IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 11, Issue 4 Ser. II (Jul. – Aug. 2022), PP 56-61
www.iosrjournals.org

A Retrospective analysis of factors affecting the patency of Chemoport and the associated complication.

Mrs .Rekha[1], Ms. Rohini Sharma[2], Ms Rajeswari[3]Mrs. Lijo Thomas[4],
[1](Nursing Officer, Apollo Proton Cancer Centre, Chennai)
[2](Vice –Principal,Apollo School of Nursing Indraprastha Apollo Hospitals, New Delhi)
[3](Infection control Nursing Officer, Apollo Proton Cancer Centre, Chennai)
[4](Chief Nursing Officer, Apollo Proton cancer centre, Chennai)

Abstract
Background: Implantable *Chemoport is a very useful device for long-term venous access for infusion of chemotherapeutic drugs and other agents. There are few studies from resource poor countries reporting complications of Chemoport.*
Material and Methods:*A quantitative, Non-Experimental retrospective exploratory cohort design research approach, used to assess the factors affecting the Chemo port patency and its associated complications at Apollo Proton Cancer centre. The target population was patient who had undergone Chemo port insertion at APCC. The data collection period lasted for the months from Sep 20 to Oct 21.*
Results:*Through a retrospective analysis we found, 5(5%) non- Adherence to the Flushing protocol as per policy, 6(6%) Non- adherence to the aseptic technique while preparing the medicine by the clinical –pharmacist and chemo port handling by the Nurses, 101 (100%) adherence to the use of appropriate size of syringe and heparin lock as required when the port is not in use . When we looked at the associated complications there were 2(2%) had Positive blood and pus cultures within 30days of port insertion, 4 (3.9%) were suspected infections, 3(3%) were had port dislocation which required a small surgical procedure to realign the placement of the port due to the non –adherence to the proper positioning at home*
Conclusion: *Patient and family education on Chemo port care and regular hands on training for the Nurses who handles the Chemo port will reduce the chemo port related complications and the ports can be retained for longer years without any complication*
Key Words*: Chemo port, Patency, Flushing policy, Infections and associated complications*

Date of Submission: 22-07-2022 Date of Acceptance: 05-08-2022

I. Introduction:

A Chemo port 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, so that patient feels comfort against pricking again and again. Access of this totally implanted reservoir is possible with a special needle that allows puncture of the skin and silicone membrane of the port chamber. Chamber puncture has to take place under sterile conditions. Furthermore, patients need no external dressing of the port area and are allowed to pursue normal activities like showering and swimming after needle removal. Totally implanted central venous port systems are widely used for chronically ill patients, who need long-term access to central veins for prolonged therapy because of their low rates of extravasations and infection. Implantable Chemoport is a very useful device for long-term venous access for infusion of chemotherapeutic drugs and other agents.

Use of implantable devices for this purpose have become the preferred choice these days, but they have their own set of problems, starting from difficulties in Cannulation to safely maintaining the access for a prolonged period of time in a sterile way. Moreover, the patient population undergoing these treatments is mostly immune suppressed and prone to systemic infections making the care of any implanted device more difficult. The present study evaluates the experience of using chemo ports in a comprehensive cancer care centreour centre is an exclusive state of the art cancer centre that deals with patients requiring Proton and Tomotherapy. The nature of interventions that patients undergo is diverse and exclusively specialized as compared to other hospitals nearby. The routine indicators of HAI surveillance may not be entirely applicable to our hospital as many patients who are on chemo ports may not need an additional central line for IV access although they are admitted in an ICU for various reasons. However the risk of Chemo port infections in such patients is higher than the others who access the chemo ports for routine chemotherapy alone. Moreover any

infection or fever that occurs due to handling of the Chemo port as day care procedures do not classify for HAI surveillance. Additionally this poses a challenge for identifying breaches in infection control practices.

Implantation of central venous port systems is performed in an interventional suite or operating room using fluoroscopic guidance under local anesthesia of course, even after uneventful implantation, proper catheter maintenance is necessary to avoid complications, which are reported in up to 27%. Some studies have reported factors affecting the efficacy of Chemoport. One of the greatest challenges we face on a everyday basis is maintaining the sterility of the port. The incidence of fever post handling of chemoport was noted to have increased since June 2021. There were two more patients with fever post use of the chemo port in the month of August again. Since this was an unusual occurrence in our hospital this issue was discussed at the Chemotherapy QI team meeting. Astute handling of this situation averted an outbreak of bacteraemia in those with chemoports.Hence it is important to study some specific factors to understand it better & its effect on the patency of the Chemo port andWe have also tried to study the chemo port related complications and reasons for removal of the chemo ports this will help us to look at better systems, enhance skills of care of Chemoport& also provide better patient education to enhance the efficacy of the port.

