Port-A-Cath: A Real-Life Study in Patients Receiving Chemotherapy “A single centre Experience, to Access Efficacy, safety & Impact on Quality of life

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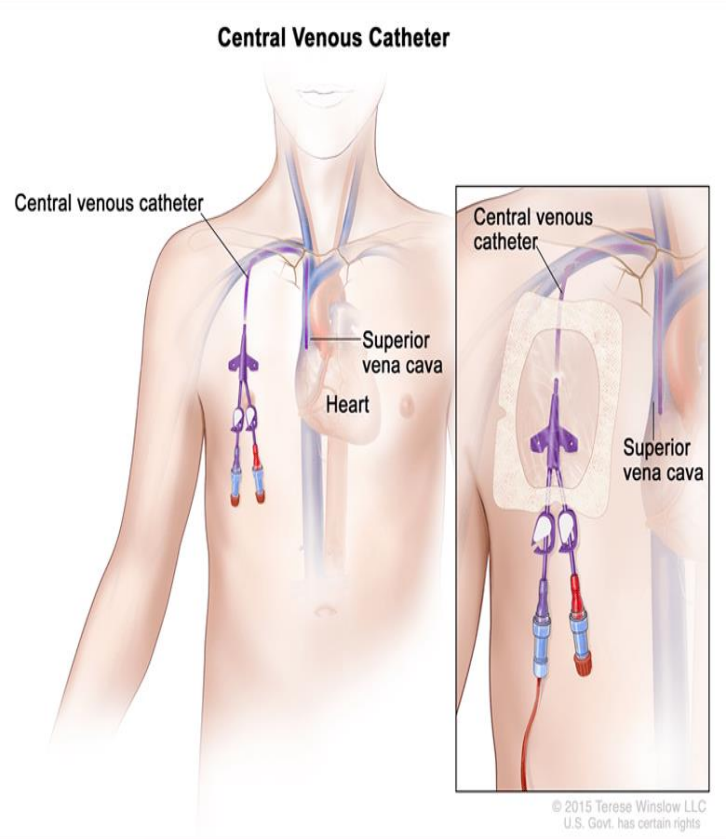
A port-a-cath, also known as a chemotherapy port, is crucial for cancer patients because it allows for the convenient and repeated administration of chemotherapy drugs, blood draws, and other fluids through a single, implanted access point, significantly reducing the need for multiple needle sticks and minimizing discomfort and potential vein damage, especially for patients requiring long-term treatment or with fragile veins; essentially improving their quality of life during cancer treatment

Types of iv access

- Central
  - No tunneled central catheters
  - Tunneled central catheters (Port a cath)
  - Peripherally inserted central catheters (PICC)
  - Implantable ports
- peripheral
  - Cannula
  - Butterfly


