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ORIGINAL ARTICLE

A Comparative Study Between Portacath Insertion in Jugular Vein or Basilic Vein for Chemotherapy Infusion in Cancer Patients

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Abstract

Background: **The fully implantable indwelling catheter known as port-cath, port-a-cath, or simply port, which offers high insertion success rates, is now the technology of choice for this use. Fully implanted catheters can be introduced through the superior vena cava system by catheterizing deep or superficial veins.**

Aim: **Comparing the outcomes of jugal portacath or basilic portacath insertion in terms of its benefits, drawbacks, efficacy, and patency to select the approach with the fewest complications.**

Subject and methods: **Thirty patients in the Department of Vascular Surgery at Al- Azhar University Hospitals in Cairo participated in this prospective, randomised trial.**

Results: **The majority of individuals had rectal and colon cancer, however, there was no discernible difference in any primary tumour analysed between the two groups of patients. Between the two groups, there were no appreciable differences in Hb, PLT, INR, PT, or PTT. There is a considerable disparity between the two groups in terms of hospital stays. The majority of patients experienced thrombi, but there was no difference in either group's outcomes that could be seen.**

Conclusion: **The current study revealed that Juglar port-a-cath and basilic port-a-cath approaches were safe and effective CVC for chemotherapy. Both techniques were comparable about length of hospital stay and complication rate. Medical professionals can choose the best CVC for long-term chemotherapy based on their experience, characteristics, and the preferences of the patients.**

Keywords: Basilic port-a-cath, Chemotherapy, Jugular port-a-cath

1. Introduction

The number of cancer patients has been increasing worldwide due to progressive society's ageing. Rapid developments in outpatient cancer chemotherapy have exponentially increased the need for implantable central venous (CV) ports. Cancer patients taking chemotherapy frequently suffer vascular access issues. In a recent study of patients' opinions on their treatment. One of the most disturbing physiological side effects of chemotherapy, according to cancer patients, is the agony connected with the hunt for suitable veins.'

A progressive induration, thrombosis, and therefore the obliteration of the accessible surface veins occur as a result of blood vessel initiation from antineoplastic medications and therefore the demand for perennial puncture over an amount of months to years. Several oncologists advise putting a central nous tube for blood vessel access in patients with weak peripheral veins to cut back the high risk. Extravasation caused by vesicant therapy administration therapy and artificial nourishment is administered through whole deep-seated blood vessel access ports (TIVAPs), that square measure usually used. These devices have undergone rigorous testing in an exceeding range of areas,

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together with the chest, The higher arm and forearm oft show exceptional outcomes in terms of technical success and low rates of difficulties since the reservoir is positioned within the arm. For patients receiving therapy, semipermanent central blood vessel access is important. The presently most well-liked technology for this purpose is the totally implantable inward tube referred to as port-cath, port-a-cath, or just port, that offers high insertion success rates. Through the superior venous blood vessel system, totally deep-seated catheters is introduced by catheterizing either deep veins (external jugular, cephalic, and basilic veins) or superficial veins (internal jugular, subclavian, and innominate veins). In extreme cases wherever the superior venous blood vessel system is obstructed, the leg bone or nice saphenous veins can even be used as entry sites. An alternate to such catheters is that the use of a peripherally deep-seated, totally implantable tube with the reservoir positioned within the arm and inserted via the vena basilica or another axial vein of the arm. Non-interference with breast imaging, a lower risk of intraoperative complications together with abnormality or haemothorax, and easier access for puncture square measure some potential blessings that stimulate additional analysis into this approach and improved aesthetic outcomes. The aim of this work was between the results of insert of juglar portacath or basilic portacath, as regard to their advantages, disadvantage, efficiency and patency in an attempt to choose the best method with least complication.

2. Patients and methods

On 30 patients, this prospective randomised trial will be carried out. For juglar and basilic porta caths, there are 15 patients each. It was carried out at the Al-Azhar University Hospitals in Cairo's Vascular Surgery Department (Al-Hussein and said- Galal Hospitals).

2.1. Inclusion criteria

Patients ranged in age from 16 to 65, had to be mentally stable to consent to the treatment, and needed a catheter used only for chemotherapy.

2.2. Exclusion criteria

Inflammatory skin condition at the location of the port insertion or the puncture older than 65, younger than 16, anticoagulant users, patients with basilic veins smaller than 2 mm in diameter in cases of basilica portacath, patients with a history of basilic AVF in the same limb, and patients with bilateral thrombosis of the basilica and jugular.

2.3. Methods

2.3.1. Patient evaluation

Following the receipt of written consent, patients underwent the following: clinical assessment Bilateral duplex ultrasound for the jugular and basilica, All patients underwent clinical evaluation in accordance with the following protocol: thorough general examinations followed by detailed histories. Local investigation Data collected and maintained regarding to: age, sex and basilic or jugular. Preprocedure Assessment: CBC, coagulation profile and Doppler/duplex scan for all patients.