Our goal is to minimize or ideally eliminate the reasons which affect the patency of the chemo port and any infections that may occur while handling the chemoport. Any issues with patency and concurrent infections due to the chemoport not only delays recovery, escalates cost of therapy but also impacts the overall prognosis of the patient

II. Materials and Methods

A quantitative, Non-Experimentalretrospectiveexploratory cohort designresearch approach, used to assess the factors affecting the Chemo port patency and its associated complications at Apollo Proton Cancer centre. The target population was patient who had undergone Chemo port insertion at APCC. The data collection period lasted for the months from Sep 20 to Oct 21.

Inclusion criteria:
All patients who have undergone Chemo portinsertionat APCC
Purposive sampling technique for selected Chemo port insertion patient during the defined period

Exclusion criteria:
Patients who have undergoneChemoport insertion outside the selected hospital

Procedure Methodology

The structured tool was used by the researcher to assess the factors affecting chemo port patency and assess the complications of chemo port. The data collection consisted of demographic variable such as unique identification number, age and sex. Whereas clinical variable consists of The date of chemo port insertion, Diagnosis, Details of the Tumor such as Stage, Location etc… , Patients Coagulation parameters such as Platelet , PT and APTT was also taken in to consideration to assess the complication related to bleeding . Data collection further extended up to the removal of port due to the absence of backflow and due to any positivecultures. The data was analyzed using descriptive statistical methods used to find the factors affecting the Chemo port patency and factors contributing to complications associated with chemo port handling.

III. Results

Table 1 Describes the Frequency and percentage of demographic variables of patients have undergone chemo port. Out of 101 patients, 13 (13%) were age above 65yrs, 42 (41.5%) were age between 51 to 65yrs , 30 (29.7%) were age between 35 to 50yrs, 16 (15.8%) were age between 35 and below . In relation to the gender and the necessity of chemo port insertion, 61 (60%) of female required chemoportwhereas it was only 40 (40%) in male gender. When we look at the Type of cancers, patients with Breast and GI carcinoma was highly recommended for chemo port insertion due to the nature of the chemo regimen and the total cycle of chemo therapy required for the patient. All these 101 ports had been handled around 964 times at various time periods by the nurses.

Table 2 Describes the frequency and percentage distribution of factors affected the Chemo port patency and also the complications encountered during the treatment period of the patient such as InfectionOverall analysis of the risk factors associated with chemoport insertion/maintenance revealed that non-adherence to the flushing protocol as per policy was 5%, breach of aseptic technique while preparing the medicine by the clinical – pharmacist and chemo-nurses was around 6%. Six patients satisfied the case definition for a suspected chemoport infection and blood cultures were sent for all six patients. Of the six patients all had positive blood cultures (2 grew E.coli, 2 grew Enterobacter cloacae, 2 grew Methicillin sensitive staphylococcus aureus

(MSSA) and one grew klebsiella pneumoniae. Of these four had foci of infection elsewhere and hence did not qualify as confirmed chemo port infection. Two patients had confirmed chemoport infection requiring chemo port removal. 3(3%) had port dislocation which required a small surgical procedure to realign the placement of the port. Upon detailed probing it was discovered that the devices used for reconstitution of chemotherapy agents (intended single use devices) were inadvertently being reused by the clinical pharmacist.

Table 1: Frequency and percentage of demographic variables of patients have undergone chemo port insertion from Sep20 to Oct-21.

Table -1 Demographic Variables with Percentage distribution

S.No	Demographic variables	Frequency (n)	Percentage (%)
1	**Age of the Patients in Years**		
	A Above 65yrs b)51 to 65yrs c) 35 to 50yrs f) Below 35yrs	13 42 30 16	13% 41.5% 29.7% 15.8%
2	**Gender**		
	a)Male b)Female	40 61	40% 60%
3	**Types of Cancers**		
	a) Breast Carcinomas b)GI Carcinomas c) Lung Carcinomas d)Bone and Tissues e) Neuroblastoma f) T-cell Lymphoma g) Oro Pharynx h) Genito urinary Ca	41 47 3 2 2 1 1 4	40% 47% 3% 2% 2% 1% 1% 4%

Table 2 shows the frequency and percentage distribution of various factors affected the Chemo port patency

Table -2 :Various Factors affecting the Chemo port Patency

Factors	Frequency (n) - Non-Adherence	Non – Adherence Percentage (%)
Adherence to the Flushing protocol as per policy	5	5%
Adherence to the Aseptic technique while Preparing medicine and handling Chemo port	6	6%
Usage of Appropriate size of Syringe (10ml)	0	0%

