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Oncology

A COMPARATIVE STUDY OF CHEMOPORT VERSUS PERIPHERAL VENOUS ACCESS IN BREAST CANCER PATIENTS IN GOA MEDICAL COLLEGE.

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ABSTRACT **Background:** Totally implantable venous access devices (TIVADs) considered standard of care for administration of intravenous chemotherapeutic drugs for patients needing long term chemotherapeutic drugs. **Methodology:** This prospective comparative study carried over a period 2 years in all patients diagnosed with breast cancer. Patients will be divided into 2 groups-1 group will receive chemotherapy using the chemoport and the other group through peripheral intravenous access. The group will be divided based on simple randomization on alternate basis. **Results:** While the average duration for the procedure of port insertion was 59mins, almost 90% patients were discharged within 24 hrs with no complications Of the 50 patients that underwent the procedure of chemoport implantation, 21 patients underwent by Internal Juglar Vein while the remainder by Subclavian vein out of which in 2 patients the procedure was abandoned owing to complications of migration of guide wire and hemothorax, both of which occurred while attempting subclavian catheterization. While the guide wire was retrieved under fluoroscopic guidance, Intercoastal drainage tube was passed for patient with hemothorax. This complication can be avoided by using radiological guidance or under fluoroscope. Of the remaining patients, 13 patients the port was removed as they had completed chemotherapy were termed disease free. While in 2 patients port was removed pre-maturely due local port site infection and generalized sepsis due to neutropenia. During the process of chemotherapy through port, 1 patient developed blockage of port as evidenced by no return flow by aspiration. This was managed by giving heparin flush and visualized under C-arm for patency. When it comes to morbidity of the port, majority of the people were in the opinion that the process of port insertion was painless, they had no sensation of foreign body, no itching/pain and did not interfere with day to day life.And on inquiring regarding the satisfaction by the patient, maximum people were of the opinion that port helped speed up chemotherapy sessions, satisfied with cosmesis, and preferred port over peripheral iv line. About 60% would agree to recommend port over peripheral iv line. In comparison to patients who received chemotherapy through peripheral iv line, out of 50, 11 patients had serious complication of extravasation and thrombophlebitis which required hospital admission and surgical debridement. In terms of patient morbidity, >40% experienced difficulty in initiation of chemotherapy in more than 50% of cycles, 26 patients were forced to receive multiple pricks, 34 patients required a second iv line to complete the session in half the cycles and 10 patients required iv at the leg/neck as others were inaccessible. **Conclusion:** High satisfaction rate observed in patients using chemoports for chemotherapy-it speeded up the sessions, less painful and only few people felt its presence affecting cosmesis/ day-to-day activities. It avoids the blunt of undergoing painful process of multiple pricks, use of 2nd line, thrombophlebitis and prolonged sessions seen in peripheral IV lines. Although the procedure of port implantation has got serious complications, the rate is minimal and with the help of radiological tools and surgical expertise, these can be made negligible. The only set-back by using a port is the maintenance part, which requires periodic flushing with heparinized saline to prevent blockage when not in use for prolong period (>4weeks). And so, it is advisable to remove the port promptly after completion of treatment if patient is labelled cured. Complications like infection can be avoided by strict aseptic precautions taken while handling the port for chemotherapy sessions by trained personal. Above all patient education and compliance is utmost important to ensure proper functioning of the port.

KEYWORDS :

INTRODUCTION

Totally implantable venous access devices (TIVADs) were utilized for practice in the 1980s1, and now considered a standard of care for administration of intra- venous (IV) chemotherapeutic drugs in most centers, especially for patients needing long-term chemotherapy and other supportive treatment TIVAD use aims to achieve easy, painless, and secure venous access. Furthermore, it can reduce the apprehension and anxiety associated with IV access that increases with each chemotherapy.

A totally implantable access device or 'chemoport' is a small medical appliance that is installed beneath the skin. A catheter connects the port to a central vein with a large inflow of blood. Under the skin, the port has a septum through which drugs can be injected and blood samples can be drawn repeatedly, usually with far less discomfort for the patient than a more typical "needle stick".

Ports are used mostly to treat oncology patients; in our institute, we use it to provide chemotherapy for carcinoma breast patients.

In this prospective study, we try to study the number of patients who underwent chemoport insertions and related complications. This study has looked into the safety of chemotherapy administration through chemoport device and patient acceptance and satisfaction with TIVAD in our institution specifically in breast cancer patients. Unlike most other malignancies, patients with breast cancer are almost exclusively middle age to elderly females, and in whom administration of chemotherapy is avoided in the arm on the side of pathology.

AIMS AND OBJECTIVES.

