

Original Research Article

Limited Versus Complete Axillary Lymphatic Dissection as Part of The Overall Procedure of Modified Radical Mastectomy in The Management of Invasive Breast Cancer Patients

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Abstract

Complete dissection of axillary lymph nodes (DALN) can be sidestepped in chosen cases of invasive breast cancer patients with confined lymph nodal disease and having conventional breast surgery, nevertheless, for node positive mastectomy patients, complete dissection of axillary lymph nodes remains the model procedure, Avoidance of complete dissection of axillary lymph nodes is reliable in many node-positive patients and can be substituted with limited axillary lymph node dissection which consists of elimination of Sentinel lymph nodes and other grossly palpable lymphatics without further axillary devastation. A prospective study of 55 women patients diagnosed with invasive breast cancer underwent mastectomy with conservative dissection of axillary lymph nodes between September 2012 and December 2014 in Al-yarmouk teaching hospital and private hospitals in Baghdad, the recorded information included patient age, menstrual history, drug history, family history, tumour staging, number of axillary lymph nodes excised, postoperative medical therapy, adjuvant radiotherapy, recurrence and local complications including lymphedema, Fifty five patients underwent mastectomy with limited axillary lymph node dissection, all are females, the mean age was 38 years, 43 patient (78.2%) were invasive ductal carcinoma and 12 patients (21.8%) invasive lobular carcinoma, the mean follow-up period was 2 years, a mean number of eight lymph nodes were removed, there were 1 patients (1.8) % with local chest wall recurrence but no single case of axillary recurrence. Lymphedema development occurred in 2 patients (3.6%) and was associated with significant number of the removed lymph nodes (P=0.05) and postoperative radiotherapy (P=0.005).

Key words: Mastectomy, Axillary lymph node dissection, Breast cancer

التشريح الابطي للمفاوي الجزئي مقارنة بالتشريح للمفاوي الابطي الكامل كجزء من عملية استئصال الثدي الجذري لعلاج حالات مرضى سرطان الثدي النافذ

الخلاصة

يعتبر التشريح الابطي للمفاوي الكامل هو الاجراء الاعتيادي المتبع في علاج حالات سرطان الثدي النافذ للمرضى الخاضعين الى عملية استئصال الثدي ولكن هذا الاجراء يمكن تجنبه بأمان في حالات مختارة من حالات سرطان الثدي مع انتشار لمفاوي ايجابي محدود والاستعاضة عنه باستئصال محافظ للغدد للمفاوية الابطية الحارسة والعقد الكبيرة الواضحة دون المساس بباقي انسجة الابط الاخرى. لإثبات أن التشريح الكامل للابط في علاج حالات سرطان الثدي النافذ باستئصال الثدي يمكن تجنبه بأمان بإزالة محدودة للغدد للمفاوية الحارسة والواضحة فقط مع اقل معدلات اعتلال ونتائج افضل.

اجريت دراسة مستقبلية لمرضى سرطان الثدي في الفترة من ايلول / ٢٠١٢ إلى كانون ٢ / ٢٠١٥, شملت الدراسة مرضى في مستشفى اليرموك التعليمي والمستشفيات الخاصة في بغداد وشملت البيانات التي تم جمعها على عمر المريض، التاريخ العائلي، تاريخ الطمث، التشخيص

النسيجي للورم، عدد الغدد اللمفاوية التي تم استئصالها من الأبط، العلاج الطبي والاشعاعي بعد العملية، رجوع الورم والمضاعفات ما بعد العملية بما في ذلك الوذمة اللمفية للأطراف العلوية.

تم إخضاع ٥٥ مريض لمرضى سرطان الثدي لعملية استئصال الثدي مع استئصال تحفظي محدود للغدد اللمفاوية الإبطية، كلهم من الإناث، متوسط العمر ثمان وثلاثون سنة ومتوسط فترة المتابعة سنتان وخلال فترة العلاج الكيماوي والذري ما بعد العملية تم خلالها تسجيل حالات عودة المرض أو الاعتلالات المرافقة للمرض بما فيها الوذمة اللمفاوية ومقارنتها بالدراسات المماثلة. الاستئصال الإبطي العقدي اللمفاوي المحدود في علاج حالات سرطان الثدي النافذ عند استئصال الثدي هو إجراء آمن وينصح به في حالات مختارة حيث ان نسبة رجوع الورم قليلة مع انخفاض نسبة الوذمة اللمفاوية للأطراف العلوية.

