Double Wire, a Novel Technique for the Insertion of Tunneled Venous Catheter for Hemodialysis

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ABSTRACT

Objective: *to present the experience in and outline the technique for insertion of tunneled catheters using two wires.* ***Patients and Methods:*** *We applied the double wire technique in 26 patients for their tunneled catheter insertion. Twenty patients had debut tunneled catheter insertion. Five patients benefitted the technique for replacing their malfunctioning (four patients) or damaged (one patient) catheter. Additional patient had the catheter rescued after a mishap occurred during its insertion. Techniques for catheter insertion, catheter replacement and adjusting catheter position were presented.* ***Results:*** *All procedure were complimented by patients' comfort. Blood loss was unaccountable in all cases and no single suspicion of air embolism was reported. It happened once in a patient subjected to insertion of tunneled catheter through left common femoral vein (CFV) to develop asymptomatic ventricular tachycardia. It was picked up by ECG monitoring. The event reverted immediately upon withdrawal of the wire out of the right atrium. We did not encounter any puncture site complictions.* ***Conclusion:*** *The technique is simple and easy to performe and to reproduce. Both patient and operator satisfaction complimented the technique.*
Key Words: *Sheathless, Double wire, Hemodialysis catheter.*

INTRODUCTION

Since its advent into the realm of percutaneous dialysis access, chronic venous catheter is inserted by two techniques. One is more common than the other is. The peel off sheath technique is more commonly used than the over the wire (sheath-less) technique. Catheter performs in an independent way regardless the technique of its insertion. The maximum withdrawal flow at >200 ml/min. can be achieved by catheters inserted in either techniques[1]. There are some supporting evidences for the use of over the wire, to be better than, the peel off sheath technique. The former has less procedural blood loss. It reduces, with no less than certain, the risk of air embolism. The hole in the vein is the same diameter as that of the catheter therefore, no blood oozing around the catheter occurs.[2] The bent under the inguinal ligament that peel off sheath should follow during its insertion through the common femoral vein, may make its insertion problematic.[3] Being stiffer over its dilator than it is, the peel off sheath was reported to perforate the superior vena cava or induce hemothorax.[2] However, over the wire technique has some consideration:

- If the catheter is advanced slowly blood can egress through the arterial end. This blood loss can be substantial in case long time passes before the wire is removed.
- Both the wire and catheter advance en- mass as the tunneled portion of the catheter does not allow advancing the catheter over the wire. Catheters have no pushability partly due to their construction material and partly due to one's inability to push on the hub of catheter that is situated at the catheter exit site (away from the vein puncture site). Therefore, for a catheter to be inserted over a wire after being tunneled, an arc comprising both catheter and a wire inside should be formed (arc of insertion). In order to advance the catheter this arc should be advanced (en-mass) through the vein puncture. As this happens, the tip of the wire can go far into the heart inciting possible serious dysrhythmia.
- In addition, the guide wire bends at the formation of the arc, can be fractured at its outer coat and its withdrawal would be difficult except, by extreme gentle pull. A rather bigger incision at the vein puncture site (3-4 cm) would allow for bigger base of the arc and therefore less bent of the wire. However, this adds to the blood loss through bleeding from the vein puncture site.
- Over a single wire insertion technique is possible only for catheters with special design

which allows for flossing of the wire into both catheter tip through a side hole placed at the venous catheter tip opposite the end-hole of the arterial channel of the catheter.[4]

The presented technique (over double wire) provides solution for each of the above-mentioned disadvantages of the over the (single) wire technique.