- The study aims to assess the morbidity and patient satisfaction of chemotherapy administration via chemoport and compare it with patients receiving peripheral intravenous access.
- To assess the safety and efficacy of chemoport insertion

MATERIALS AND METHODS

This prospective comparative study carried over a period 2 years in all patients diagnosed with breast cancer.

Patients will be divided into 2 groups-1 group will receive chemotherapy using the chemoport and the other group through peripheral intravenous access.

The group will be divided based on simple randomization on alternate basis.

All patients will undergo following investigations:

1. Complete hemogram,
2. renal funtions,
3. liver function tests,
4. chest xray,
5. ECG

Study Design

Prospective comparative study with simple randomization.

Inclusion Criteria

All patients detected to have carcinoma breast requiring chemotherapy.

Exclusion Criteria For Chemoport Insertion

1. Bleeding disorder.

2. Sepsis.
3. Abnormal coagulation profile.
4. Anti-coagulation therapy.

Study Method

Every patient under the study were subjected to a questionnaire designed to assess the morbidity of the chemotherapy session and satisfaction with the mode of receiving the chemotherapy, i.e. through peripheral vein or through the port.

Based on the response from the questionnaire, comparison was done between the two groups. A total of 50 subjects in each group was taken over a duration of 2 years. Data was expressed in the form of table, graphs and pie charts. Means, proportion, chi square were used to analyse the data. P levels of less than 0.05 was considered statistically significant. Analyses and results.

Insertion Techniques

The selection of the vein for central venous access is dependent on the individual surgeon's preferences. The most common veins used for vascular access are subclavian, external jugular, and internal jugular vein. Alternative veins include the common femoral, the great saphenous vein, inferior epigastric vein and the inferior vena cava through the trans lumbar and trans hepatic routes, the intercostals veins and the azygous vein (5-11).

However, the requirement for a firm bony surface to place the reservoir precludes most of these options except for the large veins of the neck.

Insertion site	Advantage	Disadvantage
Internal Juglar Vein	Bleeding can be recognized and controlled Malposition is rare Less risk of pneumothorax	Risk of Carotid artery puncture Pneumothorax possible
Subclavian Vein	Most comfortable in conscious patients	Highest risk of pneumothorax, hemothorax Vein non-compressible

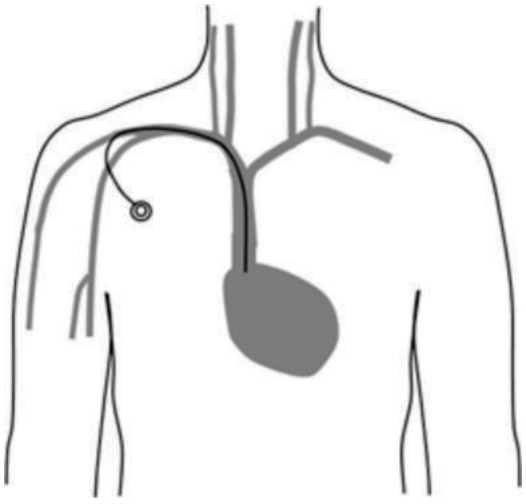


Fig. 2 Example of an inserted TIVAD

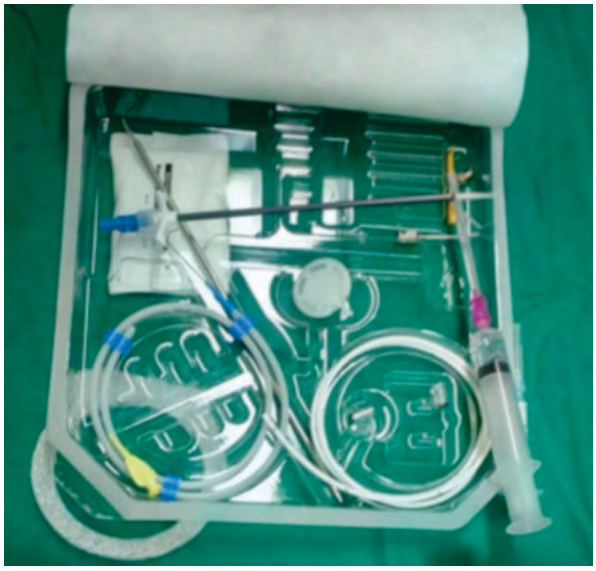
Insertion of chemoport can be done under sedation (General Anaesthesia) or under Local infiltration, as done in our institute and also if possible, under fluoroscopy guidance with the help of interventional radiologists for better results and avoid complications.

There are two techniques which are widely used for port insertion:
1) Seldinger's Technique
2) Venous cut-down method

In our institute the Seldinger's technique is used.
Pre-Operative Preparation.
- Usually the site selected for the insertion of the port is over anterior chest wall about 2 inches below the mid clavicular region on the un-diseased side.
- The area is prepared and cleaned prior to surgery

The kit containing the chemoport comes in double packaging ETO sterilized which cannot be re-used if damaged.