2.4. Statistical analysis

All information was gathered, organized, and genuinely examined involving MedCalc 13 for Windows and SPSS 22.0 for Windows (SPSS Inc., Chicago, IL, USA) (MedCalc Programming bvba, Ostend, Belgium). Utilizing the Shapiro Walk test, the dispersion of the information was analyzed for ordinariness. Frequencies and relative rates were utilized to portray subjective information. The distinction between the subjective factors was determined utilizing the χ^2-test and Fisher definite, as displayed. For parametric and non-parametric information, separately, the mean and SD (standard deviation) were utilized to communicate quantitative information. For parametric and non-parametric factors, separately, the Autonomous T-test and the Mann–Whitney test were utilized to ascertain the contrast between quantitative factors in two gatherings. The two-followed importance test was performed for each measurable examination. $P > 0.05$ indicates no distinction, level of P-esteem of 0.05 means a tremendous contrast, and P 0.001 indicates an exceptionally huge contrast.

3. Results

Table 1.

No significant difference between the two groups regarding age, BMI, and sex (Table 2).

The table shows no significant difference between the two groups regarding any of studied comorbidities (Table 3).

The table shows no significant difference between the two groups regarding any of studied primary tumor (Table 4).

There is no significant difference between the two groups regarding Hb, PLT, INR, PT, and PTT (Table 5).

Table 1. Demographic and clinical data of both groups.

	Juglar ($N = 15$)	Basilic ($N = 15$)	t	P
Age (years) Mean ± SD	50.17 ± 12.31	51.35 ± 13.22	0.253	0.802
BMI (kg/m^2) Mean ± SD	26.48 ± 2.65	27.71 ± 3.82	1.02	0.314
Sex				
Male	9 (60%)	8 (53.3%)	0.136	0.713
Female	6 (40%)	7 (46.7%)		

There is a significant difference between the two groups regarding hospital stay (Table 6).

No significant difference between the two groups regarding any of the complications.

4. Discussion

Despite the widespread use of TIVAPs, it remains unclear which access site for implantation of a TIVAP is clinically superior. Even though several institutions have reported on research contrasting chest access with arm access, some of the findings are conflicting and only applicable to a small patient population.[1]

To select the optimal procedure with the fewest complications, the primary goal of this study was to compare the outcomes of inserting a Juglar portacath versus a basilic portacath in terms of their benefits, drawbacks, efficacy, and patency. The current study contained groups that were perfectly matched in terms of all baseline characteristics in order to exclude any potential confounding variables from our comparison. Regarding age, BMI, sex, and other variables, we discovered no statistically significant differences between the Juglar and basilic groups, comorbidities, primary tumor type, and Laboratory parameters.

The current study revealed that techniques, Juglar and basilic access were comparable as regard length of hospital stay. No significant difference was also found between the two groups regarding any of complications.

In constancy with the current work **Iorio *et al.***[2] performed an evaluation of the external jugular vein and cephalic vein procedures in a comparative prospective study.

Table 2. Comorbidities distribution among the two studied groups.

	Juglar ($N = 15$) N (%)	Basilic ($N = 15$) N (%)	χ^2	P
Hypertension	4 (26.7%)	3 (20%)	0.186	0.666
Diabetes mellitus	2 (13.3%)	2 (13.3%)	–	1
Smoking	5 (33.3%)	6 (40%)	0.371	0.543

Table 3. Primary tumor distribution among the two studied groups.

	Juglar ($N = 15$) N (%)	Basilic ($N = 15$) N (%)	χ^2	P
Colon cancer	4 (26.7%)	6 (40%)	2.4	0.880
Rectal cancer	5 (33.3%)	5 (33.3%)		
Gastric cancer	2 (13.3%)	2 (13.3%)		
Pancreatic cancer	1 (6.7%)	0 (–)		
Esophageal cancer	1 (6.7%)	1 (6.7%)		
Hepatic carcinoma	1 (6.7%)	1 (6.7%)		
Other	1 (6.7%)	0 (–)		

To administer chemotherapy, 215 patients had TIVAD implantation in succession. Depending on the implantation method, the patients were split into two groups. Patients in group A (106) received implantation through the external jugular vein, while those in group B (109) got implantation through the cephalic vein. Baseline characteristics were comparable between the studied groups. The implantation via external jugular vein was associated with shorter operative time and lower rate Conversion to other implantation sites. Additionally, the study found no evidence of a substantial difference between the two groups in terms of 30-day problems or postoperative discomfort.

Also, in agreement with the current study **Goltz *et al.***[3] compared the influence of completely implantable venous access ports (TIVAP) on patients' quality of life and happiness after they were implanted in the chest and forearm. 50 individuals (mean age, 55.815.4 years) were enrolled in the trial, and 25 of them had implants placed in their chests or forearms. Regarding age, sex, original tumour type, There were no statistically significant differences between the forearm and chest groups, regardless of treatment method or other factors. No evidence of a significant difference between the two groups in terms of catheter duration, issues, satisfaction, or quality of life was also discovered by the study. Unlike the current study, Lim et al.[4] assessed the risks, technical viability, and issues of implanting fully implanted venous access ports (TIVAPs) in the arm as opposed to the chest for cancer patients at a single facility. The experiment had 371 patients in total, of whom 252 were in the upper arm and 119 were in the

Table 4. Laboratory parameters between the studied groups.