PATIENTS & METHODS

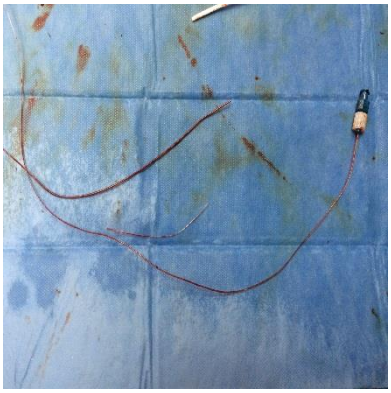
We inserted 26 tunneled catheters of various brands using double wires and without the use of peel off sheath, table (1). Among those patients are, five catheter exchange for new one with change of the tunnel of insertion of the old catheter, table (2). The technique was applies as bailout for a mishap occurred during the insertion of spilt tip catheter, picture (1). All cases were performed under local infiltration anesthesia with conscious sedation and continuous ECG and oxygen saturation monitoring.

Table (1): The site of insertion and type of catheters. *= (Medcomp, Inc), += (Medcomp, Inc), ^= Duramax (Angiodynamics, Inc).

Insertion site	*No. of patients*	*Type of catheter*	*No. of catheters*
Right IJV	9	Split tip*	7
		Split stream+	2
Left IJV	4	Split tip*	4
Right SCV	2	Split tip*	2
Left SCV	1	Split tip*	1
Left CFV	3	Split tip*	2
		`Curved tip^	1
Right CFV	1	Split tip*	1

Table (2): Cases who offered catheter exchange. * = catheter exit site was close to anterior axillary line and catheter catchs her clothes.

Site of insertion	*Cause for exchange*	*No. of patients*
Right IJV	Malfunction	2
	Catheter damage	1
Left SCV	Patient discomfort*	1
Left CFV	Malfunction	1



Picture (1): after completing the insertion of tunneled split tip catherter and the sheath was pealed off, the provided hollow stylet broke as it was pulled out. Part of the stylet remained inside the catheter. Additional peel off sheath was unavailable on shelf at that time. The only way to clear the catheter of the broken piece of stylet was through inserting a guide wire inside the other catheter lumen and to pull the catheter out over the wire. Broken piece was removed. After inserting a 6 F sheath over the just inserted wire, another guide wire was inserted through the sheath. Sheath was removed and catheter was advanced into the vein over both wires.

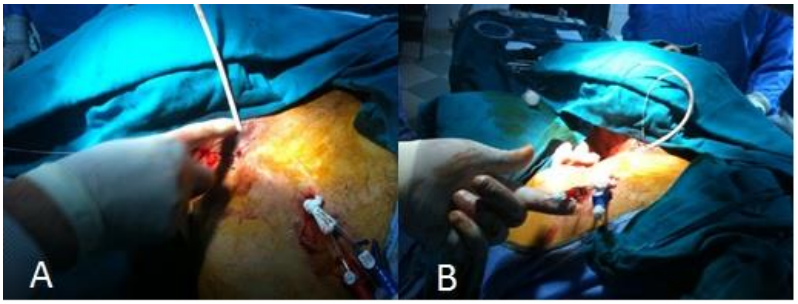
Procedure

We performed all patients in the catheter suit and under fluoroscopic control. Vein puncture side was dictated by choosing the pristine or the less scarred side. Primary predilection was given to the right internal jugular vein (IJV), the left IJV, right subclavian vein (SCV), left SCV in that order. Demotion to common femoral vein (CFV) access was dictated only by the unavailability of suitable neck or chest veins for insertion. The left CFV was given a predilection over the right. For the latter is better spared in instance kidney transplantation is considered. Vein puncture was guided by the anatomic landmarks due to unavailability of the ultrasound guidance. By using the modified Seldinger technique, wire was inserted. Skin incision of 1.5 to 2 cm was done at the vein puncture site. A 6 F sheath was then advanced over the wire. Two 0.035 floppy wires (Terumo standard wire, Terumo Medical Inc., or Glide wire, Boston Scientific Inc.,) were inserted into the sheath side by side. Both wires were directed to the upper part of the inferior vena cava (IVC). If the CFV was used in the access, tip of both wires were kept in the lower part of the IVC.