It contains:
- implantable port
- Puncture needle
- Guide-wire with advancer
- Peel-apart Desilet
- 10ml syringe
- 1 transduce probe
- Tunneling needle
- 1 Hubesite
- Extra set a Huber needle 19G



Silicon catheter

Procedure

The patient in a supine position with elevation a shoulder blades with head turned to opposite site and elevation of 15-30°. ECG leads placed to check for ectopics.

Instruments provided in the kit are flushed with heparinized saline including the port.

Preparation of the site with beta scrub and spirit followed by draping. Local infiltration is given along the site of insertion till placement of the port, including the area around the chest wall below the clavicular region.

A small stab incision is made through which the needle is introduced to a depth sufficient to reach the vessel to be punctured for Internal Jugular Vein between the two heads of the sternocleidomastoid muscle at 45° angle pointing towards the nipple and for Subclavian Vein junction of medial 2/3rd and lateral 1/3rd below the clavicle pointing towards the sternal notch. Once vessel confirmed, the syringe is disconnected and the guidewire is advanced using the advancer into the lumen of this needle without any resistance, its placement can be confirmed in right atrium upon appearance of ectopics on the ECG monitor.

Holding the guide wire, remove the needle and insert the Desilet(containing a dilator with sheath introducer) through the guide wire. The Desilet is pushed slowly through the tissue into the venous system till at least 2cm of sheath is exposed.

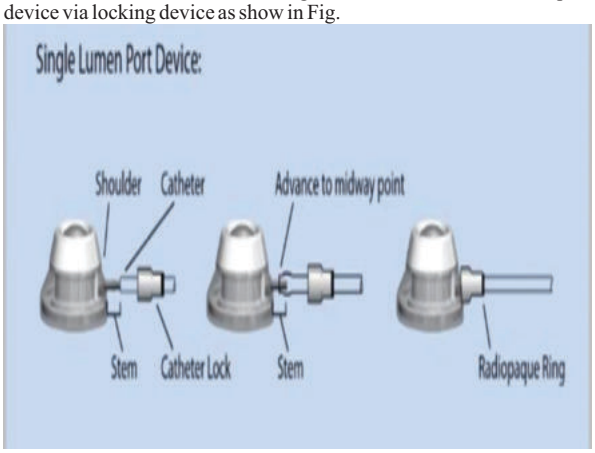
The dilator is removed along with the guidewire. The catheter is advanced from the sheath into the vessel by the help of the markings over the catheter (15-20 cm). The blood flow is confirmed by using a syringe attached to the end of the catheter and flushed with heparinized saline. The sheath is now peeled apart leaving only the catheter in place.

After confirming the placement of catheter in place, about 4-5cm horizontal incision is given over upper chest wall midclavicular region and a subcutaneous pocket is made enough for the chemoport device to fit. A tunnel/ passage is made from the subcutaneous pocket to site of catheter insertion point with tunnelling needle.

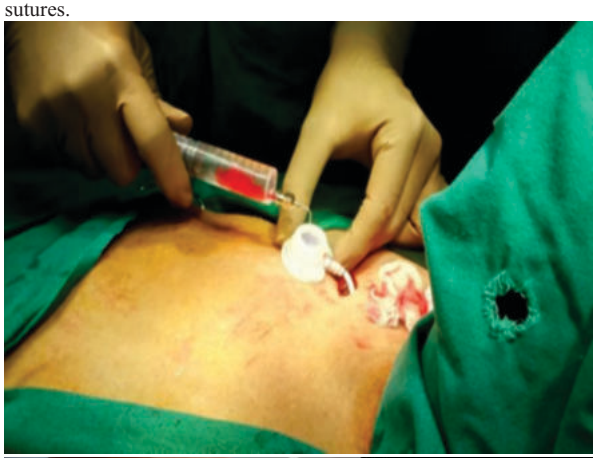
The loose end of the catheter is now attached to one of the tunnelling

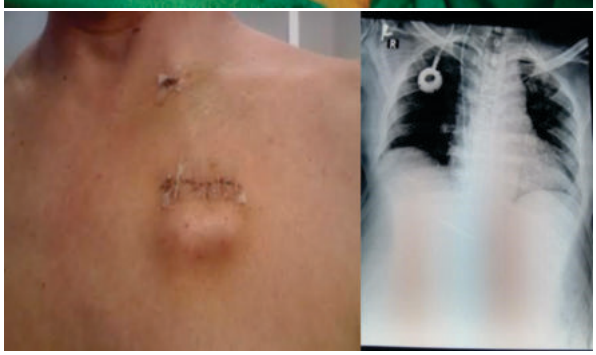
needle is brought out through the pocket. Care is taken to avoid any kinks at the site of initial needle entry.