	Juglar ($N = 15$)	Basilic ($N = 15$)	t	P
Hb (g/dl) Mean ± SD	9.72 ± 1.54	10.26 ± 1.38	1.01	0.321
PLT (ml) Mean ± SD	311.48 ± 98.55	317.5 ± 106.22	0.161	0.873
INR Mean ± SD	0.951 ± 0.112	1.04 ± 0.158	1.78	0.086
PT Mean ± SD	11.78 ± 1.32	12.14 ± 1.75	0.636	0.530
PTT Mean ± SD	28.31 ± 4.63	28.54 ± 4.82	0.133	0.895

Table 5. Hospital stay among the two groups.

	Juglar ($N = 15$)	Basilic ($N = 15$)	t	P
Hospital stay (days) Mean ± SD	3.15 ± 0.792	2.63 ± 1.04	1.54	0.135

upper chest wall. In both groups, every baseline feature was the same. 100% of technical attempts were successful. The dangers connected to totally implanted venous access devices (TIVADs or ports) in the arm versus the chest were also contrasted by Pike et al. The examined devices included 201 chest devices (66% female, mean age 61.5 years) and 201 arm devices (71% female, mean age 59.4 years).

There were no significant differences between the two groups in terms of age, sex, or kind of cancer. Overall complication rates for the arm and chest were equal (arm: 30 issues per 56,938 catheter days (0.530/1000 catheter days) vs. chest: 47 issues per 63,324 catheter days (0.742/1000 catheter days), P value 0).173].

However, in contrast to our findings, Nabil et al.[5] anticipated to examine early post-employable entanglements, patency rates, consistency, and patient satisfaction using an upper arm route through the basilic or cephalic veins as well as an absolute implanted focal venous port. 50 patients who underwent totally implanted venous access port (TIVAP) implantation in the chest (25 patients) or arm were chosen for the review (25 patients). In terms of pattern qualities, the two groups were quite closely matched. The review revealed a remarkable specialisation attainment rate of 100%. Our results concurred with those of Wu et al systematic's audit and meta-analysis seven, which looked at the complexity rates of peripheral arm ports and central chest ports. 15 publications in all covering 3524 patients with malignant growths satisfied the needs. There was no distinction between arm ports and chest ports in catheter-related illnesses or testing. A second systematic review and meta-analysis by Li et al. that contrasted the efficacy and safety of arm port vs. chest port approaches supports our findings. There were found to be 13 comparison studies including 3896 subjects (2176 for chest ports and one, 720 for arm ports). Arm ports were associated with lower rates of intra-operative complications (1.38% in the chest port cluster and zero.41% in the arm port group; OR 2.38, 95% CI 1.07–5.29; $P = 0.03$) but higher rates of procedure conversion (2.51% in the chest port cluster and eight.32% in the arm port group; odd ratios [OR] zero.27, 95% CI 0.15–0.46; p0.001), according to the meta-analysis. Peripherally inserted central catheters (PICCs), external non-tunneled central blood vessel catheters, and constituted blood vessel ports square measure 3 often used CVCs for therapy that were studied by Fang et al., eight for problems, costs, and patients' quality of life and satisfaction (NTCs). There have been 45 blood vessel ports, 40 NTCs, and 60 PICCs.

Table 6. Postoperative complications distribution between the two groups.

Complications	Juglar ($N = 15$) N (%)	Basilic ($N = 15$) N (%)	χ^2	P
Thrombus	1 (6.7%)	1 (6.7%)	–	1
Infection	3 (20%)	2 (13.3%)	0.24	0.624
Poor transfusion	1 (6.7%)	1 (6.7%)	–	1
Cardiac arrhythmia	1 (6.7%)	0 (–)	1.03	0.311
Bleeding	0 (–)	1 (6.7%)	1.03	0.311
Pinch-off syndrome	1 (6.7%)	0 (–)	1.03	0.311
Mortality	1 (6.7%)	2 (13.3%)	0.370	0.543

The baseline information for the 3 analysis teams did not considerably take issue each other. The study found no statistically vital distinction between the success rates of PICC and port catheterization. NTC had a hit rate that was one puncture not up to ports. The issues with ports square measure but those with PICCs and NTCs. Complication rates for ports, PICCs, and NTCs were a pair of.2%, 40%, and 27.5%, severally. If the therapy treatment lasted twelve months, NTCs were way more pricy compared to PICC and NTC. There was no value distinction between the port and PICC for periods larger than twelve months. Patients' satisfaction and quality of life within the Port cluster were considerably more than those within the alternative 2 groups.

4.1. Conclusion

The current study revealed that Juglar port-a-cath and basilic port-a-cath approaches were safe and effective CVC for chemotherapy. Both techniques were comparable regarding the length of hospital stay and complication rate. Medical professionals can choose the best CVC for long-term chemotherapy based on their experience, characteristics, and the preferences of the patients.

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Conflicts of interest

The authors declared that there were NO conflicts of Interest.

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