Central Venous Catheter
Central venous catheter
Superior vena cava
Heart
Central venous catheter
Superior vena cava
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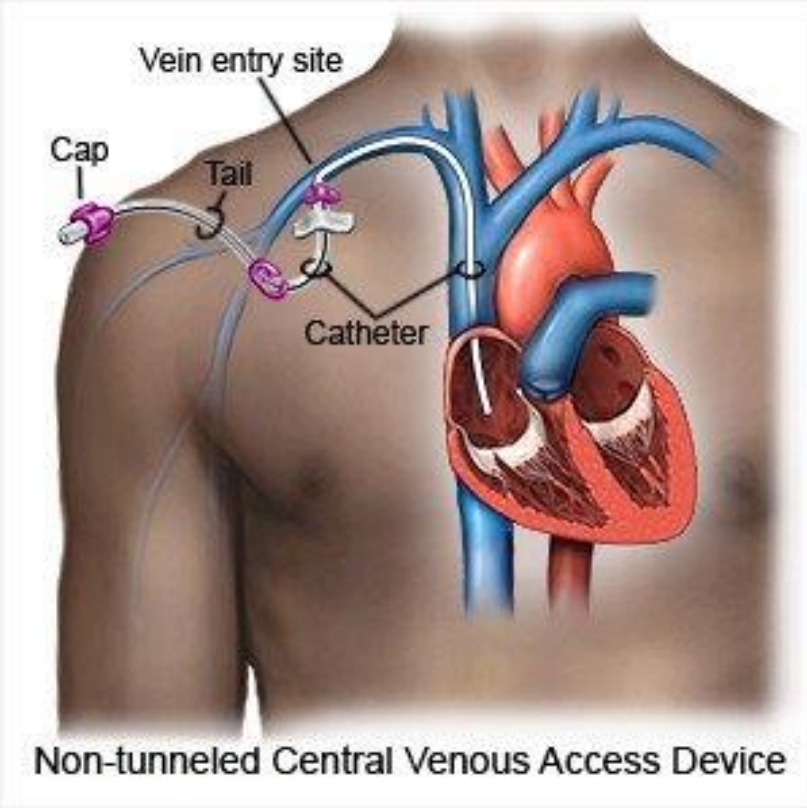
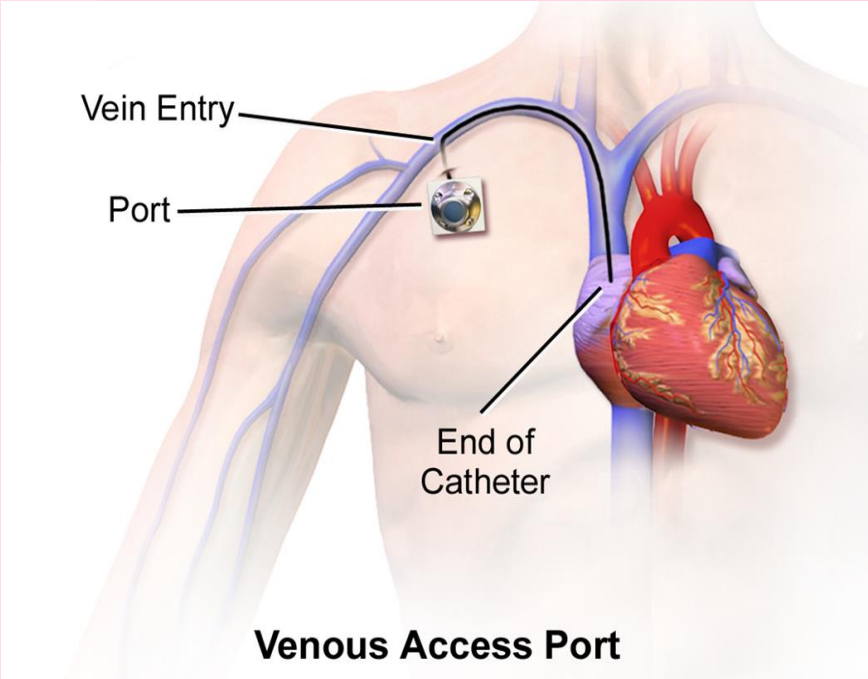
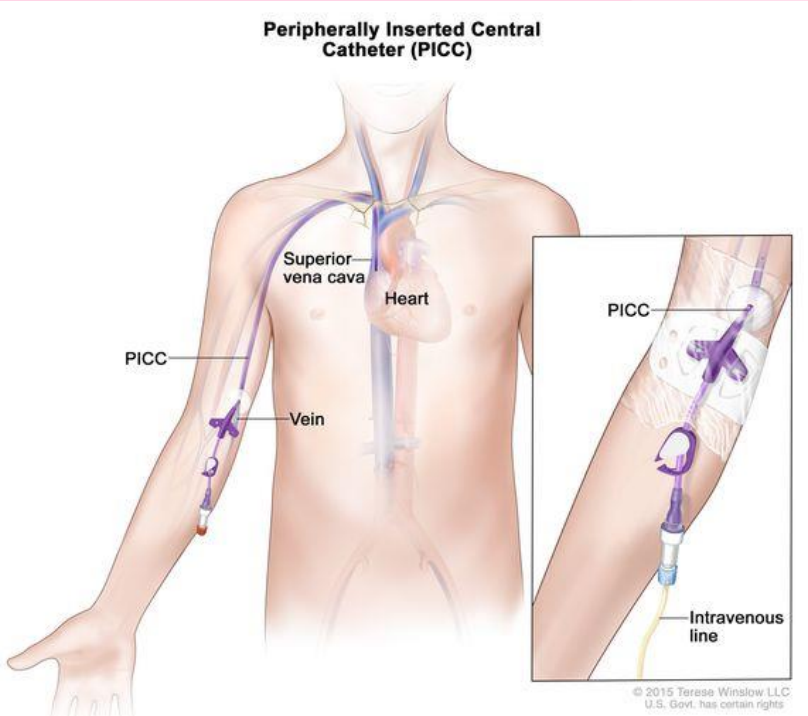

