Original Article

A comparative study of sentinel lymph node biopsy versus modified inguinal lymphadenectomy in penile cancer

Bharat Subhash Borole[1*], Govinda Bhagwat Toke[2]

[1,2]Associate Professor, Department of Pathology, Dr Ulhas Patil Medical College and Hospital, Jalgaon, Maharashtra, INDIA.
Email: drbharatsborole@gmail.com

Abstract

Introduction: Nodal metastasis remains the single most important prognostic factor for patients with penile cancer. Over half of patients with penile squamous cell carcinoma (SCC) have clinically impalpable inguinal nodes at presentation, and up to 20% of these will harbor clinically occult micro metastases (< 2 mm). Clinical examination and current imaging methods remain inaccurate for detecting micro metastases. **Methodology:** After approval from institutional ethical committee a prospective study on 30 patients who had penile cancer was carried out at tertiary health center conducted between Jan 2010 to Jan 2015. All the patients, after signature of informed consent, had undergone partial penectomy, biopsy of the sentinel lymph node from the negative inguinal regions and modified radical lymphadenectomy as proposed by Catalona (1988) in these regions regardless of the biopsy results. Biopsy of the sentinel lymph node and classical radical lymphadenectomy were performed in the positive inguinal regions **Result:** Total Malignancy detected by the Sentinel Lymph node biopsy were in 19 cases out of that 18 were confirmed by the Modified inguinal Lymphadenectomy 1 was falsely diagnosed as Malignant and in 11 malignancy negative sites 9 were true negative but in 2 cases malignancy was detected by Modified inguinal Lymphadenectomy so in this case Sensitivity of the Sentinel Lymph node biopsy = 90%, Specificity = 76.78%, Positive Predictive Value= 94.73%, Negative Predictive Value= 81.81%. **Conclusion:** Sentinel Lymph node biopsyprocedure is having high diagnostic reliability and accuracy as comparable with the gold standard procedures so is having valuable role in management of the penile cancer.
Keywords: Sentinel Lymph node biopsy, modified inguinal Lymphadenectomy, Penile Cancer.

[*]**Address for Correspondence:**
Dr. Bharat Subhash Borole, Associate Professor, Department of Pathology, Dr. Ulhas Patil Medical College & Hospital, N.H.No.6, Jalgaon-Bhusawal Road, Jalgaon, Khurd, Jalgaon-425309 Maharashtra, INDIA.
Email: drbharatsborole@gmail.com
Received Date: 02/06/2015 Revised Date: 10/07/2015 Accepted Date: 20/08/2015

Access this article online	
Quick Response Code:	Website: www.statperson.com
	DOI: 01 December 2015

INTRODUCTION

Nodal metastasis remains the single most important prognostic factor for patients with penile cancer1. Over half of patients with penile squamous cell carcinoma (SCC) have clinically impalpable inguinal nodes at presentation, and up to 20% of these will harbor clinically occult micro metastases (< 2 mm)[2]. Clinical examination and current imaging methods remain inaccurate for detecting micro metastases3.Lopes *et al*. comparing clinical and pathological features in penile cancer patients, found that the sensitivity, specificity, positive and negative predictive values, and effectiveness of clinical procedures for assessment of metastases were 66.7, 52.3, 60.8, 58.6 and 59.9%, respectively. On multivariate analysis of pathological factors only lymphatic (p = 0.0008) and venous (p = 0.0410) penile embolization were significantly associated with risk of lymph node me¬tastases[18]. In the case of clinically negative inguinal regions, the treatments proposed might vary from careful observation to radical dissection for all patients with intermediary solutions such as sentinel lymph node biopsy and modified dissection of the inguinal region with preservation of some structures and lymph nodes[4]. The principle of identifying the first drainage lymph node in the affected area and based on its pathological assessment defining the need for more

How to site this article: Bharat Subhash Borole, Govinda Bhagwat Toke. A comparative study of sentinel lymph node biopsy versus modified inguinal lymphadenectomy in penile cancer. *International Journal of Recent Trends in Science and Technology*. December 2015; 17(2): 01-03 http://www.statperson.com (accessed 02 December 2015).

aggressive interventions seems to be an important and interesting procedure. This may be the reason why it has been the subject of several articles that demonstrate experience in this procedure or aim at assessing the validity of this test and its morbidity in relation to other interventions[5,6].

