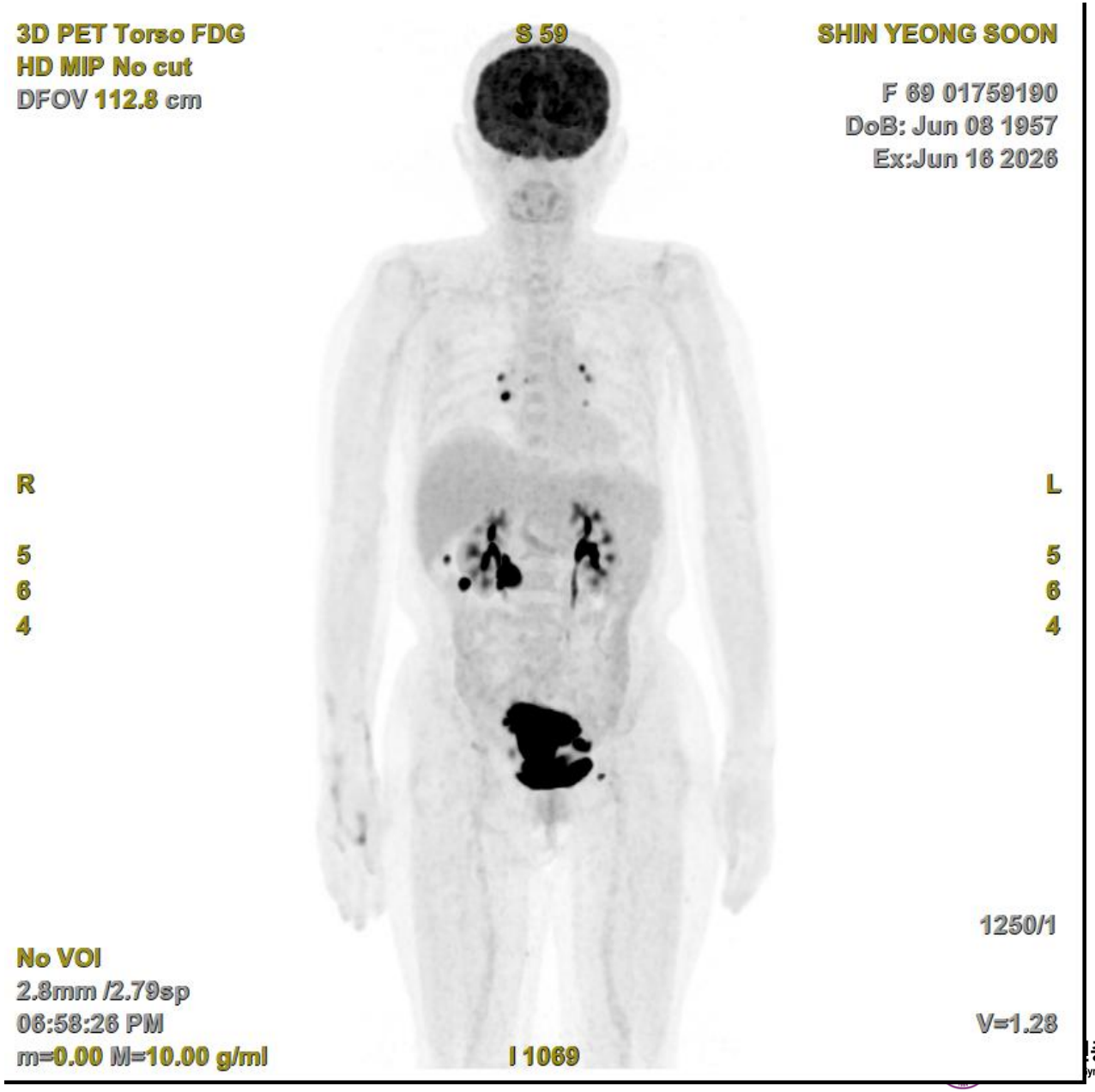
## 2. Anatomical landmarks





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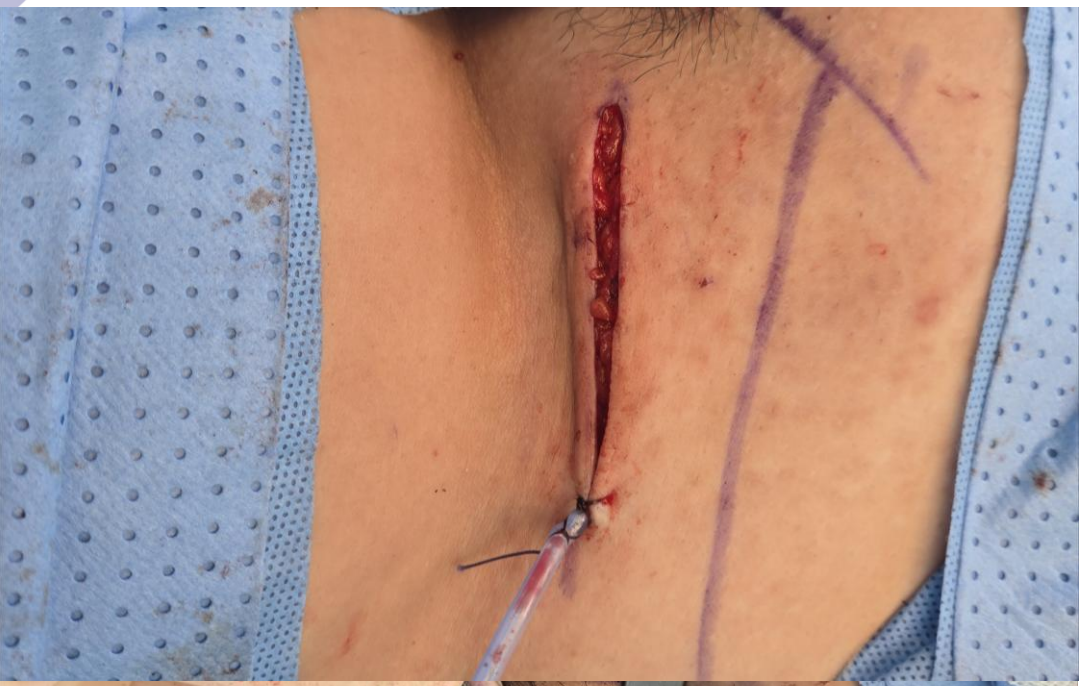
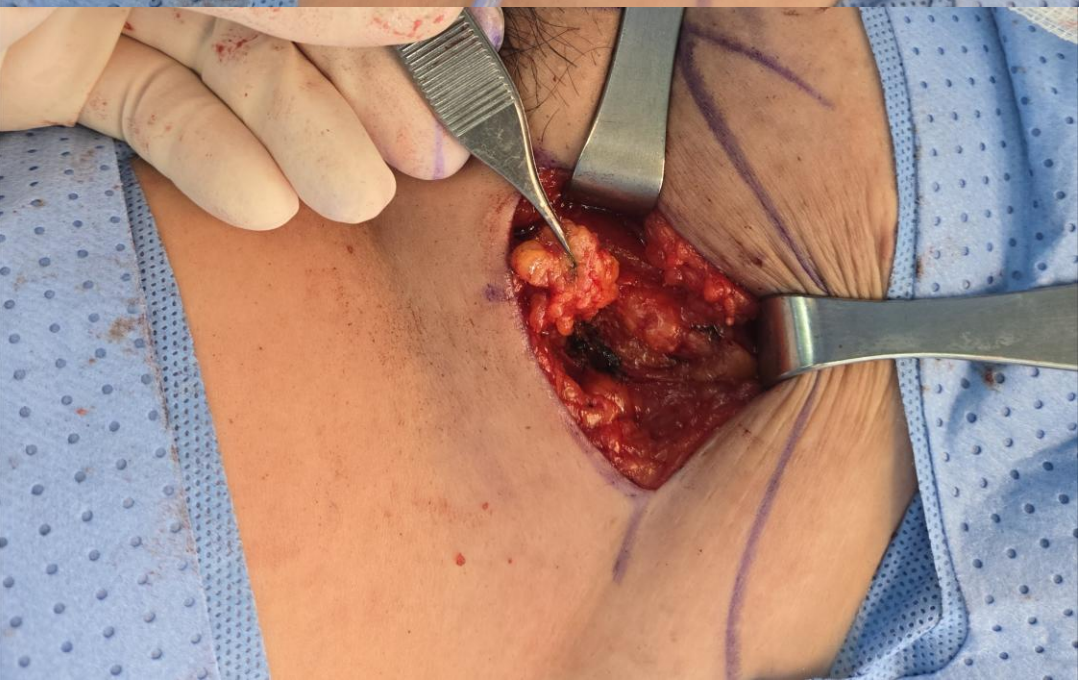




Uterus, radical hysterectomy;
Endometrium; Endometrioid carcinoma, FIGO grade 2, with
1) tumor size; 8.5x8.1cm
2) myometrial invasion: one half or more
15mm/18.6mm(invasion depth/myometrial thickness)
3) no cervical stromal invasion
4) adnexal involvement (right ovary)
5) parametrial invasion
6) metastasis in 1 out of 7 lymph nodes(1/7)
; **left inguinal LN(1/1),** LN in No.1 tissue(0/6)
7) lymphovascular space invasion: focal(<5)
8) free surgical resection margin
9) additional endometrial findings: none

Ovaries, bilateral, salpingo-oophorectomy;
1) Metastatic carcinoma, right ovary
2) No pathologic diagnosis, left ovary

Salpinges, bilateral, salpingo-oophorectomy;
No pathologic diagnosis, right & left

Omentum, omentectomy;
Metastatic carcinoma

Rectum, low anterior resection;
Metastatic carcinoma in perirectal adipose tissue

SECTION II · 

# Nodal Status Decides Outcome

*Nodes decide the whole outcome*

- **Node status matters more than tumor size and depth**
- **Isolated groin recurrence is almost always fatal**

**21%** node-positive in early-stage disease

**90.8%** vs **64.5%** 10-yr DSS, node − vs +

**2.3%** groin recurrence after a negative sentinel node

**39.5%** local recurrence at 10 yr — follow-up never ends

*GROINSS-V I — te Grootenhuis et al. Gynecol Oncol 2016 · van der Zee et al. JCO 2008*