Vein entry site
Cap
Tail
Catheter
Non-tunneled Central Venous Access Device

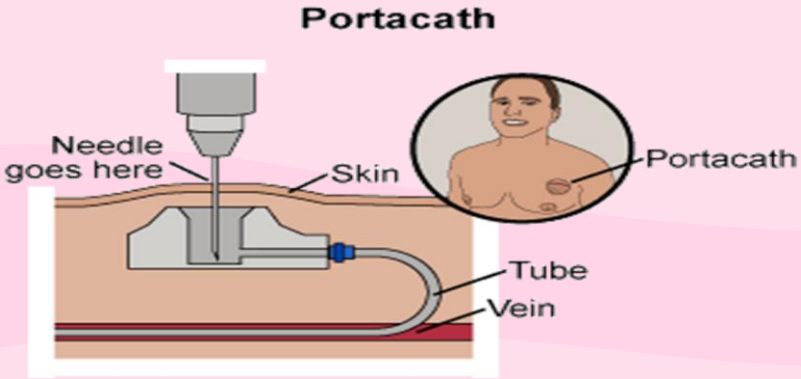


Venous Access Port



Chemo port

A "chemo port" is a small, implantable medical device placed under the skin, usually on the chest, that allows for easy access to deliver chemotherapy drugs.
A catheter that is attached to constitutes the implantable "PORT" a reservoir that is inserted into a pocket that has been created by surgery on the chest wall.
A needle is inserted through the "PORT"'s septum to gain access to the reservoir.

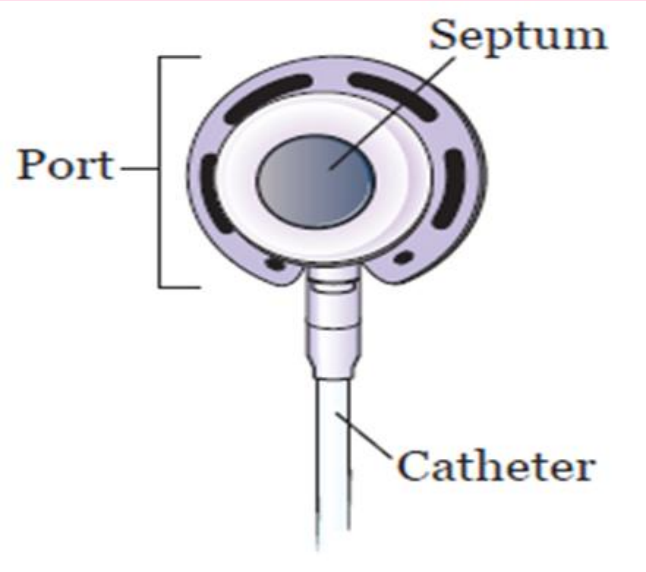


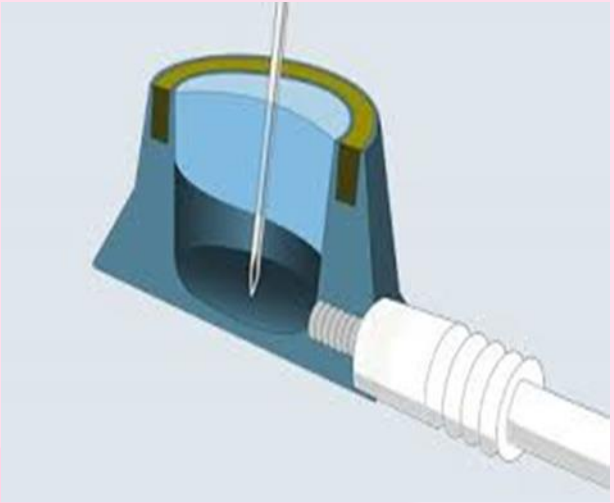
Chemo Port has two parts:

The Port : The port is a quarter-sized plastic or metal disc. The middle part of the port, a rubber piece called the access site, holds the needle in place when you receive treatment, medication, or have blood drawn.

The Catheter: A catheter, or thin tube, connects the port to a large vein in your body. The chemo port sits underneath your skin, just below your collarbone.

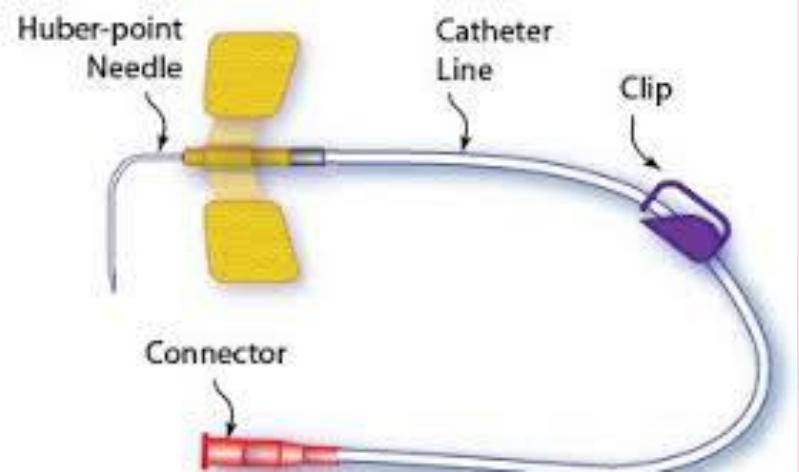
The chemo port is given in vein such as **jugular vein**, **subclavian vein** through **superior vena cava** to deliver chemotherapy drugs and other drugs


Septum
Port
Catheter



A Huber needle is a hollow needle used to access the chemo port.