Catheter and tunnel lengths were assigned. Catheter was tunneled by its appropriate tunneler attached to venous end while the arterial end is covered by the tunneler sleeve. Sheath was removed. A 12 F dilator was advanced over each wire sequentially. Bleeding from the vein around the guide wires was controlled by digital pressure over a piece of gauze. Each wire was threaded into the catheter, picture (2, A). One wire was inserted in each lumen. Wire was passed from the catheter tip to exit at each catheter connection. In doing so, part of the catheter next to the vein puncture site with both wires inside was making an arc (arc of insertion), picture (2, B). Maintaining this arc is necessary for insertion. Catheter and both wires inside were advanced into the vein by pushing on the part of the arc close to the vein puncture site. Insertion was completed by pushing on the summit of the arc until the whole arch went into the vein, Picture (3, A&B). Position of catheter tip was checked by fluoroscopy before wires were removed. During the whole process of advancing the catheter into the vein, it is impossible to keep the tip of wire at a constant site. Therefore, parking the tip of both wires into the upper part of IVC (when inserting catheter from above) is legitimate. Similarly, when inserting the catheter from below, the tip of both wires were kept at the lower part of the IVC, picture (4, A&B). If this step is condoned, wire tip can enter deep into the right atrium and dysrhythmias can be easily provoked. Wire inside the venous side was removed first and contrast medium was injected into that side. If catheter tip position is unsatisfactory, the catheter was manipulated over the remaining wire into the desired position. Only minor amendments can be accomplished that way. If more adjustment was required, the catheter was hooked by a right angled hemostat. Small arc of the catheter was then formed and catheter could be advanced or retracted easily. After adjustment was complete, the arc was pushed to inside the vein, picture (5, A&B). Wire inside the arterial side was removed. Over a lock solution suitable to the patient, catheter connections were closed. Vein puncture site was sutured and catheter is fastened to the skin by appropriate suture.

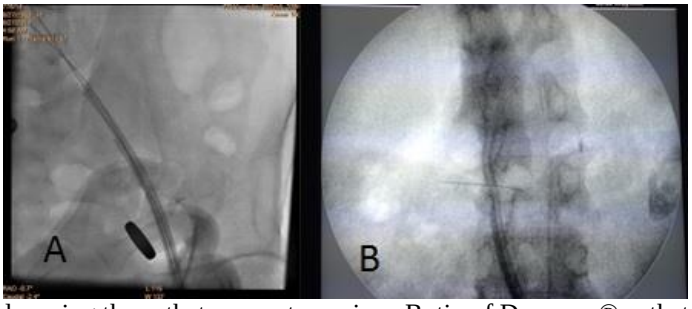
Technique for catheter exchange

The same technique was used for catheter exchange when indicated. We replaced five tunneled catheter using the same technique, table (2). The procedure commenced by inserting two floppy 0.035 wires but this time from the catheter connection inwards. Wire tip was checked by fluoroscopy that it exited the tip of the catheter. A small 1.5 cm incision was made over the vein puncture site. The catheter was dissected free of its fibrin sheathing. After being hooked by right angled hemostat, the catheter was pulled a little out the vain forming an arc looping over the vein puncture site. The Teflon cuff is allocated and an incision is made in the overlying skin. The cuff is dissected off its fibrous attachment to the surrounding subcutaneous tissue. Now the catheter is free. Catheter was pulled out the vein under fluoroscopic control. Always the wire retracts from the right atrium up to the region of the SVC. Wire should not be allowed to retract too much otherwise, the access can be lost. Catheter was pulled out the vein leaving both wires inside. As soon as the wires appeared at the vein puncture site, they were firmly grasped. Catheter was removed by exerting pull over its hub. Both wires are directed to reach the upper part of the IVC (if were inserted from above). Wires were kept at the lower part of the IVC (if they were inserted through a femoral catheter). A new tract was formed for the new catheter so as to prevent any seeding of potential infection from the old tract, picture (6,A,B&C). Catheter insertion was completed thereafter as for the debut catheter insertion.