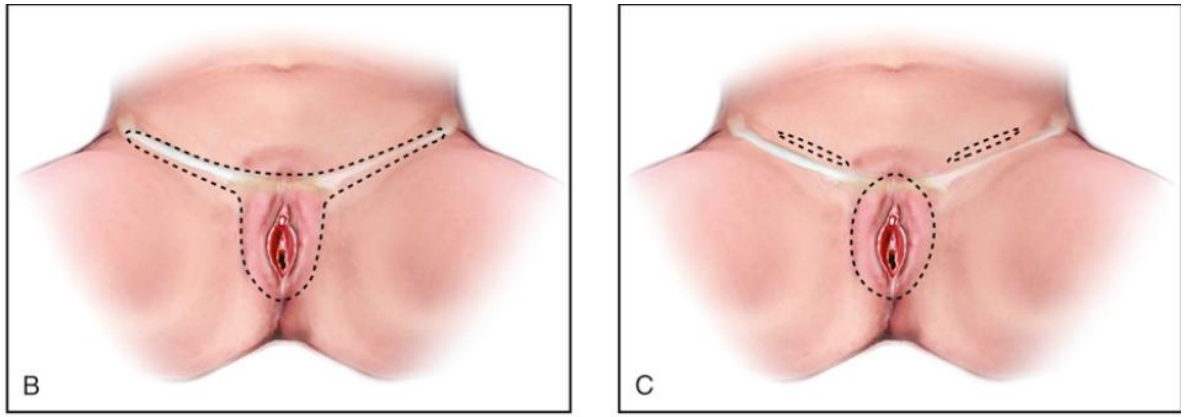
SECTION II · 

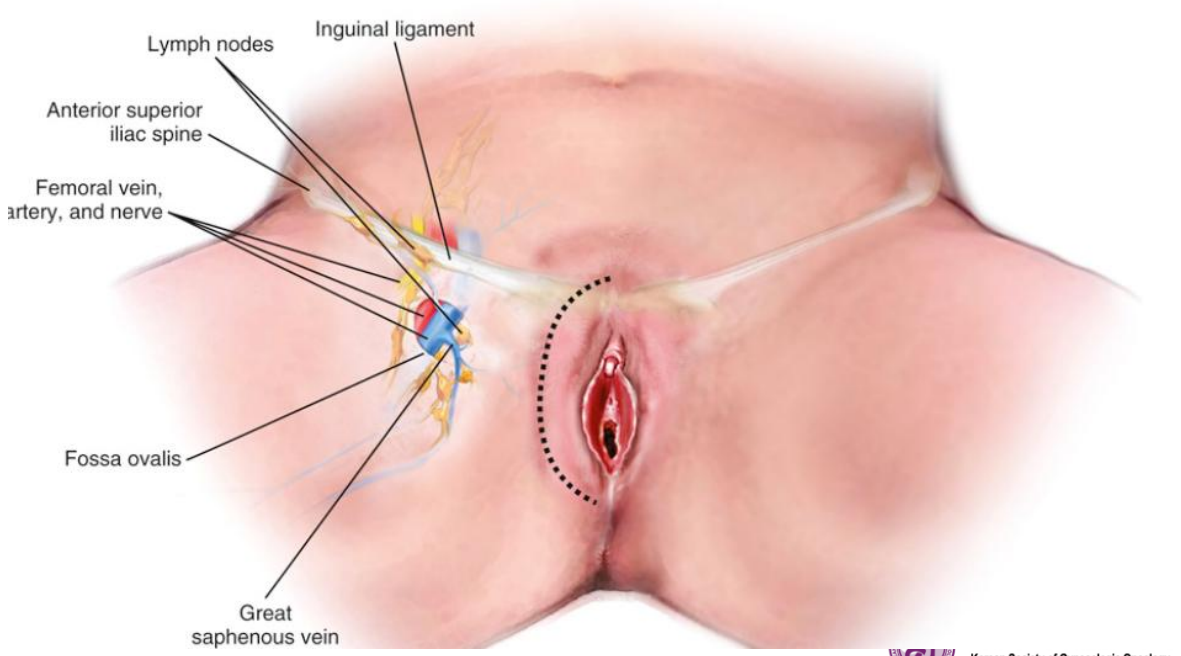
# The Price of a Complete Dissection

*The **morbidity** we are avoiding*

- **Radical en bloc** — **85%** wound, **70%** lymphedema
- **Separate incisions** — **20–40%** / **30–70%**
- **65–75%** have no nodal metastasis at all

**1.9%** vs **25.2%** lymphedema: sentinel vs completion

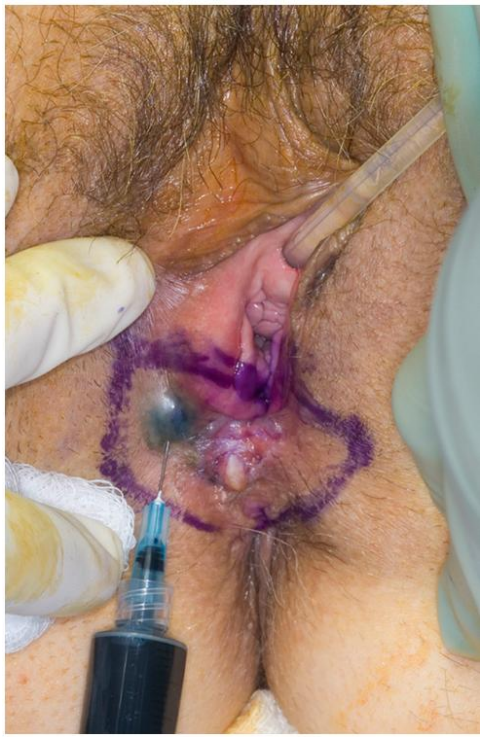



*de Hullu et al. Cancer 2002 · GROINSS-V I — te Grootenhuis et al. Gynecol Oncol 2016*
*Figure — Ramirez, Frumovitz & Abu-Rustum. Principles of Gynecologic Oncology Surgery.*

