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Introduction

In the realm of renal care, the significance of arterio-venous fistulae (AVF) in patients undergoing dialysis cannot be overstated. This comprehensive review delves into the multifaceted landscape of AVF assessment and management, aiming to provide a thorough exploration of the current state of knowledge in this critical domain. As the primary vascular access for hemodialysis, the health and functionality of AVFs profoundly impact patient outcomes and quality of life. This introduction sets the stage by elucidating the pivotal role of AVFs in dialysis and outlines the overarching goal of the review: to synthesize existing knowledge, identify challenges, and highlight advancements in AVF assessment and management. By delving into this intricate subject, we aim to contribute to the refinement of clinical practices, ultimately enhancing the well-being of individuals reliant on dialysis for renal support [1].

AVF assessment

The assessment of arterio-venous fistulae (AVF) in patients undergoing dialysis is a critical aspect of renal care. Effective AVF assessment serves as a cornerstone for ensuring optimal vascular access, thereby influencing the success of hemodialysis treatments. This review explores various dimensions of AVF assessment, encompassing both clinical and diagnostic approaches. Clinical assessment involves a meticulous examination of the physical characteristics of the AVF, including palpation for thrill and auscultation for bruits. This review scrutinizes the significance of these clinical cues in gauging the patency and functionality of the AVF, providing insights into the diagnostic value of such bedside evaluations [2].

In parallel, the review delves into the realm of imaging modalities utilized for AVF assessment. From traditional Doppler ultrasound to more advanced imaging techniques, the nuances of each method are dissected. Emphasis is placed on the sensitivity and specificity of these diagnostic tools in detecting complications such as stenosis or thrombosis, crucial factors that can impact the longevity and effectiveness of the AVF. Furthermore, the review navigates through the evolving landscape of technological innovations, including the integration of artificial intelligence in AVF assessment. By evaluating the potential role of AI algorithms in predicting AVF outcomes and detecting subtle anomalies, the review sheds light on the transformative possibilities in enhancing diagnostic accuracy and efficiency. Through a comprehensive analysis of AVF assessment methodologies, this review aims to provide clinicians, researchers, and healthcare practitioners

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