Picture (2): A, catheter is tunneled and exited beside both wires at the vein puncture site. B, both wires are threaded through the catheter from tip to hub and arc is created.

Picture (3): A, as the arc is pushed to the inside the vein. B, fully inserted cath before either wire was removed.



Picture (4): A, advancing the catheter over two wires. B, tip of Duramax® catheter inside the IVC

Picture (5): Adjusting the tip position of a tunneled spit tip catheter. A, tip catheter was far down a little. B, fully inserted catheter before removing the wires, its tip is at the upper part of the right atrium.

Picture (6): Exchange of tunneled femoral catheter over two guide wires. A, two wires exits the vein puncture site. B, new catheter in a new tunnel is inserted over the two wires. C, as the arc is manipulated during the insertion.

RESULTS

All procedure were complimented by patients' comfort. Blood loss was unaccountable in all cases and no single suspicion of air embolism was reported. It happened once in a patient subjected to insertion of tunneled catheter through left common femoral vein (CFV) to develop asymptomatic ventricular tachycardia. It was picked up by ECG monitoring. The event reverted immediately upon withdrawal of the wire out of the right atrium. We did not encounter any puncture site complictions e.g., inadvertent arterial puncture, hemothorax, pnuemothorax or nerve injury.

DISCUSSION

Over the wire insertion of tunneld catheter is gaining popularity over the peel off sheath technique. Less blood loss, lower incidence of air embolism, less trauma to accessed and chest veins all pledge the growing zeal to over the wire technique.[2] The latter requires catheters with special tip design, which may not be available all the time. This design allows flossing a single wire into both catheter tips. A hole in the venous tip (located above the end-hole) and opposite the end-hole of the arterial side (arterial tip is shorter than the venous tip) allows the passage of the wire from the end-hole of the venous tip, through the side hole into the end-hole of the arterial side. Finally, this single wire exits the arterial connection of the catheter (colored red). In doing so both tips of the catheter are, housing the wire and neither catch the tissue during advancement of the catheter. [3] Because each tip of the catheter houses a wire, double wire technique suits any design of catheter tip.

Being rigid over its dilator than it is, the peel off sheath is traumatic and serious vein perforation happened during its insertion. Moreover, negotiation of curves might not be safe. The bent of the vein under the inguinal ligament sometimes poses difficulty for a peel off sheath to pass easily. More often than not, the peel off sheath crimps after its dilator is withdrawn preventing the catheter advancement through its lumen. This frequently happens at a natural curve in the vein (commonly at the central end of the right subclavian vein), or whenever there is a vein stenosis exerting external concentric compression over the sheath. Situation that abandon the use of a peel off sheath or abort the procedure. [5]

For a catheter after being tunnled to be inserted over a wire an arc (arc of insertion) inevitably forms.[3] The width of the base of such arc reflects the amount of bend the wire will sustain. As the base gets narrower, the wire will bend more. Excessive wire bending may break the wire at its outer coat. In order to lessen the wire bending, the base of the arc should be wide. This can be achieved by enlarging the incision at the vein puncture site. A larger incision (3-4 cm) is required at the vein puncture site. Although, this will solve the problem of wire bending, it increases the blood loss from the vein puncture site. The amount of blood loss can be substantial when the insertion of the catheter into the vein takes longer time in addition. Manipulations of the arc is difficult when only single wire is inside the catheter. Difficult manipulations lengthen this step and furtherly increases the blood loss. In the double wire technique, manipulations are better tuned owing to the added support of both wires.

Obviously, the time being required to accomplish this step is shorter than when a single wire is used. The added strength of two wires dispels the fear of wire breaking at the base of the arc. Therefore, an incision as short as one or one and half cm at the vein puncture site (the base of insertion arc) is enough to insert the catheter over two wires without excessive blood loss.