SECTION III · 

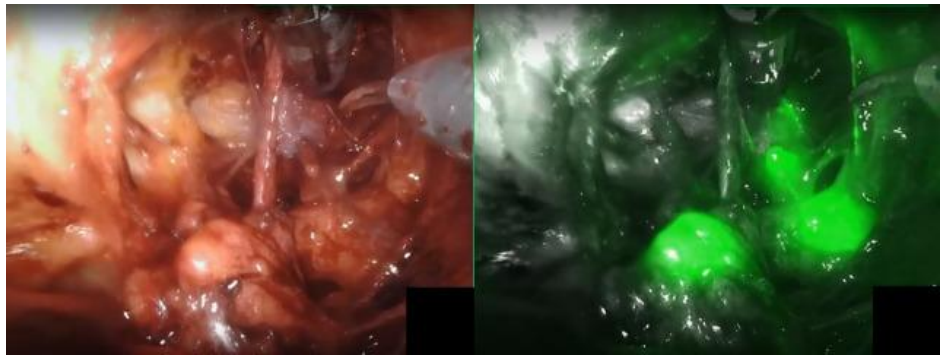
# Sentinel Node: Two Validation Trials



*Two trials, one conclusion*

- **GROINSS-V I** (n=403) — recurrence **2.3%**, survival **97%**
- **GOG-173** (n=452) — FNPV **3.7%** (**2.0%** if <4 cm)
- **Eligibility** — unifocal tumor, <4 cm, DOI >1 mm, clinically negative groins

| | GROINSS-V I | GROINSS-V II | GROINSS-V III |
|---|---|---|---|
| 디자인 | 2000–2006<br>다기관 관찰연구 | 2005–2016<br>2상 단일군 시험 | 2021– 등록 중<br>2상 단일군 시험 |
| 대상 | SN 음성 (전체 403명) | SN 미세전이 ≤2 mm<br>(전체 1535명) | SN 대전이 >2 mm<br>/ 피막외 침윤 |
| 치료 | IFL 생략 | 방사선 50 Gy | 항암방사선 56 Gy<br>+ cisplatin |
| 결과 | 서혜부 재발 2.3%<br>생존 97% | 재발 1.6%, 이환율 ↓ | 목표 157명 등록 예정 |



*GROINSS-V I — van der Zee et al. JCO 2008 · GOG-173 — Levenback et al. JCO 2012*

# SECTION III · Laterality and the Midline

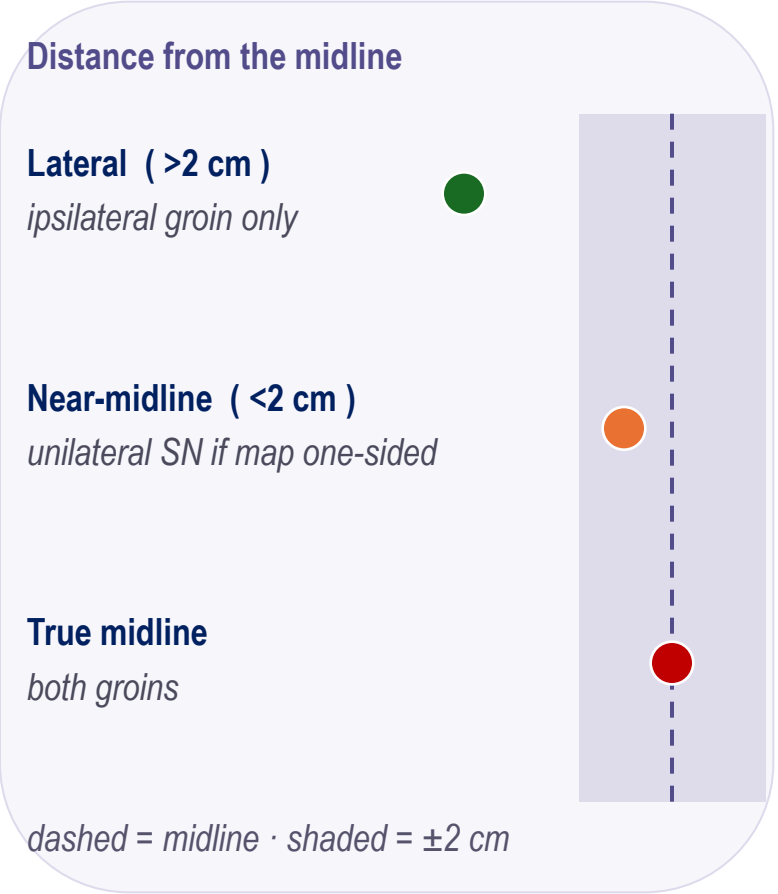
*The midline governs laterality*

- **Lateral (>2 cm) — ipsilateral groin only**
- **Near-midline (<2 cm) — unilateral SN if drainage one-sided**
- **True midline — imaging cannot spare the other groin**
- **Lymphoscintigraphy maps the basin before the incision**

**2 cm** from the midline — the line that defines a lateral lesion

**<3%** contralateral drainage from a truly lateral lesion

***Drainage crosses, or no map on one side → both groins***




*Coleman et al. Gynecol Oncol 2013;128:155–159 — lymphoscintigraphy analysis of GOG-173*

