

# Lymphoscintigraphy in radical vaginal trachelectomy and pelvic lymphadenectomy

Dariusz Wydra<sup>1</sup>, Sambor Sawicki<sup>1</sup>, Janusz Emerich<sup>1</sup>,  
Grzegorz Romanowicz<sup>2</sup>

<sup>1</sup>Department of Gynaecology, Medical University, Gdańsk, Poland

<sup>2</sup>Department of Nuclear Medicine, Medical University, Gdańsk, Poland

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## Abstract

**BACKGROUND:** Radical hysterectomy has traditionally been the treatment of choice for early invasive cervical carcinoma. Validation of the sentinel lymph node concept in gynaecology has led to less radical surgery. If preservation of fertility is an issue, then radical trachelectomy is an accepted approach.

**CASE REPORT:** A 29-year-old female presented with stage IB1 cervical cancer was treated by radical vaginal trachelectomy and pelvic lymphadenectomy as definitive treatment. Two obturator nodes visualised on lymphoscintigraphy and one parametrial not visualized on lymphoscintigraphy were “hot” and blue during surgery, and identified as sentinel nodes. All 18 nodes were non-metastatic.

**CONCLUSION:** Preoperative lymphoscintigraphy is a useful tool in the preoperative localisation of sentinel lymph nodes, and should be undertaken in cases of early invasive cervical carcinoma where a radical trachelectomy is performed to preserve fertility.

**Key words:** sentinel node, cervical cancer, lymphoscintigraphy, radical vaginal trachelectomy

Correspondence to: Dariusz Wydra  
Department of Gynaecology, Medical University  
ul. Kliniczna 1 A, 80–402 Gdańsk, Poland  
Tel: (+48) 501 105 174, fax: (+48 58) 341 80 03  
e-mail: dwydra@amg.gda.pl

## Introduction

Radical hysterectomy with pelvic lymphadenectomy is the standard treatment for early stage (IA2, IB) cervical cancer in most centres. Approximately 30% of women suffering from cervical cancer are less than 35 years old and for many of them the preservation of fertility is an important issue. Recently, the combination of radical vaginal trachelectomy (RVT) with sentinel lymph node (SLN) assessment has been developed for the preservation of female fertility [1–4].

## Case report

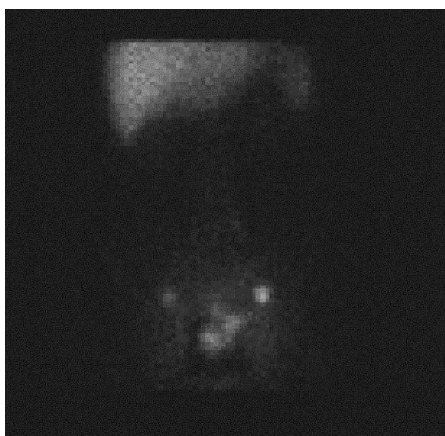
A 29-year-old female presented herself to her physician for routine gynaecological care. During her visit, she had a cytological evaluation of the cervical stump that was interpreted as cervical cancer. She underwent a cervical conisation that revealed squamous cell carcinoma with positive margin. After extensive discussion with the patient regarding the risk, she chose RVT with lymphadenectomy as a way of treatment to protect her fertility. Preoperative routine magnetic resonance imaging (MRI) performed to measure isthmus and lymph node involvement was negative.

### Preoperative lymphoscintigraphy

Pre-operative lymphoscintigraphy was performed by injecting 1.0 ml Technetium-99m-radiocolloid (Nanocoll, Amersham, England), activity 35 MBq per injection, around the tumour under the guidance of speculum-assisted view. This was divided into 4 injections at the 12, 3, 6 and 9 o'clock positions. The injection was applied using an insulin syringe (22 G). It was important not to inject directly into the tumour and to avoid backflow out of the cervical canal or injection canal. Five static scans, 900,000 counts each, were taken in anterior projection using a gammacamera Multispect2 (Siemens, Erlangen, Germany).

### Intraoperative lymphatic mapping

Blue dye was injected subepithelially after the patient had undergone general anaesthesia. Injection dose was 4 ml blue dye into the cervix at 3, 6, 9 and 12 o'clock positions.



**Figure 1.** The nodal uptake of radiotracer visible in the bottom part of the figure.

During the operation, the gamma detector probe, Europrobe (Eurorad, Sevres, France), was positioned along the lymph node regions to detect possible SLNs. Bilateral obturator SLNs visualised on lymphoscintigraphy, both blue and radioactive, were identified (Figure 1). On both sides, stained lymphatic channels were seen. Additionally, a right parametrial SLN was found hot and blue. The sentinel lymph nodes were removed and separately sent for pathological frozen section evaluation. A conventional pelvic lymphadenectomy was performed. Then, following rapid frozen section LN results, a radical vaginal trachelectomy was performed. Blood loss was 300 ml. The postoperative course was uncomplicated and she was discharged after 7 days. Final histological interpretation revealed 18 LNs non-metastatic, and without micro-invasion in the cervix. The patient completed an 8-month follow-up examination.

## Discussion

The RVT technique was first described by Dargent [5], as a modified version of Schauta operation. Although radical trachelectomy (RT) is considered an adequate therapy for women with early stage cervical cancer wishing to preserve fertility, the decision to operate in this way must also take into consideration the risk of recurrence [6]. In order to minimize this risk the following criteria should be considered: 1) the desire to preserve fertility; 2) no clinical evidence of impaired fertility; 3) stage IA2 or IB; 4) lesion size  $< 2$  cm; 5) absence of adenocarcinoma; 6) absence of capillary space involvement; 7) limited endocervical involvement on colposcopic examination; 8) no evidence of pelvic node metastasis [7–8].

Magnetic resonance imaging appears to be accurate in the prediction of myometrial tumour involvement and showing the relationship of cervical carcinoma to the internal os and, hence, the patient's suitability for trachelectomy [9]. Therefore, preoperative MRI assessment should be routinely performed to identify patients with a high risk of recurrence: tumour  $> 2$  cm and involvement of uterine isthmus.

The pelvic nodal status is an important prognostic marker for cervical cancer. If positive lymph nodes are encountered, the surgeon has the option of continuing with radical hysterectomy in-

stead of RT, or discontinuing in favour of chemoradiation with the cervix intact. The sentinel lymph node (SLN) corresponds to the first lymph node receiving lymphatic drainage from a specific region [10–13]. In order to detect this lymph node, a marker substance drained via lymphatic channels must be injected around the primary tumour: this can be done by using either a dye substance or a radioactively labelled protein.

Preoperative lymphoscintigraphy may help to identify lymphatic channels, and to define unpredictable nodal draining basins. In our reported case, an additional SLN was diagnosed in the right parametrium. It was not diagnosed during preoperative lymphoscintigraphy.

In discussing this fact, two reasons can be identified. Firstly, diagnosis was not made during preoperative lymphadenectomy because the SLN was situated too close to the point of tracer administration. Secondly, the lead shield placed beneath the patient was too large thus obscuring the signal from the "hot" parametrial node. However, whilst the efficacy of preoperative lymphoscintigraphy remains controversial in cervical cancer especially in the localisation of parametrial nodes, its main advantage is that it allows accurate preoperative localisation of SLN.

We can conclude that preoperative lymphoscintigraphy is a useful tool in the preoperative localisation of SLN and should be undertaken in cases of early invasive cervical carcinoma where a radical trachelectomy is performed to preserve fertility.

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