The needle has a long, beveled tip that can go through your skin as well as the silicone septum of your implanted port's reservoir.



A chemo port can stay in place for as long as needed, which can be weeks, months, or even years, depending on the length of your chemotherapy treatment. But its not wise to keep a port for more than 5 years due to its bioavailability and efficacy.

- Ultrasound-guided access is the safest technique for central venous access compared to the landmark technique.
- In our Centre we do all ports by US guided technique.

Indication of Port A Cath

- Difficult cannulation
- Long term access – can be years
- Aesthetics/patient body image
- May administer continuous infusion like TPN
- Ports placed for patients receiving chemotherapy , generally restricted to chemotherapy infusions only
- Lowest incidence of catheter- related bloodborne infections
- Low maintenance care at home

Contraindications

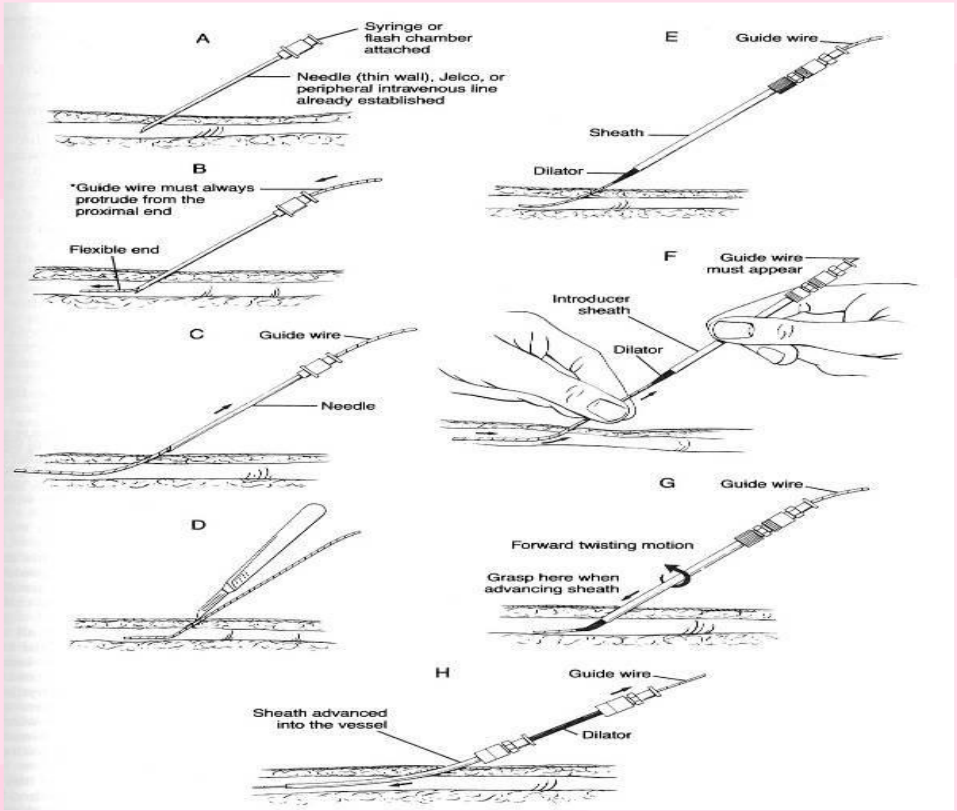
- Venous stenosis.
- Occluded vein.
- Respiratory problems
- Infected site.
- Elevated ICP (IJ line).
- Site with trauma for example clavicle fracture or ulceration.
- Patient with low PLTS (thrombocytopenia) less than 80000

Port-a-cath Insertion

It is always done in operation theater with complete aseptic precaution.
Always taking informed consent
Usual operation time 30-45 min
Preferable anesthesia is local anesthesia lignocaine and bupivacaine.
Vein is confirmed by ultrasound
Vein is access by The Seldinger technique

Seldinger technique

– Use introducing needle to locate vein
– Wire is threaded through the needle
– Needle is removed
– Skin and vessel are dilated
– Catheter is placed over the wire
– Wire is removed
– Catheter is secured in place