SECTION III · # When Lymphadenectomy Is Still Required

*When to still dissect — and the 2 mm line*

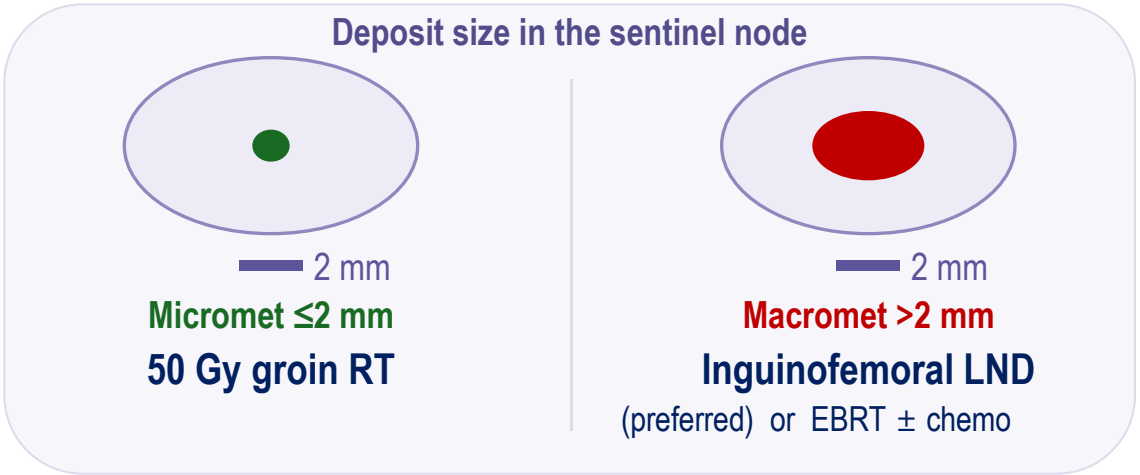
- **Dissect when** — macromet >2 mm · mapping failure · ≥4 cm or multifocal · suspicious nodes
- **Micromet ≤2 mm** — 50 Gy groin radiotherapy instead of dissection
- **Ultrastaging** — serial sections find the deposits that move the threshold

**Micromet ≤2 mm** **1.6%** +RT · **11.8%** none

**Macromet >2 mm** **22%** RT-only · **6.9%** LND

**Groin RT dose** **50 Gy** to the groin for an SN micrometastasis

**2 mm** is the decision threshold




*Oonk et al. JCO 2021 · Wagner et al. Cancers 2022 · ESGO 2023 and NCCN*

SECTION IV · 

# Sentinel Node in the Groin — NCCN

*Guideline-endorsed alternative to lymphadenectomy*

## WHO · patient selection

- **Threshold** — Stage IA (≤2 cm, ≤1 mm) → no groin surgery
- **Candidates** — cN0 groin · unifocal <4 cm · no prior surgery
- **Not a candidate** — multifocal · ≥4 cm · suspicious nodes

## HOW · technique

- **Dual tracer** — 99mTc colloid + blue dye (ICG optional)
- **Map first** — SLN before tumor excision
- **Ultrastaging** — serial sections + cytokeratin, every node
- **No map on a side** — inguinofemoral LND that side

## WHY · what a full LND costs

**20–40%** wound complication

**30–70%** lymphedema

*NCCN Guidelines, Vulvar Cancer v2.2026 — Principles of Surgery (VULVA-C)*

SECTION IV · 

# Managing the Mapping Result — NCCN

*From SLN result to groin treatment*

| | |
|---|---|
| **No map on a side** | → Full inguinofemoral LND, that groin |
| **SLN metastasis > 2 mm** | → Completion IFL preferred |
| **SLN positive (any size)** | → Completion IFL or groin RT · assess contralateral (± EBRT) |
| **Within 2 cm of midline** | → Bilateral node evaluation |

***Contralateral groin spared only if —*** *single small +node · well-lateralized · DOI ≤ 5 mm · cN0 contralateral*

*NCCN Guidelines, Vulvar Cancer v2.2026 — SLNB Management (VULVA-C)*

SECTION IV · 

# Minimally Invasive Approaches

*Less wound morbidity, similar nodal yield*

- **VEIL** — complications **20%** vs **70%** open; yield 9–11
- **RA-VEIL** — major cx **2%** vs **17%**; open-verified clearance 94.7%
- **ICG** — better mapping than blue dye alone
- **Why it helps** — no long groin incision, no skin-flap necrosis
- **Select cases** — cN0 groin, high-volume centre, structured learning curve

*Mostly penile-cancer data — promising, not yet standard*

*Ali et al. AME Med J 2023 · Mohammad & Hunter JMIG 2019 · Comba et al. Obstet Gynecol Sci 2021*

# VIDEOENDOSCOPIC SENTINEL LYMPH NODE DETECTION WITH ICG AND BILATERAL INGUINOFEMORAL LYMPHADENECTOMY IN VULVAR CANCER: COMBA TECHNIQUE

Cihan Comba M.D.[1], Sakir Volkan Erdogan M.D.[2], Aliye Erdogan M.D.[3], Busra Seker Atas M.D.[1], Omer Demir M.D.[4], Isa Aykut Ozdemir M.D.[3]