Heparin Lock as and when required	0	0%

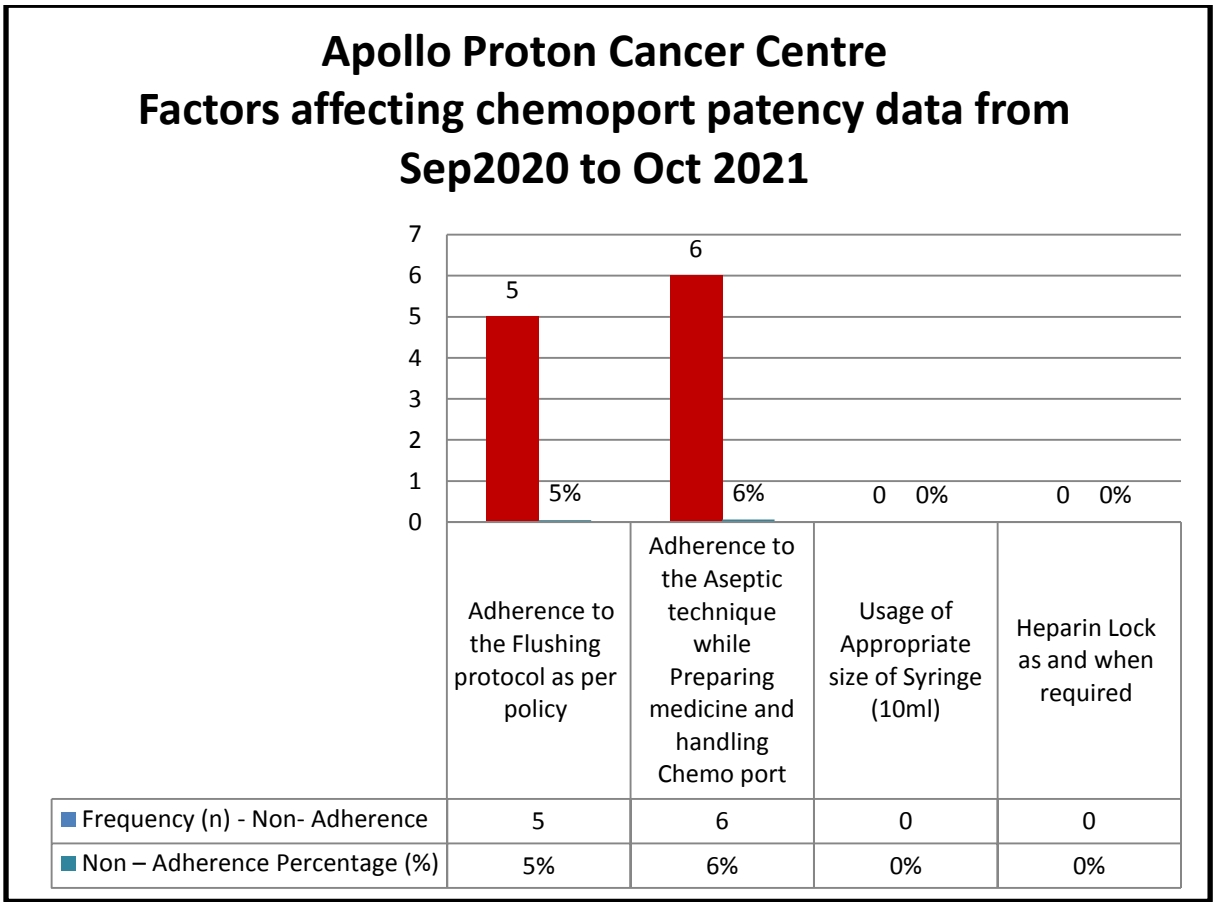
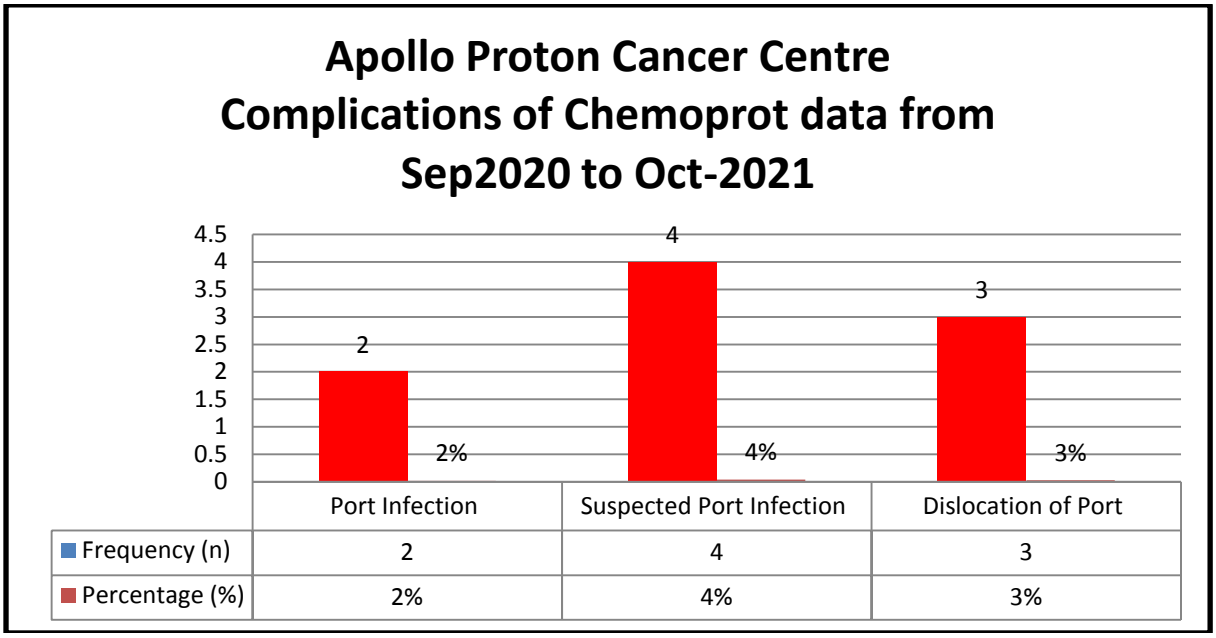