The catheter is cut at desirable length and attached to the chemoport device via locking device as show in Fig.



The port is checked for functioning by using the Huber needle by return flow of blood on aspiration. Followed by flushing of the port with heparinized saline. After confirming the port is now anchored to the chest wall by suturing the port to deep fascia by non-absorbable sutures.





Skin closure is done and cleaning with spirit followed by a small dressing. Post procedure air entry checked and Xray to be taken to confirm position.

Skin sutures are removed after 10 days.

Arterial complications and pneumothorax can be virtually eliminated. This technique is becoming a standard of care and is helpful in patients with difficult anatomy.

ANALYSES AND RESULTS

While the average duration for the procedure of port insertion was 59mins, almost 90% patients were discharged within 24 hrs with no complications.

Of the 50 patients that underwent the procedure of chemoport implantation, 21 patients underwent by Internal Juglar Vein while the remainder by Subclavian vein out of which in 2 patients the procedure was abandoned owing to complications of migration of guide wire and hemothorax, both of which occurred while attempting subclavian catheterization. While the guide wire was retrieved under fluoroscopic guidance, an Intercoastal drainage tube was passed to for patient with hemothorax. This complication can be avoided by using radiological guidance or under fluoroscope.

Of the remaining patients, 13 patients the port was removed as they had completed chemotherapy were termed disease free. While in 2 patients port was removed pre-maturely due local port site infection and generalized sepsis due to neutropenia.

During the process of chemotherapy through port, 1 patient developed blockage of port as evidenced by no return flow by aspiration. This was managed by giving heparin flush and visualized under C-arm for patency.

When it comes to morbidity of the port, majority of the people were in the opinion that the process of port insertion was painless, they had no sensation of foreign body, no itching/pain and did not interfere with day to day life.And on inquiring regarding the satisfaction by the patient, maximum people were of the opinion that port helped speed up chemotherapy sessions, satisfied with cosmesis, and preferred port over peripheral iv line. About 60% would agree to recommend port over peripheral iv line.

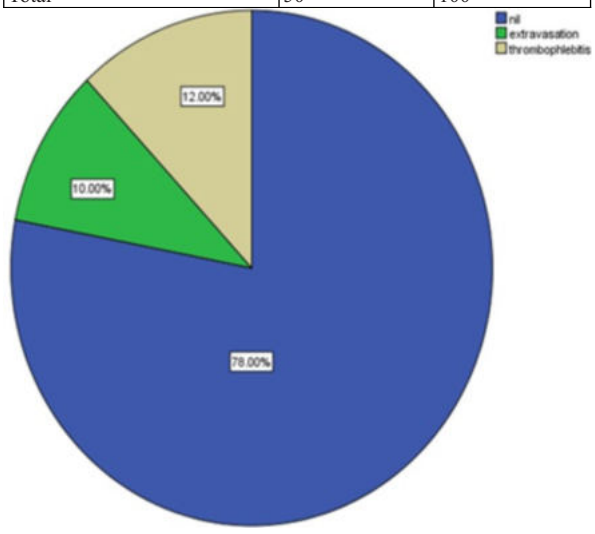
In comparison to patients who received chemotherapy through peripheral iv line, out of 50, 11 patients had serious complication of extravasation and thrombophlebitis which required hospital admission and surgical debridement.

In terms of patient morbidity, >40% experienced difficulty in initiation of chemotherapy in more than 50% of cycles, 26 patients were forced to receive multiple pricks, 34 patients required a second iv line to complete the session in half the cycles and 10 patients required iv at the leg/neck as others were inaccessible.

A) Peripheral IV Line Analysis

1) Complications of chemotherapy given by peripheral IV

Duration	Number	Percentage
Extravasation	5	10
Thrombophlebitis	6	12
None	39	78
Total	50	100



2) Difficulty in Initiation of IV line

Table 4: Morbidity Assessment Score Based On Difficulty In Initiation Of IV Line.

Score	Number	Percentage
In all cycles	14	28
>50 cycles	22	44
50 % cycles	9	18
< 50 % cycles	4	8
Never	1	2
Total	50	100

3) Need for multiple pricks.

Table 5: Morbidity Assessment Score Based On Need For Multiple Pricks.

Score	Number	Percentage
In all cycles	14	28
>50 cycles	26	52
50 % cycles	8	16
< 50 % cycles	1	2
Never	1	2
Total	50	100

4) Need for second IV line for completion of chemotherapy.

Table 6: Morbidity Assessment Score Based On Need For Second IV Line For Completion Of Chemotherapy.