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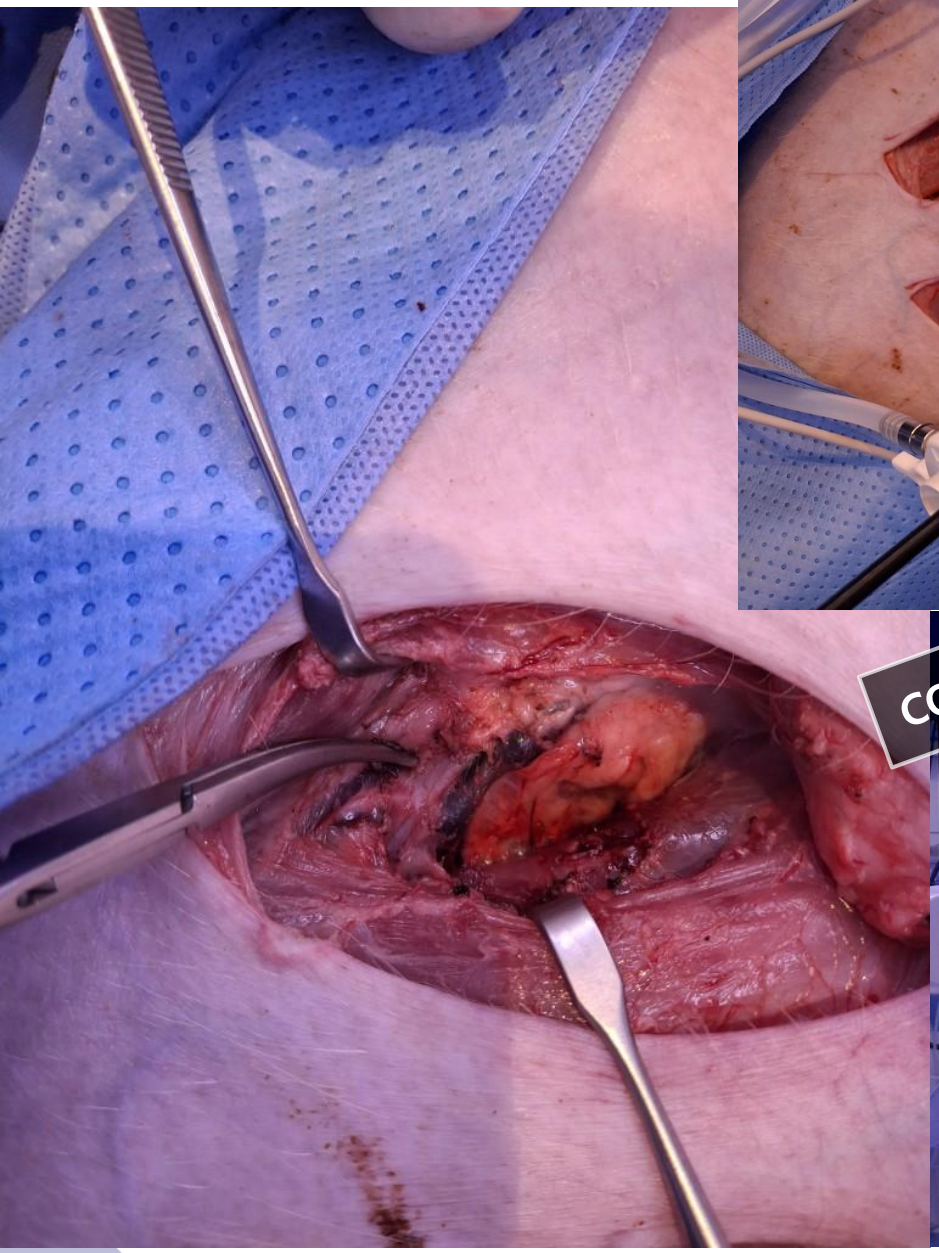
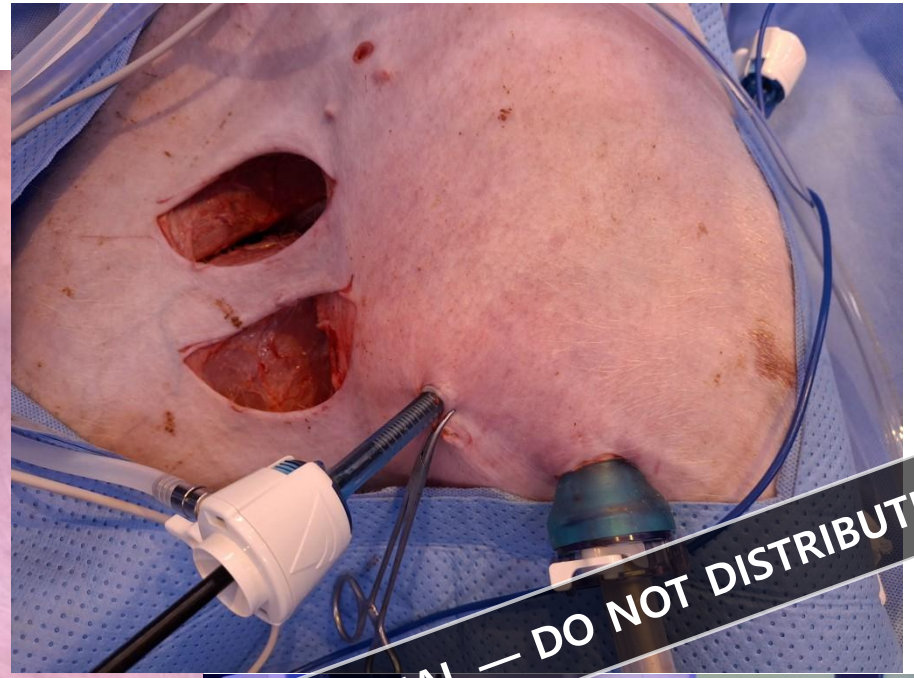