الكلمات المفتاحية: استئصال الثدي، التشريح الإبطي العقدي اللمفاوي، سرطان الثدي.

Introduction

Dissection of axillary lymph nodes (DALN) was performed as a routine part of breast cancer surgery since long time, as it was believed to provide necessary staging information and long-term regional control, and was considered essential for guiding decisions about the use of adjuvant therapy [1]. There was a steady decrease in the extent of radical surgical procedures for breast cancer [2].

It was estimated that there was no contraindication for non complete dissection of axillary lymph nodes in patients with invasive breast cancer with positive sentinel lymph node [3,4]. Axillary lymph node dissection for breast cancer typically results of removal of 17 to 24 lymph nodes [5,6].

However dissection of axillary lymph nodes has been associated with substantial rates of lymphedema, ranging from 12% to 28% depending on the lymphedema definition criteria [7]. The greatest risk period for lymphedema development is in the first 24 months after dissection of axillary lymph nodes, and therefore, all the efforts have been taken to reduce the extent of axillary lymph node surgery [7]. Axillary sentinel lymph node biopsy (SLNB) has been widely accepted as a less radical axillary staging procedure for patients with the clinically node negative invasive breast cancer [8]. The national surgical adjuvant breast and bowel project demonstrated that dissection of axillary lymph nodes can be safely omitted in patients without evidence of metastatic disease involving sentinel lymph nodes

(SLNs) [9]. Sentinel lymph node biopsy has since also been demonstrated to be safe and accurate in patients undergoing neoadjuvant therapy for breast cancer [10]. It was suggested that complete dissection of axillary lymph nodes can be safely avoided and select the patient's having breast conservation surgery with low volume axillary disease confined to 1 or 2 SLNs that are treated with adjuvant medical therapy and whole breast radiation therapy [4], and the complete dissection of axillary lymph nodes in patients with involvement of one or two SLNs did not substantially affect overall or disease free survival. That has been postulated that the use of modern adjuvant medical and radiation therapy effectively controls otherwise occult axillary disease in SLN positive breast cancer patients in whom dissection of axillary lymph nodes is omitted [11]. Complete dissection of axillary lymph node can be avoided in selected patients undergoing lumpectomy for breast cancer with one or two positive axillary SLNs [12,13].

The modern data on the omission of complete node dissection in patients having mastectomy with low volume axillary node disease are limited [14,15]. Crawford and colleague demonstrated low rates of loco regional recurrence for sentinel lymph node-positive mastectomy patients in whom completion axillary node dissection was omitted, However most patients (91%) in this study show only Micro metastasis or immunohistochemical only positive disease in the sentinel lymph node (SLN) [16]. Bilimoria and his colleagues reported lower rates of local

recurrence in Sentinel lymph node-positive mastectomy patients in whom dissection of axillary lymph nodes was omitted [17]. Spiguel and colleagues reported no axillary failures among Sentinel lymph node positive mastectomy patients in whom completion DALN was omitted similar to Milgrom and colleagues and Crawford and colleagues, this series also had a high proportion (67%) of patients with Micro metastasis disease [18]. McBride CM demonstrated that patients treated with extended simple mastectomy without adjuvant radiotherapy and medical therapy demonstrated low rate of axillary failure and survival similar to patients at that time with standard radical mastectomy [19]. George Crile began omitting axillary dissection for clinical stage 1 breast cancer patients having mastectomy [20].