Score	Number	Percentage
In all cycles	0	0
>50 cycles	2	4
50 % cycles	5	10
< 50 % cycles	17	34
Never	26	52
Total	50	100

5) Required IV line in neck/foot.

Table 7: Morbidity Assessment Score Based On Requirement Of IV Line In Neck/foot.

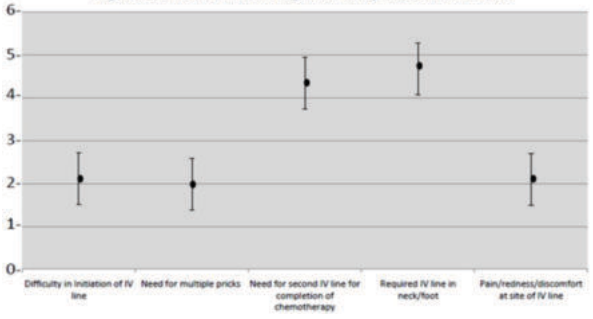
Score	Number	Percentage
In all cycles	0	0
>50 cycles	0	0
50 % cycles	3	6
< 50 % cycles	10	20
Never	37	74
Total	50	100

6) Pain/redness/discomfort at the site of the IV line

Table 8: Morbidity Assessment Score Based On Pain/ Redness/ Discomfort Of IV Line

Score	Number	Percentage
In all cycles	13	26
>50 cycles	26	52
50 % cycles	7	14
< 50 % cycles	1	2
Never	3	6
Total	50	100

Figure 2: Error bar showing morbidity assessment score



7) Patient satisfaction

a) Allowed complete and secure treatment.

Table 9: Patient Satisfaction Score Based On Complete And Secure Treatment.

Score	Number	Percentage
Agree completely	1	2
Agree very much	13	26
Agree Somewhat	18	36
Agree a little bit	12	24
Don't agree at all	6	12
Total	50	100

b) Satisfaction with cosmesis

Table 10: Patient satisfaction score based on satisfaction with cosmesis.

Score	Number	Percentage
Agree completely	1	2
Agree very much	16	32
Agree somewhat	18	36
Agree a little bit	10	20
Don't agree at all	5	10
Total	50	100

c) Would receive via PIVA again if needed again.

Table 11: Patient Satisfaction Score Based On Receiving PIVA Again If Needed Again.

Score	Number	Percentage
Agree completely	0	0
Agree very much	0	0
Agree somewhat	28	56
Agree a little bit	22	44
Don't agree at all	0	0
Total	50	100

d) Would recommend to others.

Table 12: Patient Satisfaction Score Based On Recommendations To Others.

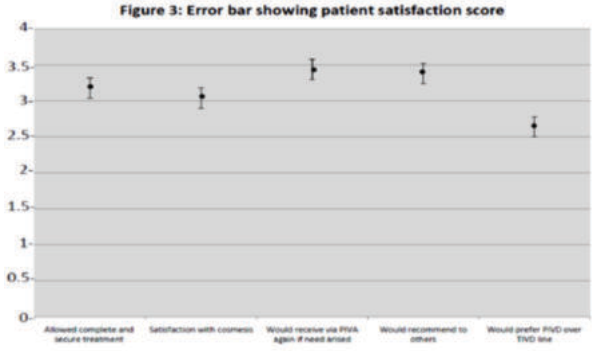
Score	Number	Percentage
Agree completely	0	0
Agree very much	7	14
Agree somewhat	18	36
Agree a little bit	24	48
Don't agree at all	1	2
Total	50	100

e) Would prefer Peripheral IV Line over Port

Table 13: Patient Satisfaction Score Based On Preference Of Peripheral IV Line Over Port

Score	Number	Percentage
Agree completely	3	6
Agree very much	3	6
Agree somewhat	18	36
Agree a little bit	10	20
Don't agree at all	16	32
Total	50	100

Figure 3: Error bar showing patient satisfaction score



B) Chemoport Insertion Related Statistics

The mean duration of the procedure: 59mins

Minimum age: 35 minutes

Maximum age: 180 minutes

1) Duration Of Chemoport Insertion

Duration (minutes)	Number	Percentage
< 45	8	16
45 – < 60	30	60
60- < 90	8	16
90 - < 120	1	2
120-< 180	2	4
180 or more	1	2
Total	50	100

2) Hospital Stay Following Chemoport Insertion

Duration	Number	Percentage
< 24 hours	47	94
2 days	1	2
5 days	1	2
6 days	1	2
Total	50	100

3) Chemoport Insertion Complication

Procedure	Number	Percentage
Arterial puncture (hematoma)	1	2
Hemotorax	1	2
Migration of guide wire	1	2