Table 3: Shows the frequency and percentage of complications encountered during the treatment period of the patient such as Infection

Table 3: Associated complications of Chemo port

Associated Complications	**Frequency (n)**	**Percentage (%)**
Port Infection	2	2%
Suspected Port Infection	4	4%
Dislocation of Port	3	3%



IV. Discussion

This study was conducted to analyze and understand the factors which affects the Patency of Chemoport of Medical oncology patients during their chemotherapy treatment and the complications associated with Chemoport. A quantitative, Non-Experimental retrospective exploratory cohort design research approach was used to collect the data retrospectively. The target population was patient who had undergone Chemo port insertion at APCC.

The data collection period lasted for the months from Sep 20 to Oct 21. After collecting the data using structured tool from the patient's medical records, the data was analyzed using descriptive and inferential statistics.

The findings were supported by a similar study done byManisaPattanayak, AnshikaArora , Sunil Saini Akash Narayan Gaind(2018)use of chemo port in a comprehensive cancer care centre ,A Retrospective data of a total of 120 chemo ports was evaluated for the study. The result concluded that the 5%, of port had to be removed because neither fluid/blood can be pushed nor aspirated and in our study . In our study the compliance to heparinization of reservoir found to be 100%. We noted that a change in position (lying down/ sitting up/lifting the shoulder) 3% out of 101 ports resulted in dislocation. The removal of chemo port due to infection complication was 10% (12 patients) which resulted in chemo port removal. In our study, 2 (2%) had infectious complications leading to removal of the port and 4 (4%) patient had suspected infection but port was not removed and continued with chemotherapy . After a detailed discussion with the Medical oncologist and with the anesthetist we have introduced a Patient guide booklet on Chemo port which briefs the patient and family about the port care at home.

Nurses had been trained to educate the patient about the importance of flushing the port as per policy which means every 4 weeks once when port is not in use and the frequent flushing when the port needle is in place. The monthly flushing details will be entered in the Patient guide book for the future references. Nurses who access and handles chemo port have been trained on Do's and Don'ts and a board with these information has been displayed in every nurses station for creating awareness. After implementation of all these, we were able maintain 0% percentage port infection and we could witness issues with chemo port blockages due to non – flushing has been reduced dramatically.

V. Conclusion:

Structured teaching program along with regular hands on training for the Nurses who handles the chemo port and also effective Patient and family education on chemo port care at home will reduce the chemo port related complications and the ports can be retained for longer years.

References:

[1]. ManisaPattanayak ,Anshika Arora , Sunil Saini , Akash Narayan Gaind , Upasana Baruah , S. K. Verma and Meenu Gupta .Use of Chemo ports in a Comprehensive Cancer Care Center. Journal of Cancer and Tumor International 7(3): 1-8, 2018; Article no.JCTI.4273216 July 2018.

[2]. Kim HJ, Yun J, Kim HJ, Kim KH, Kim SH, Lee SC, Bae SB, Kim CK, Lee NS, Lee KT, Park SK, Won JH, Park HS, Hong DS. Safety and effectiveness of central venous catheterization in patients with cancer: prospective observational study. J Korean Med Sci. 2010; 25:1748–1753. doi: 10.3346/jkms.2010.25.12.1748

[3]. Shah T, Vijay DG, Shah N, Patel B, Patel S, Khant N, GothwalK.Indian J SurgOncol. 2021 Mar;12(1):139-145. doi: 10.1007/s13193-020-01265-6. Epub 2021 Jan 7.

Mrs .Rekha, et. al. "A Retrospective analysis of factors affecting the patency of Chemoport and the associated complication." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, 11(4), 2022, pp. 56-61.