A
Syringe or flash chamber attached
Needle (thin wall), Jelco, or peripheral intravenous line already established
B
*Guide wire must always protrude from the proximal end
Flexible end
C
Guide wire
Needle
D
E
Guide wire
Sheath
Dilator
F
Guide wire must appear
Introducer sheath
Dilator
G
Guide wire
Forward twisting motion
Grasp here when advancing sheath
H
Guide wire
Sheath advanced into the vessel
Dilator

Internal Jugular Approach

Positioning

– Right side preferred

– Trendelenburg position

– Head turned slightly away from side of venipuncture

Needle placement: Central approach

– Locate the triangle formed by the clavicle and the sternal and clavicular heads of the SCM muscle

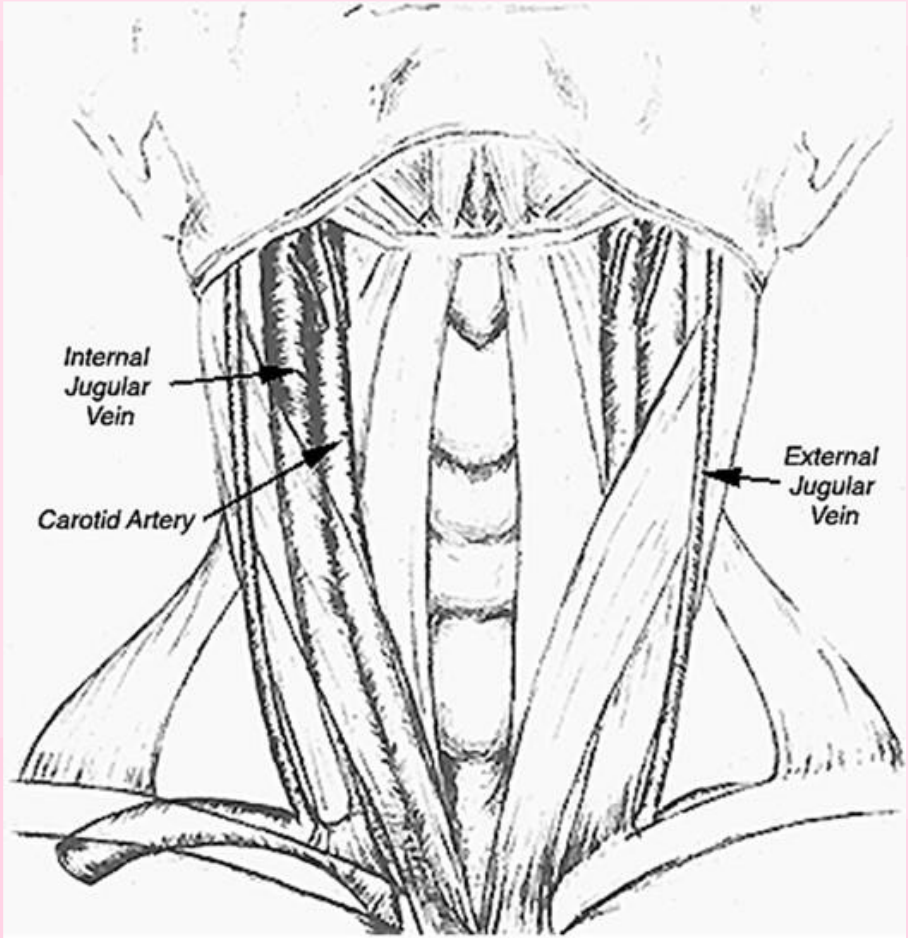
– Gently place three fingers of left hand on carotid artery

– Place needle at 30 to 40 degrees to the skin, lateral to the carotid artery

– Aim toward the ipsilateral nipple

Guidewire the introduced

Peel away sheath is introduce along the guide wire



- Right internal jugular vein is usually preferred over the left for cannulation because it has a larger diameter and affords a straighter path to the superior vena cava.
- Bleeding can be recognized and controlled easily in IJV
- chance injury to thoracic duct on left site is high in blind technique without ultrasound.

- We always prefer heparin flash every time before removal of Huber needle
- Most commonly, a heparin solution of 10 units/mL is used for flushing central lines.
- The amount of heparin flushed depends on the catheter size, but typically ranges from 3-5 mL

Patient can go home just after the procedure.
In case of pediatrics group, we always prefer General Anesthesia