Materials and Methods

A twenty eight month prospective study of invasive breast cancer patients undergoing mastectomy with conservative dissection of axillary lymph nodes (surgical excision of only the grossly enlarged and the clinically suspicious lymph nodes) between September 2012 and December 2014, the study done in both public hospital ,Al-yarmouk teaching hospital and private hospitals in Baghdad with a mean follow up period of two years

The collected data included patient age at diagnosis, clinical and pathological staging, number of axillary lymph nodes removed, adjuvant chemotherapy, antihormonal therapy and postoperative radiotherapy, loco regional recurrence which was defined as chest wall or axillary recurrence and local complications including lymphedema which is defined as decreased function and/or quality of life due to arm swelling or pain.

Four patients were excluded from the study, (2 patients refused the surgery, 1 case with locally advanced breast tumour and 1 patient with distant metastasis were sent for the oncologist for systemic therapy. Preoperative diagnosis was made

by FNAC and/ or Excisional biopsy of the palpable breast mass.

Classical mastectomy procedure was done through the standard skin incision and the conservative axillary procedure is performed through the lateral aspect of the same incision accessing the axillary cavity. After the clavicular fascia is incised, the axillary lymph nodes are explored below and above the intercostobrachial nerve, during which individual lymph nodes are not separated from the surrounding axillary fat but are used to define the boundaries of the nodal groups, and this group is then removed en bloc

Cephal axillary dissection to the level of the axillary vein usually not performed in this procedure unless there are additional grossly palpable lymph nodes.

Intra operative frozen section biopsy of the sentinel lymph nodes is not performed and no re-operation for completion axillary node dissection was done for patients found to have LN involvement on their final pathology.

The conservative axillary node excision is technically differs from full dissection of axillary lymph nodes in few ways, the traditional complete dissection is anatomically based on removing all tissues between the anterolateral latissimus dorsi muscle and the chest wall medially and proceeds superiorly to the axillary vein, including level one and two with/without level three lymph nodes dissection and all the axillary fatty tissues are removed completely clearing the inferior border of the axillary vein and all the tissues around the thoracodorsal bundle and the long thoracic nerve. With conservative dissection, all the enlarged and any attached nodes together with any clinically suspicious LNs were identified and excised only while the axillary vein is not skeletonised.

Results

Fifty five patients underwent mastectomy with conservative dissection of axillary lymph nodes for invasive breast carcinoma during the study period (2012-2014) with a mean follow up of 2 years. All patients are

females, their age ranging from 32 to 68 years with mean age 38 years, A mean of 8 axillary LNs were removed (ranging between 2 and 16 nodes) table (1),

Regarding axillary LN staging, 19patients (34.7%) was N0, 29 patients (52.7%) N1,5 patients (9%) N2, 2 patients (3.6%) N3 as shown in table (1).

Table 1 : Number of Axillary LN removed with local recurrence risk

LN stage	No. patient -(%)	No. LN removed (Axillary)	Local recurrence (%)
N0	19(34.7%)	2	0
N1	29(52.7%)	6	0
N2	5(9%)	11	0
N3	2(3.6%)	16	1(50% of N3)

Table 2 : LN staging risk for lymphedema& recurrence free survival

LN stage	lymphedema	Recurrence free survival
N0	0	19 (100% of N0)
N1	1 (1.8% of N1)	29(100% of N1)
N2	0	5 (100% of N2)
N3	1 (1.8% ofN3)	1 (50% of N3)
Total	2 (3.6%)	54 (98.18%)

Histopathologically, 43 patients (78.2%) with invasive ductal carcinoma and 12 patients (21.8%) with invasive lobular

cancer proved by excisiobal biopsy, as shown in table (3)

Table 3 : Histopathology type

No. of patients	Invasive ductal Ca.	Invasive lobular Ca.
55	43 (78.2%)	12(21.8%)

Local recurrence reported only in one patients with chest wall recurrence (1.8%)

but no axillary recurrence was reported , as shown in table (4).

Table 4 : Local recurrence

No. of patients	Chest wall recurrence	Axillary recurrence
55	1 (1.8%)	0

Lymphedema of upper arm was recorded as a loco regional postoperative complication in 2 patients (3.6%) where there was an association between the number of LN removed and the

development of lymphedema as shown in table (2) and also there was a significant association with post operative radiotherapy exposure (P=0.004) as shown in table (5).