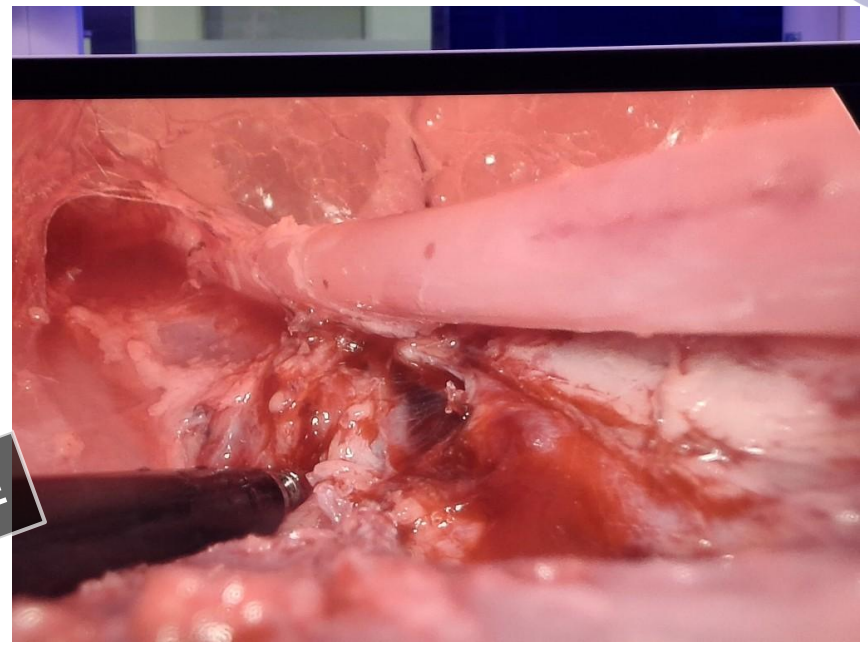
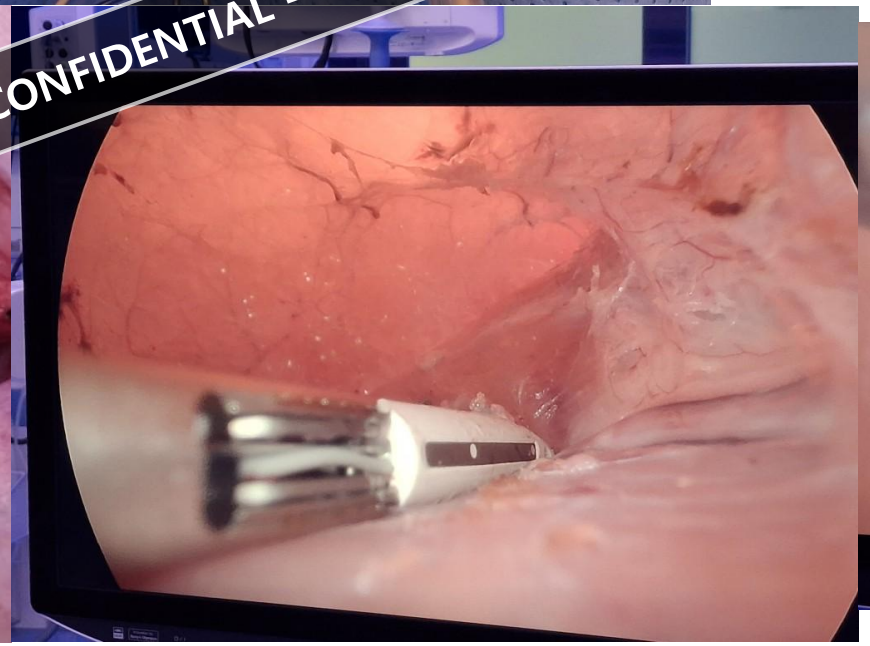
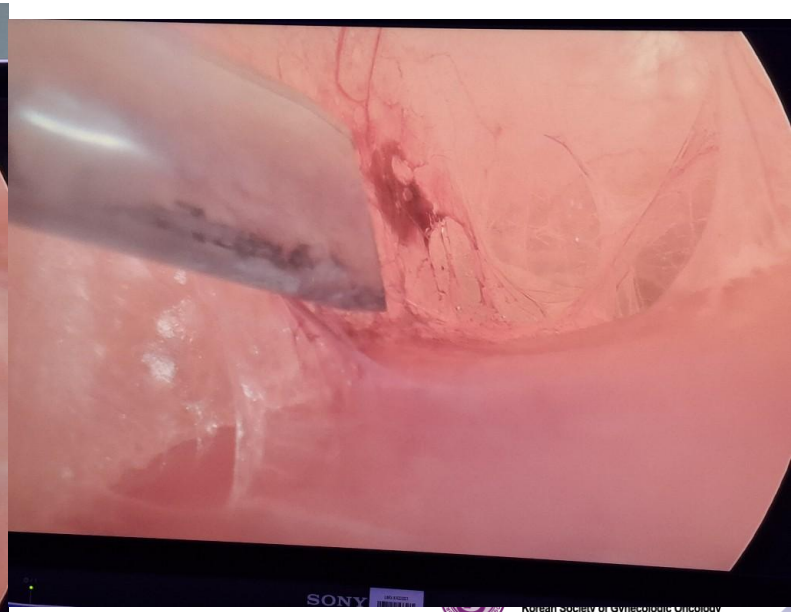