Advancing the catheter into the vein necessitates that both wire and catheter move together [3] (en-mass). This means the wire tip will move far inside the right atrium with every advancement of the catheter. Serious dysrhythmia frequently complicates wire advancement far into the right atrium. The risk is even more when two wires are advanced deep into the right atrium. As the advancement of the wire's tip during catheter advancement is inevitable, therefore, the tip of the wire should park in safe position; i.e. in the IVC. When the catheter is inserted from above (through jugular or subclavian veins), both wires are managed to bypass the right atrium into the upper part of the IVC. Similarly, when the catheter is inserted from below (through the CFV), both wires' tips should park in the lower part of the IVC. In both situations, further wires advancement will be into safe place (outside the right atrium).

Inserting wire in each tip of a split catheter can be perplexing for operators who are novice to the technique. Good orientation of where each wire is has great significance. During wire threading into the tip of a catheter, digital pressure by an assistant prevents blood loss from the vein puncture site around the wires.

Although we did not experience any puncture site complication, e.g., inadvertent arterial puncture, hemothorax, pneumothorax or nerve injury, we would use duplex to guide the vein puncture rather than exploiting the anatomic landmarks. It happened once that ventricular tachycardia was picked up by the ECG monitoring when the wire inadvertently went deep into the right atrium. The tip of the wire was off the sight on fluoroscopy as the insertion was carried out thought the left CFV. Arrhythmia disappeared once the wire moved out the right atrium.

We found the technique as a protraction to the catheter insertion over a single wire. Any surgeon who is familiar to such technique will find the double wire technique easy to perform and quick to master. Nevertheless, who finds the technique non-covetable, should not condemn its use. There is no other way to insert a catheter successfully when the peel off technique fails except the over wire technique.

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Outcome of DCIS in Egyptian patients National Cancer Institute experience

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ABSTRACT

This retrospective study was conducted on patients with the diagnosis of pre-invasive breast cancer in the National Cancer Institute (NCI), Cairo University.Aim of the study was evaluation of premalignant lesions of the breast (DCIS) in NCI cases with emphasis on clinical and pathological features, management and outcome. ***Patients and methods:*** *Sixty patients with DCIS were studied from the period between 2005 to 2012, for 38 patients the primary surgical method was wide local excision (WLE) (63.3%) and the other cases (22 patients, 36.7%) had mastectomy, fourteen cases from those who underwent local excision received radiotherapy by a dose of 50 Gy/25 fraction / 5 weeks by 2 tangential fields, while no adjuvant radiotherapy was given for those who underwent mastectomy.Hormonal treatment in the form of Tamoxifen was given for 5 years for patient who had positive hormonal receptors either after local excision or mastectomy.* ***Results:*** *no difference in overall survival between mastectomy & breast conserving therapy (wide local excison and adjuvant radiotherapy), however local recurrence rate is higher in case of breast conserving therapy, Also no role of Axillary evacuation in case of DCIS. Recurrent invasive carcinoma after wide local excision occurred in 3 cases, 2 of them had no adjuvant radiotherapy (2/9, 22.2% of DCIS cases treated with wide local excison only), while it happened in only 1 case who received adjuvant radiotherapy after wide local excision (1/14, 7.1% of DCIS cases treated with wide local excision & adjuvant radiotherapy), The use of hormonal therapy decreases the incidence of local recurrence by about 98%.* ***Conclusion****: DCIS cases can be treated safely by local excision with negative margin to be followed by breast irradiation and hormonal treatment for positive hormonal receptors.*

Key words: *Ductal Carcinoma Insitu- Surgical treatment- Radiotherapy.*

INTRODUCTION

Ductal carcinoma in situ (DCIS) of the breast is a pre-malignant condition defined by Harris et al as "a group of closely related lesions whose common histological feature is the proliferation of cancer cells within the ducts without invasion of the surrounding stromal tissue" [1].

DCIS is a precursor to invasive breast cancer, There are shared chromosomal changes between adjacent in situ and invasive cancers that demonstrate their clonal, evolutionary relationship[2], It is estimated that up to 35% of individuals with DCIS may develop an invasive carcinoma over 10 years[3].