Table 5 : postoperative systemic therapy

LN. stage	No. of patients	Postop. Medical therapy (Chem+Horm.)	Postop.Rad.	Lymphedema
N0	19	+	-	0
N1	29	+	+	1
N2	5	+	+	0
N3	2	+	+	1
Total	55	55(100%)	36(65.4%)	2(3.6%)

All patients were referred to the oncologist 10-14 days postoperatively after drying up their wounds and they received the standard courses of chemotherapy and hormonal therapy while postoperative radiotherapy was given for 36 patients (65.4%) including N1, N2 and N3 groups only as shown in table (5).

No neo adjuvant radiotherapy was given in this study.

Discussion

By more than four decades ago, the old surgical approach for breast cancer patients with clinically node negative was radical mastectomy including complete axillary lymph node dissection, total mastectomy with radiation or total mastectomy alone. Pathology specimen of clinically node negative cases who had axillary dissection showed an approximately 40% nodal metastasis rate, and for those patients in the arm without complete axillary lymph node dissection, there was no survival difference at 25 years follow-up [21]. The axillary recurrence rate for clinically node negative patients undergoing radical mastectomy was similar to patients undergoing mastectomy and radiotherapy (2%), and the axillary recurrence rate for patients with total mastectomy alone was 15% with a mean time to axillary recurrence of 12 months [22], while in our study, the local recurrence was reported in 1 patient with chest wall recurrence (1.8%) but no axillary recurrence reported. The currently reported series of mastectomy patients treated with conservative axillary lymph node dissection supports the concept that complete dissection can be safely avoided

in node positive mastectomy patients who receive adjuvant medical therapy with or without radiotherapy [23]. The local recurrence and development of lymphedema as a complication is low among N1 mastectomy group having conservative axillary lymph node dissection (1.8%). In our study Lymphedema was recorded as a loco regional postoperative complication in 2 patients (3.6%) where there was an association between the number of LN removed and its development and also there was a significant association with post operative radiotherapy exposure ($P=0.004$) and the incidence of lymphedema in our study is low in spite of using postoperative radiotherapy because the majority of our patients are in stage (N0-N1) where N0 group patients was excluded from postoperative radiotherapy. This is similar to other reports of local recurrence in node positive mastectomy patients undergoing complete axillary lymph node dissection with adjuvant medical therapy and selected use of post mastectomy radiation therapy [24, 25]. Other series have described limited axillary surgical procedures for breast cancer patients [26,27] with low axillary recurrence rate but in all cases the limited axillary surgery was combined with radiotherapy. In our study, postoperative radiotherapy was given for 36 patients (65.4%) including N1, N2 and N3 groups only while N0 group was excluded. Conservative axillary lymph node dissection procedure involves removal of around 50% of the nodes traditionally removed during classical axillary lymph

node dissection and is associated with lower rates of lymphedema (3.6%). In our study, only the grossly palpable lymph nodes and any attached nodes together with any clinically suspicious LNs were identified and excised and it was not necessary to dissect deeply in the axilla to reach the axillary vein. The limitations observed in our study was the limited post operative follow up period (2 years) because it was difficult to keep in contact with the patients for longer period especially when they are referred to complete their medical therapy courses and radiotherapy with their oncologist in other centres, the other draw back was no neo adjuvant radiotherapy was used in this study because of unavailability and limitation of resources. Most of our patients (70%) was included in the first half period of our study while the others (30%) in the second half and therefore our postoperative follow up period for most of our patients was around 28 months especially for those included in the beginning of the study and our mean follow up was 2 years.

Conclusion

Complete axillary lymph node dissection is not necessary in many node positive mastectomy patients, this is because of the low rate of loco regional recurrence and lymphedema as a complication detected in mastectomy patients having conservative axillary lymph node dissection. In addition, adjuvant radiotherapy for majority of the patients (N1) undergoing this procedure not seems to be a requirement or to be justified by the lymph node status only while the role of neo adjuvant radiotherapy in this procedure to be explored by other studies.

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