MATERIALS AND METHODS

After approval from institutional ethical committee a prospective study on 30 patients who had penile cancer was carried out at tertiary health center conducted between Jan 2010 to Jan 2015. All the patients, after signature of informed consent, had undergone partial penectomy, biopsy of the sentinel lymph node from the negative inguinal regions and modified radical lymphadenectomy as proposed by Catalona (1988) in these regions regardless of the biopsy results 3.Biopsy of the sentinel lymph node and classical radical lymphadenectomy were performed in the positive inguinal regions. Patients underwent lymphoscintigraphy with 99mtechnetium-labelednanocolloid, which was injected intradermally around the tumor or into the distal penile shaft skin. Four hours later, the sentinel lymph node was identified during surgery using a hand-held γ-probe.

RESULTS

Table 1: Distribution of Lesion Based Sentinel Lymph Node Biopsy versus Modified Inguinal Lymphadenectomy

Sentinel Lymph node biopsy	Modified inguinal Lymphadenectomy		Total
	Malignancy Detected	Malignancy not Detected	
Malignancy Detected	18(Truepositive)	1(Falsepositive)	19
Malignancy not Detected	2(Falsenegative)	9(Truenegative)	11
Total	**20**	**10**	**30**

From the Table it is clear that total Malignancy detected by the Sentinel Lymph node biopsy were in 19 cases out of that 18 were confirmed by the Modified inguinal Lymphadenectomy 1 was falsely diagnosed as Malignant and in 11 malignancy negative sites 9 were true negative but in 2 cases malignancy was detected by Modified inguinal Lymphadenectomy so in this case Sensitivity of the Sentinel Lymph node biopsy = 90%, Specificity = 76.78%, Positive Predictive Value= 94.73%, Negative Predictive Value= 81.81%.

DISCUSSION

More than 95% of malignant penile neoplasms aresquamous cell carcinomas. The pattern of dissemi-nation is predominantly lymphogenic, as is common in squamous cell carcinomas. In penile carcinoma, the first draining lymph nodes are in the inguinal region. The secondary regional nodesare located in the pelvic region. The treatment of patients with penile carcinoma and proven inguinal metastases is straightforward and consists of treatment of the primary lesion and inguinally mph node dissection (ILND). However, for clini-cally node-negative (cN0) patients the management of the inguinal regions has been subject of debate for many years. A routine elective ILND leads to over-treatment in the vast majority of patients because the incidence of occult lymphnode metastases is around 20%[7,8,9]. Incontrast, await-and-see policy carries the risk of detecting inguinal metastasis in a later stage, negative lyinfluencing oncologic outcome[10]. Conventional imaging modalities like ultrasonography, com-puted tomography (CT), and magnetic resonance imaging (MRI) have so far not convincingly improved the detection of occult metastases[11]. In addition, although several primary tumour characteristics are significantly associated with a high risk of nodal involvement, these are still rather unreliable in predicting occult metastases[12,13]. In our study we have observations total Malignancy detected by the Sentinel Lymph node biopsy were in 19 cases out of that 18 were confirmed by the Modified inguinal Lymphadenectomy 1 was falsely diagnosed as Malignant and in 11 malignancy negative sites 9 were true negative but in 2 cases malignancy was detected by Modified inguinal Lymphadenectomy so in this case Sensitivity of the Sentinel Lymph node biopsy = 90%, Specificity = 76.78%, Positive Predictive Value= 94.73%, Negative Predictive Value= 81.81%. So the detection rate of the 90% is quite excellent in the detection and also the specificity also 76.78% so this procedure is having high diagnostic reliability and accuracy as comparable with the gold standard procedures these findings are comparable with Ubirajara Ferreira *et al* (2008)[18] in the in their study they found sentinel lymph node presented 0% false negative 66% sensitivity, and 79.3% specificity when compared with the modified inguinal lymphadenectomy as the gold standard treatment. ILND has an essential role in the treatment of proven inguinal metastasis and is curative in approximately 80% of patients who present with one or two metastatic lymph nodes[16]. It is, however, a procedure that is associated with significant mor-bidity, such as severe oedema and wound infections. The reported complication rate varies from 35% to 88%[14]. The rate of complications is lower when ILDN is performed in a prophylactic or therapeutic setting and is higher in a palliative setting[14,15]. To reduce the high morbidity associated with the standard ILND, efforts have been made to reduce the extent of surgery. Catalona *et al* first reported on the modified ILND[16]. In this procedure the

extent of nodal tissue removed is limited, and the saphenous vein is spared. The complication rate of the modified ILND is lower, but the oncologic safety of this procedure has been questioned[17]. Mainly because of the morbidity of the procedure, several issues of debate remain on the role and extent of ILND in clinically node-negative groins. First, the timing of ILND is subject of debate. On the one hand, cN0 patients seem to benefit from early dissection compared to late dissection (after a wait-and-see policy)[10]. On the other hand, an elective ILND proves to be unnecessary in up to 82% of patients because of the low incidence of occult metastases in cN0 patients[8].