Before 1990, Most patients with DCIS were treated by simple mastectomy, a relatively radical, highly effective approach, Later the use of breast conserving surgery in combination with adjuvant radiotherapy began to gain acceptance[4-6].

The NSABP B-06 compared the outcome of lumpectomy, lumpectomy plus radiotherapy and modified radical mastectomy in patients with early invasive breast cancer, A pathologic review revealed 76 women with DCIS, Who were followed for a mean duration of 83 months, A local recurrence rate of 43% for lumpectomy alone compared with 7% for lumpectomy plus radiotherapy group and 0% for mastectomy was reported[7].

PATIENTS AND METHODS

This retrospective study was conducted on patients with the diagnosis of pre-invasive breast cancer in the National Cancer Institute (NCI), Cairo University. The study was approved by the ethical committee at NCI as the institutional review board guidelines.

Aim of the study was evaluation of premalignant lesions of the breast (DCIS) in NCI cases with emphasis on:

1. Clinical and pathological features
2. Management
3. Outcome

Inclusion criteria:

Patients presented to NCI during the last 8 years (2005 – 2012) with premalignant lesions of the breast (DCIS)

Exclusion criteria:

1. Patients with incomplete data
2. Patients whose specimens proved pathologically to have basement membrane invasion.

Data were collected from:

1. Medical statistics′ department records
2. Pathology department records
3. Outpatient clinic

Treatment:

Surgical treatment:

For 38 patients the primary surgical method was wide local resection (63.3%) and the other cases had simple mastectomy.

Adjuvant treatment:

14 cases from those who underwent local excision received radiotherapy by a dose of 50 Gy/25 fraction/5 weeks by 2 tangential fields, While no adjuvant radiotherapy was given for those who underwent mastectomy. Hormonal treatment in the form of Tamoxifen (10 mg orally twice a day) was given for 5 years for patient who had positive hormonal receptors either after local excision or mastectomy.

Statistical Methods:

Data was analyzed using SPSS win statistical package version 12. Numerical data were expressed as mean with minimum and maximum, Qualitative data were expressed as frequency and percentage, Chi-square test or Fisher's exact test was used to examine the relation between qualitative variables, Survival analysis used Kaplan-Meier method, Comparison between two survival curves was done using Log-rank test.

RESULTS

This study included 60 patients with DCIS presented at NCI 2005-2012. The patients age ranged between 18 and 76 years old (median was 49.3 years).

As regards the lesion size in cases with DCIS, 18 cases (30%) were less than 1.5cm, 16 cases (26.7%) had 1.5-4cm lesions and 26 cases (43.3%) had more than 4cm lesions as evident in table 2, Safety margin in case of DCIS was more than 1cm in 58 cases (96.7%) and less than 1cm in 2 cases (3.4%), Comedo necrosis appeared in 30 cases (50%) and micro-invasion presented in 14 cases (23.3%). Regarding multi-centricity and high grade, 3 cases (5%) were multi-centric, 3 cases (5%) were high grade.

Regarding hormonal receptors in our study we found that 28 cases (46.7%) were ER positive, 32 cases (53.3%) were ER negative, 31 cases (51.7%) were PR positive, 29 cases (48.3%) were PR negative.

Regarding L.Ns in our study we found that 44 cases (73.3%) had level 1 Axillary clearance, only 1 case (1.7%) had positive L.Ns .

In our study 28 cases (46.7%) have favorable Van Nuys score, 32 cases (53.3%) have intermediate score.

After a mean period of follow-up of 42,8 months and a range of 6-96 months, 54 cases (90%) were free of local recurrence or progression to carcinoma, While progression to carcinoma on the same side, DCIS on the opposite side & carcinoma on the opposite side occurred in 6 cases (10%), Patients who suffered disease progression on the same side had large initial DCIS size (≥ 3cm).

