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RESEARCH ARTICLE

VISUAL INFUSION PHLEBITIS (VIP) SCORE FOR ASSESSING VENFLON-RELATED COMPLICATIONS: A PROSPECTIVE OBSERVATIONAL STUDY

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Abstract

Background: Peripheral vein cannulation is essential in clinical care but often results in complications like phlebitis, which can lead to severe outcomes such as cellulitis, septicemia, or deep vein thrombosis (DVT). This study evaluates venflon-related complications using the Visual Infusion Phlebitis (VIP) score.

Aim: To analyse the incidence of phlebitis and assess the VIP score's utility in detecting early-stage complications.

Methods: A prospective study was conducted on 1,083 patients over one year (September 2023–August 2024) at Thanjavur Medical College, Thanjavur, Tamilnadu, India. VIP scores were used to monitor signs of phlebitis.

Results: Out of 1,083 venflon insertions, 744 (68.7%) cases of phlebitis were recorded, with females showing a higher incidence (71.8%) compared to males (64%). Most cases had a VIP score of 1, representing mild symptoms.

Conclusion: Regular monitoring using VIP scores and adherence to preventive measures significantly reduces venflon-related complications.

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Introduction:-

Peripheral vein cannulation (PVC) is widely used for fluid administration, medication delivery. Despite its utility, complications such as phlebitis—a localized inflammation of the vein—remain prevalent. Phlebitis is characterized by symptoms like redness, pain, swelling, and a palpable venous cord. If unmanaged, it may progress to cellulitis or septicaemia.

This study evaluates the incidence of phlebitis using the VIP –VISUAL INFUSION PHLEBITIS SCORE. The score provides a structured assessment tool for early detection, enabling timely intervention and better patient outcomes.

Materials and Methods:-

Study Design:

Type: Prospective observational study.

Duration: One year (September 2023–August 2024).

Setting: Department of Surgical Oncology, Thanjavur Medical College.

Patient Inclusion and exclusion criteria:

- Patients undergoing venflon insertion for intravenous therapy lasting more than 24 hours.

- Exclusion of patients with central line catheters
Patients monitored daily for signs of phlebitis by using visual infusion phlebitis criteria.

VIP Score Criteria:

- Score 0: No symptoms.
- Score 1: Mild pain/redness (requires observation).
- Score 2: Pain, erythema, or swelling (re-site cannula).
- Score 3: Pain, erythema, induration (treatment initiated).
- Score 4–5: Advanced symptoms like venous cord or pyrexia (urgent intervention).

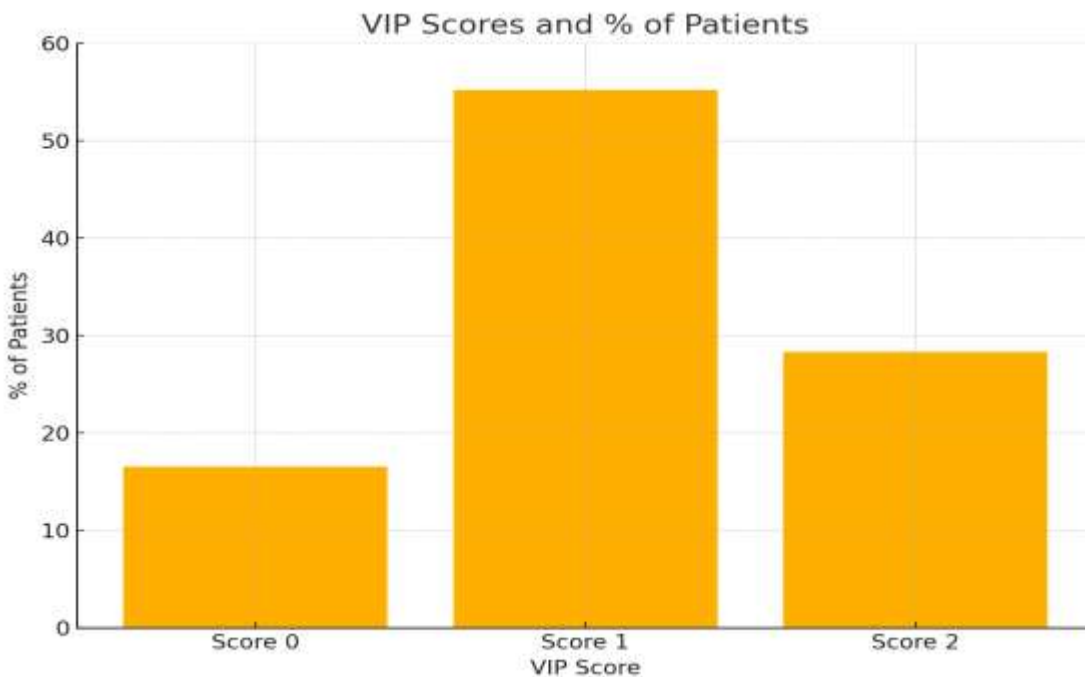
Data Analysis:

Demographic data (age, gender) and VIP scores were analyzed to identify patterns and risk factors associated with venflon-related phlebitis.

Results:-

1. Incidence: Total venflon insertions: 1,083.
Phlebitis cases: 744 (68.7%).
2. Gender Distribution:
Female patients: 466 out of 649 patients-71.8% incidence.
Male patients: 278 out of 434 patients-64.0% incidence.
3. Severity by VIP Score:
Score 1: 598 patients-55.2% (mild symptoms).
Score 2: 146 patients 28.3% (moderate symptoms).
score 0: 16.5% (no phlebitis).
4. Day of Onset:
Most cases of phlebitis developed on Day 2 post-cannulation.

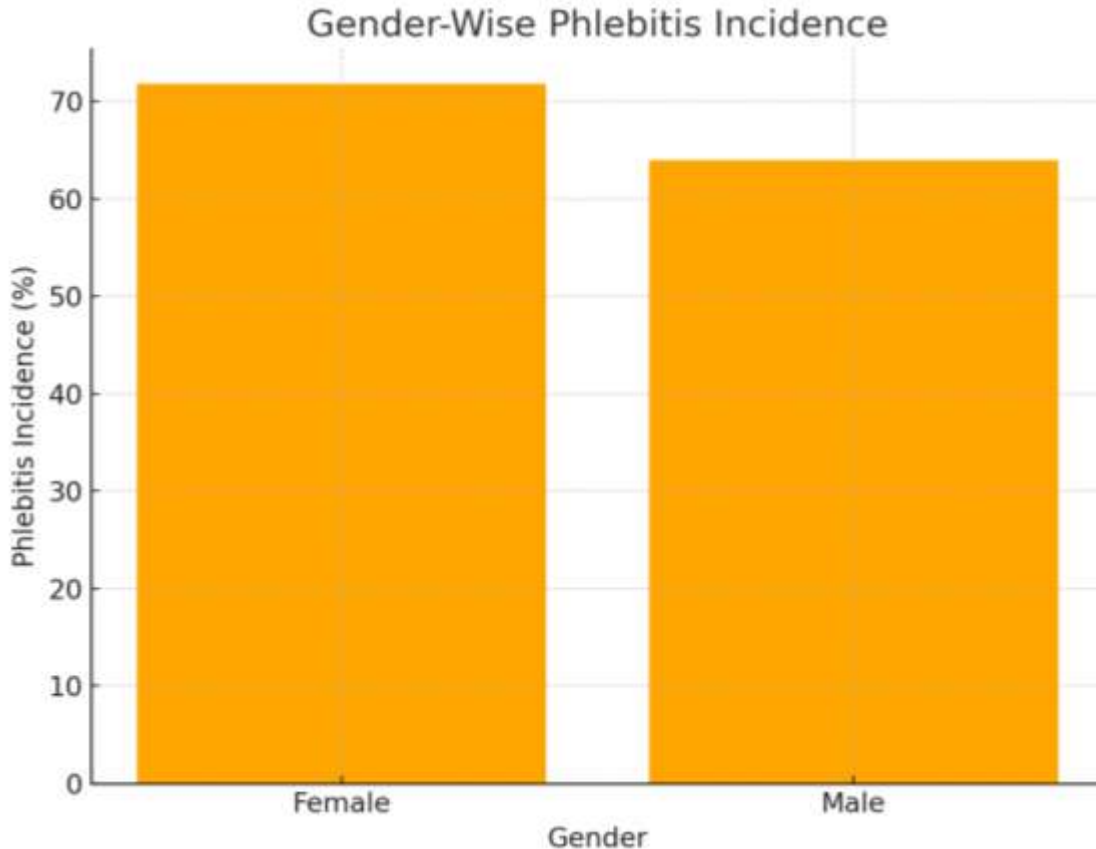
Chart 1: Incidence of Phlebitis by VIP Score