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Complications

during insertion

- Access failure
- Arterial puncture
- Pneumothorax
- Mal- position

Complication

During accessing

- Extravasation
- Infection
- Catheter fragmentation
- Mal-position of needle

Overall Observation Throughout Our Study

Background

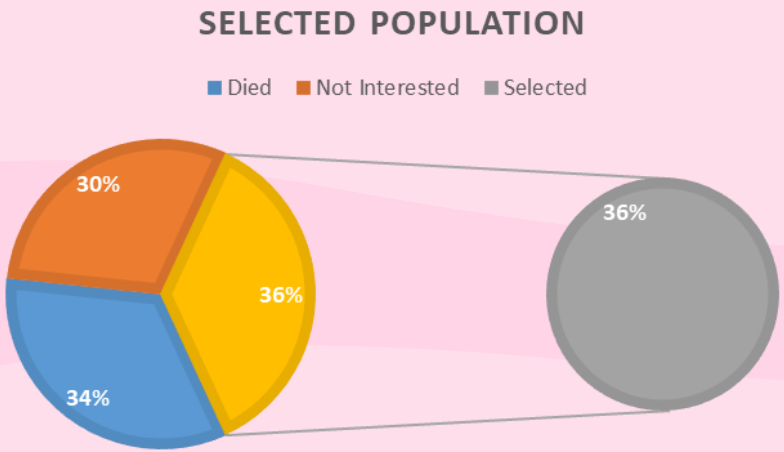
Chemotherapy through Peripheral Venous Access (PVA) causes redness, swelling around the puncture site with multiple punctures, Pain or burning sensation at the injection site, discoloration along the vein, phlebitis & extravasation and ulceration.

Meanwhile Port-A-Cath (PAC) provides significant benefits for cancer patients by offering easy, repeated access , minimizing discomfort & greater mobility while undergoing chemotherapy treatments.

The purpose of this study is to assess the experience of patients with PAC who have h/o receiving chemotherapy with PVA, to evaluate any access related anxiety, pain or any complication related to venous access, to see the satisfaction, any restricted mobilities of daily living of patients receiving chemotherapy with PAC systems .

Method and Materials

Year: 2019-2023	Total Case: 170	Unavailable Patients: 50	Not Interested: 45	Selected Population: 54	Retrospective Mixed Cohort Study done in Bangladesh Specialized Hospital

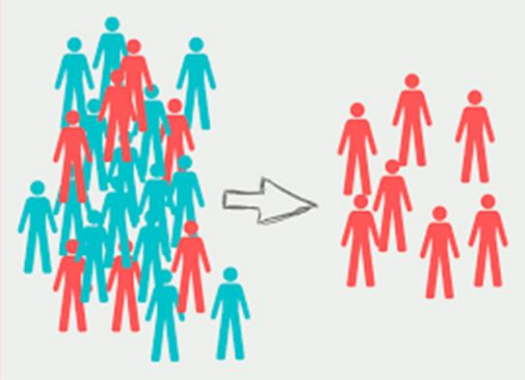


Visual Analogue Scale (VAS) was used to access pain & Modified Facial Anxiety Scale (M-FAS) to access anxiety.

Experience during PVA & PAC, both were observed in same patient population.

We also evaluated any complications related to venous access or any restricted movement of patients who were receiving the chemotherapy.

