

# A new method to aid complete lymphadenectomy in radical treatment of cancer of the cervix

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## ABSTRACT

**Objective:** A simple, new and not previously reported method to improve the complete ablation of the pelvic lymph nodes in the surgical treatment of cervical cancer is briefly reported.

**Methods:** Fourteen patients had been operated upon at Zahrawi Maternity Hospital, Damascus, Syria using radical Wertheim hysterectomy for surgical treatment. Five to 10 days prior to surgery, patients are given intramuscular iron injections that help easy visualization of the lymph nodes during operation.

**Results:** In all the 14 cases treated with this simple pre-operative medication, pelvic lymph nodes were easily identified and completely removed.

**Conclusion:** Pre-operative iron injections help in better identification of even the smallest pelvic lymph nodes and improve their complete removal.

**Keywords:** Cervical cancer, lymphadenectomy, surgical treatment.

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**P**athological analysis of lymph nodes removed at the time of radical surgery demonstrates a clear relationship between the early stage of invasive cervical squamous cell carcinoma (SCC) or depth of invasive cervical SCC, and the presence of pelvic lymph node metastases.<sup>1</sup> The spread of cervical cancer via lymphatics occurs relatively early in the course of the disease, occurring in 8-25% of stage I, and 21-38% of stage II lesions.<sup>2,3</sup> The most common sites of lymph node metastases are the internal iliac, obturator, external iliac and common iliac lymph nodes.<sup>4</sup> At present, radical hysterectomy with pelvic lymphadenectomy is considered as the appropriate therapeutic approach for most stage IA2 SCC of the cervix invading more than 3 mm into the stroma. In stage IB and stage IIA cases, radical hysterectomy and bilateral pelvic lymphadenectomy give identical results to radiation therapy. A number of reports have indicated the potential value of lymph node

identification in surgical oncology, particularly concerning cervical tumors. However, such methods as radioisotope use,<sup>5</sup> or pre-operative and postoperative lymphography<sup>6</sup> are not easily applicable in this area. We present a simple method that helps in better identification of the pelvic lymph nodes and therefore achieves complete, or as complete removal as possible. This very simple and non-invasive method describes how this desired goal is attained.

**Methods.** Fourteen patients had been operated upon, using radical Wertheim hysterectomy (Meigs II and III) for surgical treatment of cervical cancer stage IB-IIA (according to the criteria of the International Federation of Gynecology and Obstetrics, a classification of cervical cancer). These patients had been advised to have 10 intramuscular

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(IM) iron injections immediately before the surgery. A total of 10 ampoules of iron (iron III, hydroxide polymaltose/Ferrum Haussman) were injected within 5 to 10 days before operation. All specimens had been sent for histopathological examination.

**Pathological findings.** Grossly, the lymph node specimens showed smooth, brownish enlargement with small pigmented deposits on the external surface. On cut section, they showed a motley color of brownish type. All the biopsy specimens were fixed in 10% formalin, were paraffin-embedded, sectioned at 4-5  $\mu\text{m}$  thickness and stained with Hematoxylin and Eosin (H&E). Histologically, the lymphoid follicles are diminished, the germinal centres are hyperplastic, and sinus histiocytosis is predominant. The sinuses are dilated and filled with histiocytes in which large amounts of fine golden brown to fine dark brown granules are seen within the cells cytoplasm. These pigmented granules represent aggregates of hemosiderin-laden macrophages.

**Results.** Fourteen patients were included in this study, the age range was 40 to 56 years (mean 47 years). In all, the 14 cases treated with this simple pre-operative medication, pelvic lymph nodes were enlarged and easily visible showing a sodden brown discoloration. The number of ablated nodes were also higher compared to other cases without preliminary iron injections. On the other hand, the pathological findings showed characteristic features of these lymph nodes with hemosiderin accumulations. However, no side effects were reported.

**Discussion.** The process of lymph node metastasis is of major practical value. It constitutes a common object of the study in surgical excision of organs. The presence of lymph node metastasis constitutes an essential factor in the tumor node metastasis (TNM) prognosis system. A number of studies had investigated the value of identification of the pelvic lymph nodes in the surgical treatment of cervical cancer. This novel method of pre-operative IM iron administration allows easier detection of the pelvic lymph nodes. We applied this technique, for an easier and surer identification of the pelvic lymph nodes which results in their complete or as complete as possible ablation during radical surgery for operable cervical cancer in Syria. As far as we know, the pre-operative IM iron injections (IMII) as a method to improve quicker and easier pre-operative identification of the pelvic lymph nodes was not previously reported in the literature. This method, as compared to results obtained from other techniques such as radioisotope use or pre and postoperative lymphography, has the advantage of simplicity and efficiency, and we noted no side effects.

In our study, pre-operative iron injection helps in better identification of pelvic lymph nodes and improves their complete removal as the lymph nodes become enlarged. The brown staining of histiocytes gives a characteristic appearance to the lymph nodes. The histiocytes, cells endowed with phagocytic ability, are the main reactants against iron metabolism, forming hemosiderin-laden-macrophages. When there is a local excess of iron, ferritin forms hemosiderin granules, which are easily seen in the light microscope. Macroscopically and compared to patients with no IMII, we noted that those who had pre-operative IMII had more conspicuous pelvic lymph nodes than those who did not. Lymph nodes were discolored sodden brown and were visible by transparency and even before opening the pelvic peritoneum. During lymph node dissection, we were able to identify even the tiniest lymph node as they had gained that special rusty iron color. In these cases, we noted that the number of ablated nodes were higher than in those cases when surgery was carried out without preliminary iron injections. In all studied cases, the pelvic lymph nodes were beautifully identified and removed with more clinical satisfaction of a complete or a quasi-complete removal. These injections were given even in cases with normal hemoglobin levels without any adverse reactions. Due to the small number of cases, no attempt has been made yet to compare the number of removed pelvic nodes before and after applying this simple method.

We conclude, that the pre-operative IMII, which is a very simple method, helps in better identification of even the smallest pelvic lymph nodes and improves complete removal.

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