Nil	47	94
Total	50	100

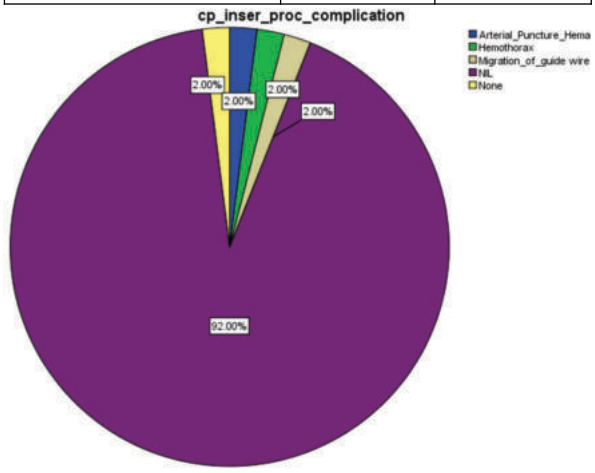


Figure 1: Chemoport insertion complications

4) Chemoport insertion procedure

Procedure	Number	Percentage
Subclavian	29	58
IJV	21	42
Total	50	100

A) Comparison of type of chemoport insertion procedure and chemoport insertion complication

Table 27: Comparison Of Type Of Chemoport Insertion Procedure And Chemoport Insertion Complication

Procedure	Complication present		Complication absent		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Subclavian	3	6	26	52	29	50
IJV	1	2	20	40	21	50
Total	4	8	46	92	50	100

B) Comparison of chemoport insertion procedure and chemotherapy complication

Procedure	Complication present		Complication absent		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Subclavian	5	10	24	42	29	50
IJV	0	0	21	48	21	50
Total	5	10	45	90	50	100

X2= 4.023 df = 1 p = 0.044 Significant

5) Painful process of chemotherapy

Table 8: Morbidity Assessment Score Based On Chemotherapy Process.

Score	Number	Percentage
Agree completely	0	0
Agree very much	3	6
Agree somewhat	6	12
Agree a little bit	12	24
Don't agree at all	27	54
Not applicable as procedure was abandoned	2	4
Total	50	100

6) Gives unpleasant foreign body sensation.

Table 9: Morbidity Assessment Score Based On Unpleasant Foreign Body Sensation Following Procedure.

Score	Number	Percentage
Agree completely	0	0
Agree very much	2	4
Agree somewhat	5	10
Agree a little bit	15	30
Don't agree at all	26	52
Not applicable as procedure was abandoned	2	4
Total	50	100

7) Pain around the site

Table 10: Morbidity Assessment Based On Presence Of Pain Around The Site.

Score	Number	Percentage
Agree completely	0	0
Agree very much	1	2
Agree somewhat	4	8
Agree a little bit	14	28
Don't agree at all	29	58
Not applicable as procedure was abandoned	2	4
Total	50	100

8) Itching around the site

Table 11: Morbidity assessment based on presence of itching around the site.

Score	Number	Percentage
Agree completely	1	2
Agree very much	1	2
Agree somewhat	1	2
Agree a little bit	19	38
Don't agree at all	26	52
Not applicable as procedure was abandoned	2	4
Total	50	100

9)Fear of blockage or dislodgement

Table 12: Morbidity assessment based on fear of blockage or dislodgement.

Score	Number	Percentage
Agree completely	1	2
Agree very much	0	0
Agree somewhat	9	18
Agree a little bit	11	22
Don't agree at all	27	54
Not applicable as procedure was abandoned	2	4
Total	50	100

10) Interference with day-to-day activities

Table 13: Morbidity assessment based on interference with day-to-day activities

Score	Number	Percentage
Agree completely	0	0
Agree very much	0	0
Agree somewhat	4	8
Agree a little bit	16	32
Don't agree at all	18	8
Not applicable as procedure was abandoned	2	4
Total	50	100

11) Fear of infection

Table 14: Morbidity Assessment Based On Fear Of Infection

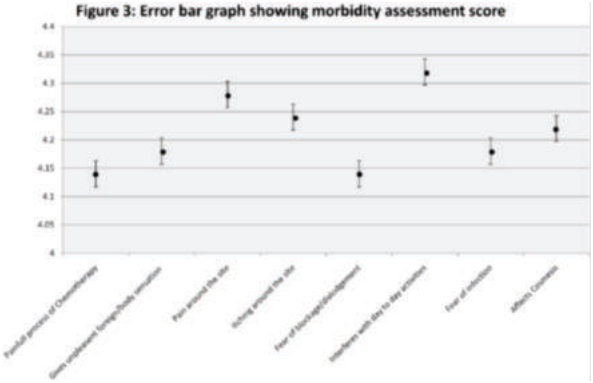
Score	Number	Percentage
Agree completely	1	2
Agree very much	0	0
Agree somewhat	3	6
Agree a little bit	21	42
Don't agree at all	23	46
Not applicable as procedure was abandoned	2	4
Total	50	100

12) Effect on cosmesis

Table 15: Morbidity assessment based on effect on cosmesis.