75 Patients

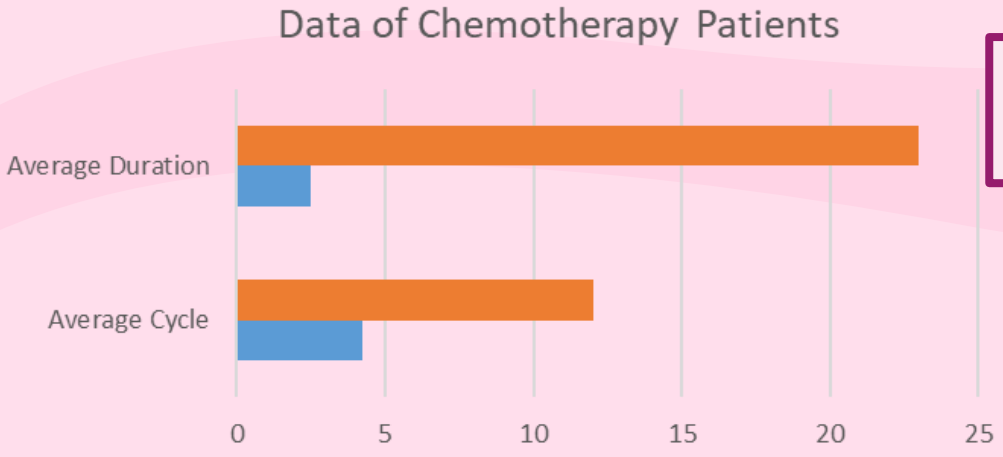


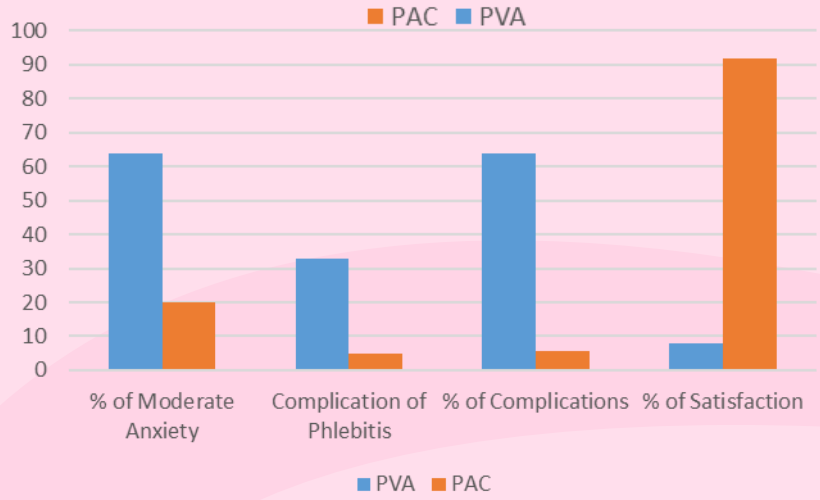
54 Patients

Inclusion criteria

- All patients with cancer presenting to medical and pediatric oncology and hematology;
- All the patients were able to give verbal permission;
- All the stages and performance status.