SUMMARY · # Five things to carry out of this room

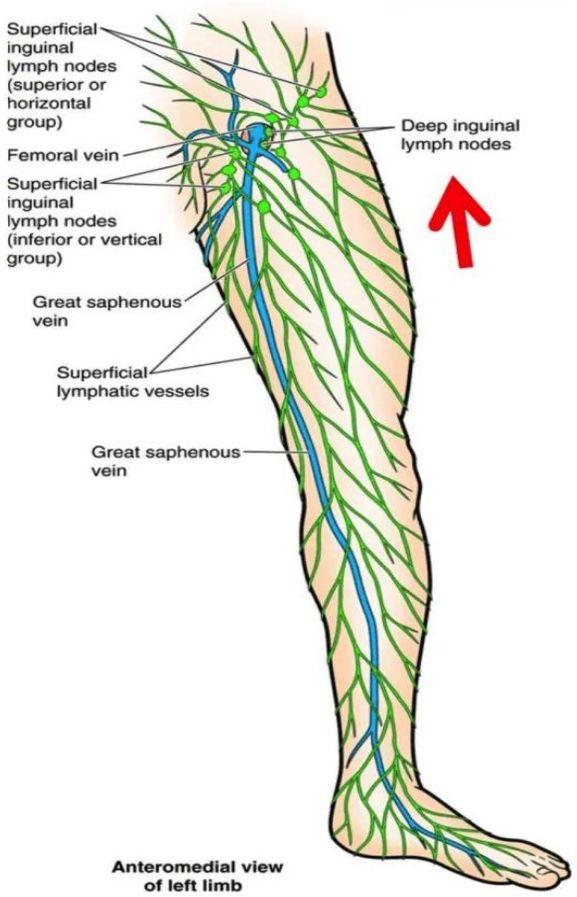
1 **Nodes decide outcome** — stage once invasion > 1 mm

