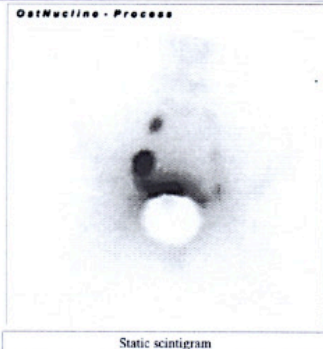


# SENTINEL NODE DETECTION IN PATIENTS WITH MIDLINE VULVAR CANCER

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**Introduction:** The standard treatment for squamous cell carcinoma of the vulva is radical surgery which includes inguinofemoral lymphadenectomy. The inguinal node status has been identified as most important prognostic factor. Lymphatic mapping with identification of sentinel nodes combined with ultrastaging by histological and immunohistochemistry examination has been proven to be essential for correct staging of the regional lymphatic nodes.

**Background and aims:** The aim of the study was to determine the diagnostic accuracy and feasibility of intraoperative sentinel lymph node (SLN) detection using gamma detection probe and blue dye (BD) in patients with vulvar cancer localised on the midline or close to it.

**Patients and methods:** In the period from May 2004 to February 2005 77 patients with histological proven cervical cancer, mean age 47.4 years, range 24-74 years, referred to our department for radical surgery were included into the study. Patients were divided into three groups according to tumor volume with tumor diameter less than 20 mm, with tumor diameter more than 20 mm and stadium IB2. The most frequent histological type was squamous cell carcinoma, 20 patients underwent preoperative consultation and 3 patients received neoadjuvant chemotherapy.



Blue SLN with blue coloured efferent lymphatic vessels

After assigned informed consent 50 MBq SENTI-SCINT (FJC National Research Institute for Radiobiology and Radiohygiene, Budapest, Hungary) was injected intracervically superficially in each quadrant around the tumor at 3, 6, 9 and 12 o'clock position using 27 gauge hypodermic needle 2 hours before surgery. Static scintigraphy is performed 1 hour after injection using a gamma camera to identify sentinel nodes. At the time of surgery in general anesthesia after pelvis exploration during the laparotomy, 4 ml of blue dye was injected superficially around the tumor at the same locations as the tracer. SLN were identified intraoperatively by using a handheld gamma detection probe after marking of lymphatic vessels with blue dye. Next the systematic lymph node dissection was done and all tissue was examined visually for blue staining and radioactive counts. If the counts were at least 10-fold above background levels, the node was considered sentinel. All sentinel nodes recorded by their position to the pelvic vessels were labeled as blue, hot or hot and blue positive. SLN were histologically and immunohistochemically analysed. For the final pathological analysis, serial sectioning of the sentinel node was performed to include four sections every 5 µm perpendicular to the long axis of the node. Each level was stained for hematoxylin and eosin and examined by immunohistochemistry with an anticytokeratin antibody cocktail (Monoclonal Mouse Anti-human Cytokeratin: AE/AE3, Code M. Dako).

FIGO stage	Number of patients	Detection rate of SLN	Detection per site	Number of SNLs	Positive SLNs	False negative
IA2 - IB1 < 2 cm	42	41 97,6%	85,7%	55	14,3%	0
IB1 > 2 cm	29	27 93,1%	87,9%	69	69%	2
IB2	6	5 83,3%	66,7	8	83,3%	0
<b>Total</b>	<b>42</b>	<b>38 90,5%</b>	<b>84,5%</b>	<b>97</b>	<b>17</b>	<b>2</b>

**Results:** A total number of 2 764 lymph nodes with an average 36 per patient and 202 sentinel lymph nodes with an average 2,6 per patient were identified. The SLN detection rate was 94,8 % per patient and 85,7% for the side of dissection and depends of the tumor volume. False negative rate was 3%, sensitivity and negative predictive value calculated per patient were 92,3% and 95,7% respectively. Sentinel nodes were identified in obturator area in 48%, external iliac in 15 %, common iliac and internal iliac both in 9%, interiliac in 8 %, sacral region in 6% and parametrial region in 5 % of cases. Metastatic disease was detected in 31 patients (40,0 %), patients in whom SLN only site of micrometastasis were 6 (50%).

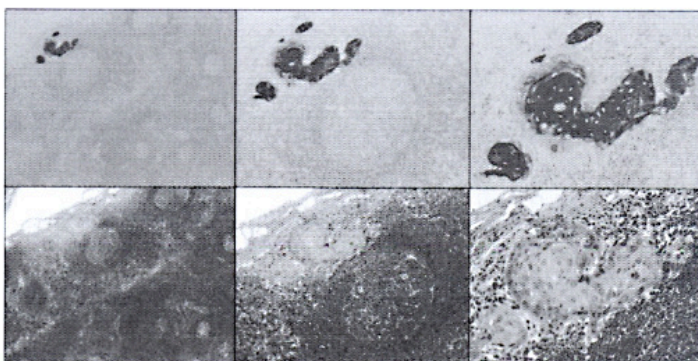
**Discussion:** Non invasive staging of the regional lymph nodes in these patients is false negative in approximately 20%.

In cases, where lymphatic spreading is confirmed by positivity of the sentinel node, the primary surgical treatment will be avoided, as it would have followed by adjuvant radiotherapy.

In cases, where the lymphatic spreading of the tumor will be excluded by the negativity of the sentinel node, there is no need to perform systematic regional lymphadenectomy and thus patient morbidity will be decreased.

**Conclusions:** Intraoperative lymphatic mapping using combination of technetium-99-labeled nanocolloid and blue dye are feasible, safe and accurate techniques to identify SLN in vulvar cancer.

Micrometastasis in the subcapsular sinus in a sentinel node stained by immunohistochemistry (magnification 31x, 76x, 156x)



Micrometastasis in the subcapsular sinus in a sentinel node stained by H&E (magnification 31x, 76x, 156x)

Factor considered	Methods of SLN Localization		
	Radioisotope Alone	Blue Dye Alone	Radioisotope plus Blue Dye
Patients in whom SLNs found at surgery	66/84 78,6%	54/84 64,3%	38/42 90,5%
Sensitivity	17/17 100%	13/14 92,9%	18/18 100%
Negative predictive value	42/42 100%	59/60 98,3%	51/51 100%
Accuracy	59/59 100%	59/60 98,3%	69/69 100%
Patients in whom SLN only site of metastasis	6/13 46,2%	4/10 40%	6/12 50%