REFERENCES

1. Ornellas AA, Seixas AL, Marota A, Wisnescky A, Campos F, de MoraesJR. Surgical treatment of invasive squamouscell carcinoma of the penis: retrospective analysis of 350 cases. JUrol 1994;151:1244–
2. .Abi-Aad AS, deKernion JB. Controversies in ilioinguinal lymphadenectomy for cancer of the penis. UrolClin North Am 1992;19: 319–24
3. Horenblas S, Van Tinteren H, Delemarre JF, Moonen LM, Lustig V, Kroger R.Squamous cell carcinoma of the penis: accuracy of tumor, nodes and metastasis classification system, and role of lymphangiography, computerized tomography scan and fine needle aspiration cytology.J Urol1991;146:1279–83
4. Catalona WJ: Modified inguinal lymphadenectomy for carcinoma of the penis with preservation of saphenous veins: technique and preliminary results. J Urol. 1988; 140: 306-10.
5. Perdona S, Autorino R, De Sio M, Di Lorenzo G, Gallo L, Damiano R, et al.: Dynamic sentinel node biopsy in clinically node-negative penile cancer versus radical inguinal lymphadenectomy: a comparative study. Urology. 2005; 66: 1282-6
6. Kroon BK, Horenblas S, Meinhardt W, van der Poel HG, Bex A, van Tinteren H, et al.: Dynamic sentinel node biopsy in penile carcinoma: evaluation of 10 years' experience. Eur Urol. 2005; 47: 601-6; discussion 606.
7. Solsona E, Algaba F, Horenblas S, Pizzocaro G, Windahl TEAU guidelines on penile cancer. EurUrol 2004;46:1–8
8. Hegarty PK, Kayes O, Freeman A, et al. A prospective study of 100 cases of penile cancer managed according to Eur- opean Association of Urology guidelines. BJU Int 2006; 98:526–31.
9. Ficarra V, Zattoni F, Cunico SC, et al. Lymphatic and vascular embolizations are independent predictive variables of inguinal lymph node involvement in patients with squamous cell carcinoma of the penis: GruppoUro-Oncologico del Nord Est (Northeast Uro-Oncological Group) Penile Cancer data base data. Cancer 2005;103: 2507–16
10. Kroon BK, Horenblas S, Lont AP, et al. Patients with penile carcinoma benefit from immediate resection of clinically occult lymph node metastases. J Urol 2005;173:816–9
11. Horenblas S, van Tinteren H, Delemarre JF, et al. Squamous cell carcinoma of the penis: accuracy of tumor, nodes and metastasis classification system, and role of lymphangiography, computerized tomography scan and fine needle aspiration cytology. J Urol 1991; 146:1279–83.
12. Lopes A, Hidalgo GS, Kowalski LP, et al. Prognostic factors in carcinoma of the penis: multivariate analysis of 145 patients treated with amputation and lymphadenectomy. J Urol 1996;156:1637–42
13. Slaton JW, Morgenstern N, Levy DA, et al. Tumor stage, vascular invasion and the percentage of poorly differentiated cancer: independent prognosticators for inguinallymph node metastasis in penile squamous cancer. J Urol2001; 165:1138–42.
14. Bevan-Thomas R, Slaton JW, Pettaway CA. Contemporary morbidity from lymphadenectomy for penile squamous cell carcinoma: the M. D. Anderson Cancer Center Experi-ence. J Urol 2002;167:1638–42
15. d'Ancona CA, de Lucena RG, Querne FA, et al. Long-term followup of penile carcinoma treated with penectomy and bilateral modified inguinal lymphadenectomy. J Urol 2004; 172:498–501.
16. Catalona WJ. Modified inguinal lymphadenectomy for carcinoma of the penis with preservation of saphenous veins: technique and preliminary results. J Urol 1988; 140: 306–10.
17. Lopes A, Rossi BM, Fonseca FP, Morini S. Unreliability of modified inguinal lymphadenectomy for clinical staging of penile carcinoma. Cancer 1996; 77:2099–102.
18. Ubirajara Ferreira, Marco A.V. Ribeiro, Leonardo O. Reis, Alessandro Prudente, Wagner E. Matheus. Sentinel Lymph Node Biopsy in Penile Cancer: A Comparative Study Using Modified Inguinal Dissection. International Braz J Urol. November - December, 2008; 34 (6): 725-733

Source of Support: None Declared
Conflict of Interest: None Declared