Table (1): The Clinical features of DCIS

	Ductalcarcinoma in situ 60 patients
Age in years Mean (range)	49.3 (18-76)
Presentation	
-Mass	43(71.7%)
-Nipple discharge	8(13.3%)
-Mammography	5(8.3%)
-Paget`s nipple	4(6.7%)
Mammography & ultrasound	
-Mass	15 (25%)
-Microcalcifications	10 (16.7%)
-Mass & Microcalcifications	4 (6.7%)
-no available report	31 (51.6%)

Table (2): The Pathological features of the DCIS specimens for 60 patients

	Frequency (%)		*Frequency (%)*
Size		**Grade**	
<1.5cm	18(30)	Low grade	57(95)
1.5-4cm	16(26.7)	High grade	3(5)
>4cm	26(43.3)	**ER receptor**	
Margin		No	32(53.3)
<1mm	1(1.7)	Yes	28(46.7)
1mm-1cm	1(1.7)	**PR receptor**	
>1cm	58(96.7)	No	29(48.3)
Comedo necrosis		Yes	31(51.7)
No	30(50)	**Axillary L.Ns**	
Yes	30(50)	No Axillary clearance	16(26.7)
Micro-invasion		Axillary clearance	
No	46(76.7)	negative nodes	43(71.6)
Yes	14(23.3)	positive nodes	1(1.7)
Multi-centricity		**Van Nuys score**	
No	57(95)	Favorable	28(46.7)
Yes	3(5)	Intermediate	32(53.3)

Table (3): Follow up of DCIS cases

Prognosis	***DCIS*** *N (60 patients)*
Free	54(90%)
Progression	6(10%)
Recurrent DCIS on same side	-
Malignancy on same side	3
DCIS on opposite side	2
Malignancy on opposite side	1
Death	-

Survival and prognostic factors for DCIS:

5 year disease free survival (DFS) was 85.7% and testing pathological and treatment prognostic factors against DFS revealed no significance to all of them i.e. $P \geq 0.05$ as seen in table 4.

Table (4): DFS in DCIS

DFS Factor		***Number of cases***	***Number of events***	***5 yrs DFS (%)***	***P-value***
All		60	6	85.7	
Size	<1.5cm	18	1	90.9	
	1.5-4cm	16	5	75.8	
	>4cm	26	0	100	0.122
Comedo necrosis	No	30	1	96.7	
	Yes	30	5	72	0.066
VanNuys score	Favorable	28	1	96.4	
	Intermediate	32	5	72.9	0.092
Microinvasion	No	46	4	87.2	
	Yes	14	3	84.4	0.67
ER	No	32	4	79.3	
	Yes	28	2	92.7	0.443
PR	No	29	4	78.3	
	Yes	31	2	93.3	0.337
CTH	None	18	2	83.7	
	Adjuvant hormonal	31	1	96.6	
	Adjuvant chemo	11	3	64.9	0.06
RTH	None	46	4	85.2	
	Adjuvant	14	2	85.1	0.598

DISCUSSION

In case of DCIS the range of age was 18-76 with the mean age 49.3. Comparable to studies in western countries DCIS is also uncommon in women younger than 30 with mean age 40[8]. The rate of DCIS increases with age from 0.6 per 1000 in women aged 40 to 49 years to 1.3 per 1000 in women aged 70 to 84 years.

In our study we found that the most common presentation of DCIS was a palpable mass (71.7%) and 4 patients presented with Paget's disease (6.7%). While in the Western and other high-income countries more than 90% of all cases of DCIS are detected only on imaging studies[9].

In our study we found that 34 cases (73.4%) had level 1 Axillary clearance at NCI, While 10 cases had Axillary evacuation outside NCI, only 1 case had positive L.Ns (1.7%).