A bar chart shows the percentage distribution for VIP scores 1 through 5.

Chart 2: Gender-Wise Phlebitis Incidence

A bar chart comparing phlebitis incidence between male and female patients.



Discussion:-

Peripheral vein cannulation (PVC) plays an indispensable role in modern clinical care for fluid administration, medication delivery. However, it carries inherent risks, including phlebitis, thrombophlebitis, and even life-threatening complications such as septicaemia and deep vein thrombosis. This study evaluates these risks using the Visual Infusion Phlebitis (VIP) score—a practical tool for early detection and risk assessment. This tool's implementation is crucial to reducing the morbidity and healthcare costs associated with venflon-related complications.

Phlebitis is one of the most frequent complications encountered in patients undergoing peripheral vein cannulation. The high incidence rate observed in this study (68.7%) aligns with global trends. However, variations in rates reported in the literature highlight differences in healthcare settings and practices. For example, (1) Tagalakis et al. reported a lower incidence of 59%, whereas (3) Singh et al. found rates comparable to our findings at 70%. These variations may arise from differences in monitoring protocols, patient demographics, or local practices.

Female patients showed a higher susceptibility to phlebitis (71.8%), potentially due to hormonal influences on vascular integrity. The predominance of mild cases (VIP score 1) underscores the importance of early detection to prevent progression to severe stages. Routine monitoring, coupled with preventive measures such as aseptic techniques, site rotation, and staff training, can significantly mitigate these risks.

Clinical Implications:

The VIP score provides a simple yet effective tool for phlebitis monitoring. Its routine use in hospital settings can reduce complications and improve patient outcome.

Preventive Strategies: recommended by centre for disease control (CDC) (1) O'Grady, N. P., et al.

- Use of upper extremity vein is preferable to lower extremity
- Use midline catheter or peripherally inserted central line catheter when duration of IV therapy will likely to exceed six days

- Practice aseptic techniques for insertions
- Disinfect site of venflon insertion with alcohol, povidone iodine or chlorhexidine.
- Replace catheter or rotate peripheral venous site every 72 - 96 hrs
- Secure catheter with sterile gauze or transparent dressings
- Replace dressings when catheter is removed or when dressings become soaked or loosened
- Evaluate catheter insertion site atleast once daily by palpating for tenderness
- Remove the venflon if the patient develops signs of phlebitis.

Conclusion:-

Phlebitis remains a prevalent complication associated with venflon insertions, particularly among female patients. This study highlights the utility of the VIP score as a simple yet effective tool for early detection and management of venflon-related complications. Preventive strategies, including adherence to aseptic techniques and regular site inspections, are instrumental in reducing these risks and improving patient outcomes.

Study Strengths and Limitations

Strengths:

1. Large sample size of 1,083 patients.
2. Comprehensive analysis using a validated scoring system (VIP score).

Limitations:

1. Single-center design limits generalizability.
2. Exclusion of patients with central or midline catheters may underestimate the total complication burden.

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