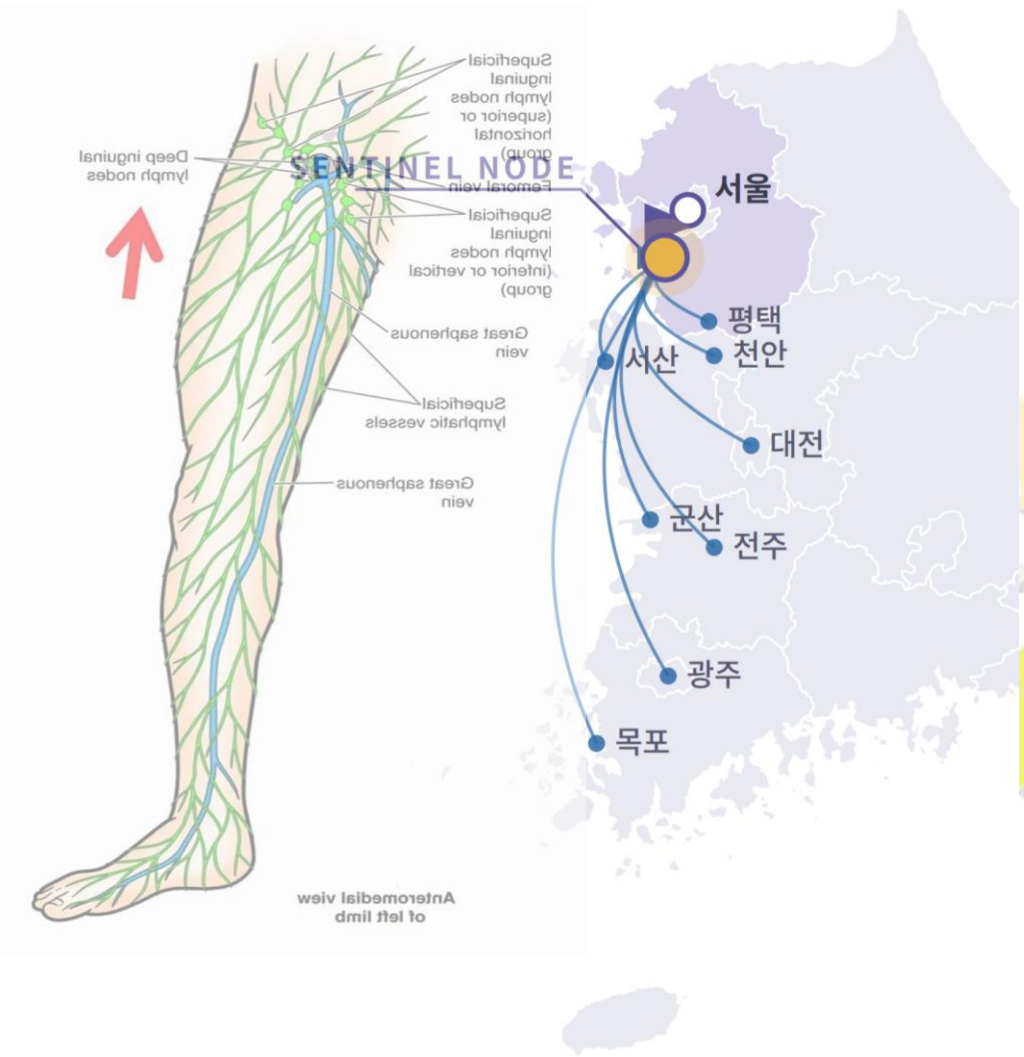
2 **Sentinel node is the early-disease standard** — FNPV ≈ 2%

3 **Midline governs laterality** — imaging spares only near-midline tumors

4 **Two millimetres changes the operation** — micrometastasis → RT, macrometastasis → LND

5 **Technique still protects the patient** — preserve Camper's fascia & saphenous vein


Superficial inguinal lymph nodes (superior or horizontal group)
Femoral vein
Superficial inguinal lymph nodes (inferior or vertical group)
Great saphenous vein
Superficial lymphatic vessels
Great saphenous vein
Deep inguinal lymph nodes
Anteromedial view of left limb





# 안산

## 고려대학교 안산병원 산부인과

- 서해안에서 서울로 올라오는 첫 관문
- 서울까지 30 km — 사실상 midline

Korean Society of
Gynecologic Oncology

# 2026년
# 대한부인종양학회 하계학술대회
# 제20차 젊은의사 워크숍
# 제9차 분과전문의 연수강좌
# 제1차 부인종양간호사 연수강좌
# & 카데바 워크숍

일자 2026년 8월 8일(토) - 9일(일)

장소 위례 밀리토피아 마린 호텔 / 가톨릭대학교 응용해부연구소

대한부인종양학회
Korean Society of Gynecologic Oncology