Result





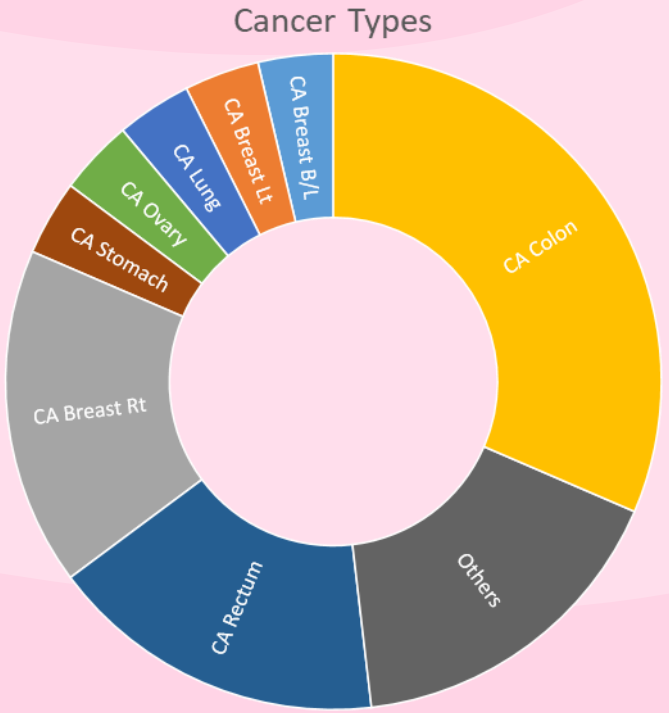
PAC-1.4

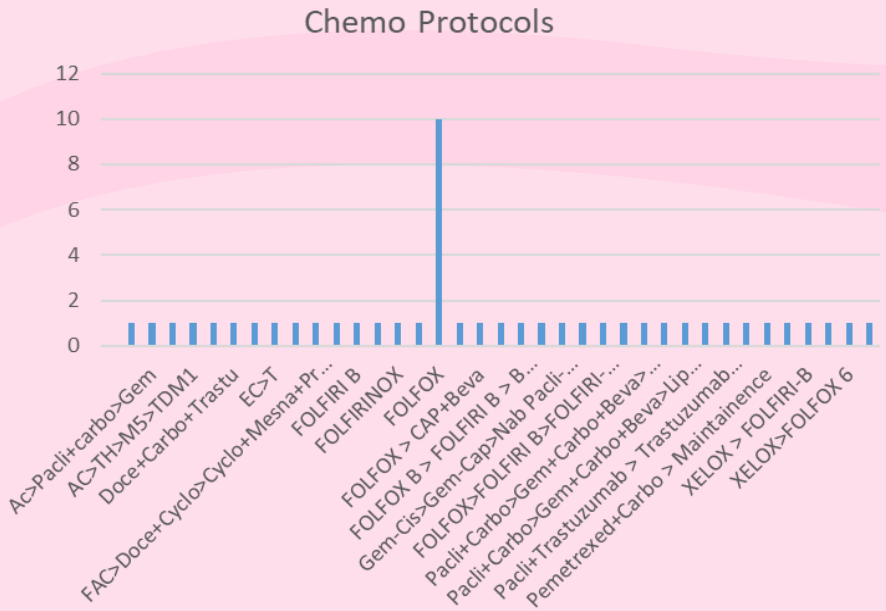
PVA-4

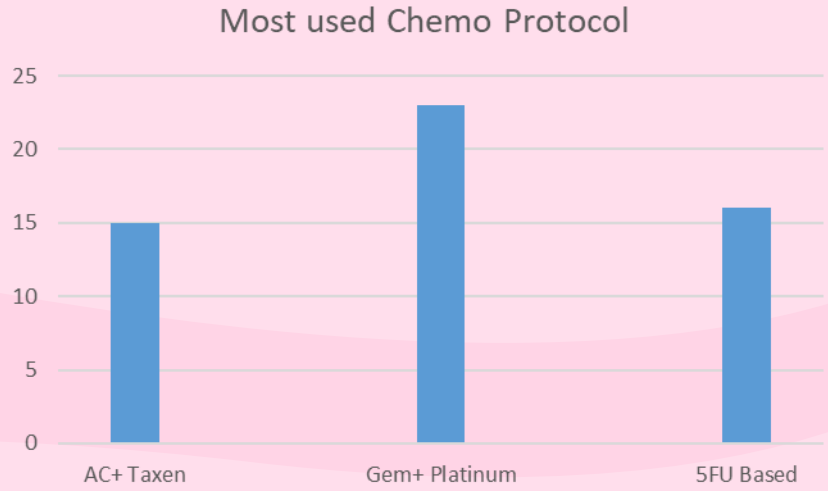
Pain Assessment

Frequency of Disease

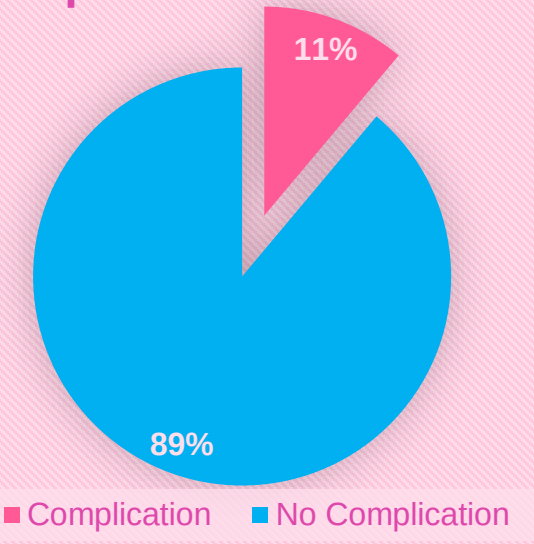
Ca Colon	17
Ca Rectum	09
Ca Breast	15
Others	13




Chemo Protocols
12
10
8
6
4
2
0
Ac>Pacli+carbo>Gem
AC>TH>M5>TDM1
Doce+Carbo+Trastu
EC>T
FAC>Doce+Cyclo>Cyclo+Mesna+Pr...
FOLFIRI B
FOLFIRINOX
FOLFOX
FOLFOX > CAP+Beva
FOLFOX B > FOLFIRI B > B...
Gem-Cis>Gem-Cap>Nab Pacli-...
FOLFOX>FOLFIRI B>FOLFIRI-...
Pacli+Carbo>Gem+Carbo+Beva>...
Pacli+Carbo>Gem+Carbo+Beva>Lip...
Pacli+Trastuzumab > Trastuzumab...
Pemetrexed+Carbo > Maintainence
XELOX > FOLFIRI-B
XELOX>FOLFOX 6

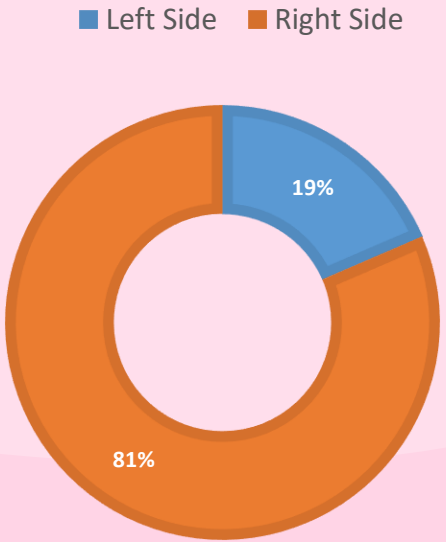

Most used Chemo Protocol
25
20
15
10
5
0
AC+ Taxen
Gem+ Platinum
5FU Based

Complications with PORT



Complications happened due to port site infections

PORT INSERTION SITE



M:F Ratio :- 1:1.7

Average age 39 yrs.

80% of the population had mild to no anxiety with PORT, on the other hand 20% had moderate anxiety

Conclusion

Port-A-Cath is a safe and effective option with easy access and subjective comfort, especially for patients receiving chemotherapy, by avoiding chemotherapy related local complication, thus helps improving quality of life with access related less pain and anxiety. With cost consideration port-a-cath can be advised with individual needs.