Score	Number	Percentage
Agree completely	0	0
Agree very much	1	2
Agree somewhat	3	6
Agree a little bit	20	40
Don't agree at all	24	48
Not applicable as procedure was abandoned	2	4
Total	50	100

Figure 3: Error bar graph showing morbidity assessment score



13) Patient satisfaction

a) Complete and secure chemotherapy administration

Table 16: Patient Satisfaction Based On Complete And Secure Chemotherapy Administration

Score	Number	Percentage
Agree completely	29	58
Agree very much	17	34
Agree somewhat	2	4
Agree a little bit	0	0
Don't agree at all	0	0
Not applicable as procedure was abandoned	2	4
Total	50	100

b) Satisfaction with cosmesis

Table 17: Patient Satisfaction Of Cosmesis

Score	Number	Percentage
Agree completely	20	40
Agree very much	23	46
Agree somewhat	4	8
Agree a little bit	1	2
Don't agree at all	0	0
Not applicable as procedure was abandoned	2	4
Total	50	100

c) Speeded up chemotherapy sessions

Table 18: Patient satisfaction based on speeded up chemotherapy sessions

Score	Number	Percentage
Agree completely	16	32
Agree very much	17	34
Agree somewhat	15	30
Agree a little bit	0	0
Don't agree at all	0	0
Not applicable as procedure was abandoned	2	4
Total	50	100

d) Recommendation to others

Table 19: Patient Satisfaction Based On Recommendation To Others

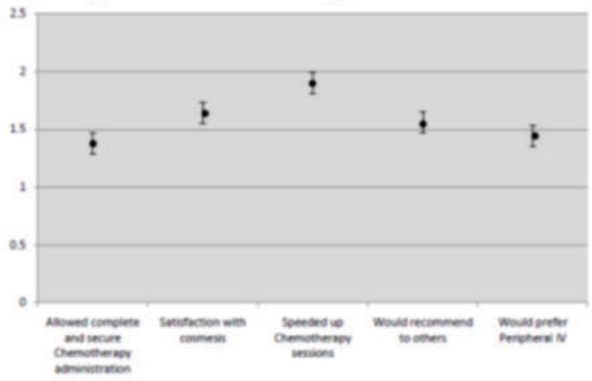
Score	Number	Percentage
Agree completely	20	40
Agree very much	26	₹
Agree somewhat	2	4
Agree a little bit	0	0
Don't agree at all	0	0
Not applicable as procedure was abandoned	2	4
Total	50	100

e) Preference for port over peripheral IV

Table 20: Patient Satisfaction Based On Preference For Port Over Peripheral IV

Score	Number	Percentage
Agree completely	29	58
Agree very much	17	34
Agree somewhat	0	0
Agree a little bit	1	2
Don't agree at all	1	2
Not applicable as procedure was abandoned	2	4
Total	50	100

Figure 4: Error bar showing patient satisfaction



14) Chemoport removal

Table 21: Chemoport Removal In Study Participants

Diagnosis	Number	Percentage
Yes	15	30
No	33	66
Not applicable as procedure was abandoned	2	4
Total	50	100

Table 22: Indication For Chemoport Removal

Diagnosis	Number	Percentage
Completed treatment	13	26
Infected port	1	2
Septicemia	1	2
Not applicable as port not removed	33	66
Not applicable as procedure was abandoned	2	4
Total	50	100

DISCUSSION

It is important that patient suffering from carcinoma breast have a safe and secure intra-venous access to provide chemotherapy as almost patients with proven malignancy will require multiple cycles in their lifetime and supportive drugs over long period.

Chemoports have proven highly effective and safe method with minimum acceptable complication rates and high patient satisfaction. Though the idea of operative intervention required along with the risks involved and the cost factor in acquiring it limits it's use in comparatively higher socio-economic people with considerable educational intellect, innovative strategies need to be designed to provide the treatment to all classes of people particularly in breast cancer patients where in veins of the ipsilateral arm are not available.

In this prospective comparative study, we have designed a questionnaire assessing the acceptability, perceived morbidity of chemotherapy, associated complications and patient satisfaction in breast cancer patients administered chemotherapy via chemoport with those receiving by peripheral IV line.