Comparing our results to other studies indicates that there is no role of Axillary evacuation in case of DCIS, also Sentinel lymph node biopsy (SLNB) is not indicated in the evaluation of the patient with DCIS undergoing breast conserving therapy, because the Axillary nodes are rarely positive for metastatic disease, even with extensive multi-focal high grade DCIS (10), Axillary lymph node metastases are present in fewer than 5 percent of patients with a final diagnosis of DCIS (after surgical excision)[8].

We found in our study that among 23 cases of DCIS who had WLE only 14 cases received adjuvant radiotherapy (60.8% of wide local excision cases). The 9 cases who had not adjuvant radiotherapy were > 50 year-old, low grade with negative margins.

Invasive cancer on the same side developed in 3 cases, 2 of them had no adjuvant radiotherapy (2/9, 22.2% of DCIS cases treated with wide local excision only), While it happened in only 1 case who received adjuvant radiotherapy after wide local excision (1/14, 7.1% of DCIS cases treated with wide local excision and adjuvant radiotherapy).

The radiotherapy play important role as adjuvant treatment after wide local excision as it is observed in randomized trials which show that adjuvant radiotherapy significantly reduces the risk of local recurrence by 50% compared to excision alone. However, Treating all women who undergo wide excision for DCIS with adjuvant radiotherapy may be overtreatment for some [11].

Radiotherapy is generally indicated for all patient to reduce local recurrence, but some patients may not benefit and may choose to omit radiotherapy (especially older women, low grade & negative margins) [12].

In addition, The reduction in the risk of a local recurrence after radiotherapy appears to be long lasting, Though this is not associated with a survival advantage, This was shown in a report of the long term follow up of the National Surgical Breast and Bowel Project Trial B-17[13], At 15 years, Compared to excision alone, RTH resulted in a significantly lower rate of ipsilateral invasive recurrence (8.9 versus 19.4%) as well as similar overall survival (83 versus 84%).

In our study we found that 31 cases (51.7%) were hormone receptor positive and all of them received adjuvant hormonal therapy (Tamoxifen). Our results are similar to that in other studies which show that approximately 50 to 75% of DCIS lesions express estrogen receptors (ER) and/or progesterone receptors (PR) [14,15].

In our study we found that 11 cases (18.3%) of DCIS received adjuvant chemotherapy, All of them had micro-invasion, And all of them had free follow up except 3 cases (27.3% of DCIS cases who received chemotherapy), 2 of them developed invasive cancer on the same side & 1 case developed invasive cancer on the opposite side.

Different studies show that the primary role of systemic treatment is to reduce the risk of invasive breast cancer in the ipsilateral or contralateral breast and the risk of distant metastases in women with DCIS is very low and overall prognosis is excellent and so chemotherapy plays no role in the management of these patients [14,15].

In our study recurrence on the same side occurred in 3 cases after wide local excision and it did not occur after mastectomy. But there was no difference in overall survival.

Our results were the same as other studies comparing Breast conserving therapy (wide excision of the tumor with negative surgical margins followed by radiation therapy) with mastectomy for DCIS which have demonstrated equivalent long-term survival [13,16&17].

However, local recurrence rate is higher with BCT while disease recurrence is rare after mastectomy (1 to 2%) [18].

In our study all local recurrence cases occurred after excision of the lesion with negative margins (>1cm). And so margin in our study did not affect local recurrence, While other studies showed that there is a relationship between margin width and tumor recurrence, A 2012 meta-analysis of 21 studies (n = 7564 patients) showed that negative surgical margins on excision were significantly associated with a lower risk of in recurrence compared to positive margins among those who underwent adjuvant radiotherapy and those who did not undergo radiotherapy, Also showed that a wider negative margin (>10 mm) was associated with a significant reduction in the tumor recurrence risk compared to a more narrow margin <2 mm [19].

In conclusion we recommend national based screening program for breast cancer for early detection in the pre-invasive or even early invasive stages.

DCIS cases can be treated safely with high survival rate by local excision with negative margin to be followed by breast irradiation and hormonal treatment for positive hormonal receptors.

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