In this randomized study, we have not taken into consideration the education level or the economic status as ports were made available in our institute. More than 60% of population were not aware about the use of chemoports and its properties for providing chemotherapy. In our institute, the procedure of implantation was carried out in operation theatre under local anaesthesia. The complications that occurred during the procedure can be prevented using radiological guidance or by interventional radiologists.

The procedure of implantation was found to be painful in 9% of people in our study as compared to other previous study which reported around 18-60%. Venous access was found easier in port patients who also did not require multiple pricks as compared to those receiving peripheral IV in whom patient required multiple pricks to initiate chemotherapy in more than 50% cycles. In 13 patients, IV line were inserted into leg/neck for completion of chemotherapy.

A total of 3 patients (6%) in our study had complications related to the port aner insertion put of which 2 patients had port site infection (4%) and one patient had blocked pon out of which 2 patients required port removal due to infection. Singh et al (19) reponed 14% rate of complication which involved blockage (8%), infection (3.5%), flipping of IJV and thrombosis. Similarly. Cil et al(29) reported complications occurred at a rate of 10.7%.. Among those, 7.6% developed minor complications in which port removal was not needed; however, ports 3.15% had to be removed due to major complications. 1.47% ports were explanted due to treatment-resistant bacteraemia and sepsis. in addition to 0.42% because Of port pocket infections. An additional 1.26% for the following reasons: skin necrosis (0.21%); incision dehiscence (021%): broken or torn catheter (0.42%): jugular vein thrombosis (0.21%); thrombosis Of superior caval vein (021%). In another study of 132 patients by Nakamura et al (30), complications occurred in 8 patients (6%). The catheter was removed because of infection in 4 patients and catheter kinking in 1 patient. Port extravasation occurred in 3 patients.

From this study and also from similar studies it is evident that infection related to chemoport is the most common complication and also the reason from premature removal if chemoport before completion of treatment. In comprehensive study done on blood stream infection related to chemoport by Desgranges et al.(33) showed 5.2% cases with proven blood stream infection caused mainly by gram positive cocci. Even in our study, port site infection lead to removal of chemoport in 2 patients. Other studies on port infection as shown in the table.

Reference

Chang et al. (33)	8.9%
Dal Molin eta:((35)	4%
Maki et al (34)	3.6%-4.0%
Sakamoto et al (36)	1.4%
Teichgraber et al (37)	5.1%
Toure et al (35)	13.0%
Yoshida et al.(3.9)	10%

Patients who also did not require multiple pricks as compared to those receiving peripheral IV in whom required multiple pricks to initiate chemotherapy in more than 50% cycles. In 13 patients, IV line were inserted into leg/neck for completion of chemotherapy. Around 30% patients agreed that chemoport accelerated their sessions and patients were satisfied and would recommend port to other patients.

The administration of chemotherapy by using a chemoport is to have an impact of quality-of-life patient Very few studies have been based of assessing the morbidity and patient satisfaction which compare the use of ports to that of peripheral iv line. In one such similar study by Singh al (19,. the majority (81.2) were satisfied with the cosmetic outcome, 91.5 % would have TIVAD re-inserted if the need arose, and 89.6 % would recommend it to others. The results seen in our study is similar with around 80% were satisfied with cosmesis and around 75% would have re-inserted in required. In another study by B. Burbridge et al.(34) which studied on patient satisfaction and quality of life in port patients indicated that "the port system was a very positive enhancement to their treatment. The port had little impact on daily activities. The port in this study did not negatively impact subject satisfaction and quality of life for this cohort. Most subjects rated the device utility highly and felt that the port was a positive enhancement to their treatment, one that they would possibly utilise again in future. if need be"

Our patients had very less complaints of discomfort, foreign body sensation and itching around port site. Even though peripheral IV line did not have any significant impact (20%) on cosmesis. half of the patients developed variable degree of pain, redness or arm edema. and as the number of sessions increased, the difficulty in finding a suitable peripheral vein become more and more difficult.

CONCLUSION

Based on the above results we infer that:
High satisfaction rate observed in patients using chemoports for chemotherapy-it speeded up the sessions, less painful and only few people felt its presence affecting cosmesis/ day-to-day activities.

It avoids the blunt of undergoing painful process of multiple pricks, use of 2nd line, thrombophlebitis and prolonged sessions seen in peripheral IV lines.

Although the procedure of port implantation has got serious complications, the rate is minimal and with the help of radiological tools and surgical expertise, these can be made negligible.

The only set-back by using a port is the maintenance part, which requires periodic flushing with heparinized saline to prevent blockage when not in use for prolong period (>4weeks). And so, it is advisable to remove the port promptly after completion of treatment if patient is labelled cured.

Complications like infection can be avoided by strict aseptic precautions taken while handling the port for chemotherapy sessions by trained personal.

Above all patient education and compliance is utmost important to ensure proper functioning of the port

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