

Abstract**High Brachial Bifurcation: Clinical Implications for Arteriovenous Access**

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Purpose:

High Brachial Artery Bifurcation [HBB] is a relatively common arterial variation of the upper limb. Our aim was to determine the incidence of HBB in chronic renal failure patients undergoing autologous Arteriovenous Fistula [AVF] access formation and investigate the effect on AVF patency.

Materials and Methods:

A retrospective analysis was completed on all patients who underwent a primary AVF formation who had documented pre-operative Ultrasound mapping from Jan 2009 to April 2012. The presence of HBB was noted in either limb. Primary patency, Primary Assisted Patency and number of interventions were recorded at 3, 6 and 12 months.

Results:

79 Primary patients who underwent autologous AVFs were considered, with a total of 129 limbs scanned. 8 patients had HBB, bilateral in 4 and unilateral in 4. The total incidence was 14 out of 129 (10.9%) or 8 out of 79 patients (10.1%).

Of the 71 patients with normal anatomy, the 12 month Primary Patency was 53.5%. A total of 40 interventions were performed in this group to bring the 12 months Primary Assisted Patency rate up to 85.9%. Of the 8 patients with HBB, 12 month primary patency was only 12.5%. A total of 11 procedures were performed to elevate Primary Assisted patency up to 87.5%.

7 out of 8 patients with HBB failed or required intervention compared with 33 of 71 patients with normal anatomy (Relative Risk 1.88, 95% CI 1.31 – 2.70, $p = 0.0006$)

Conclusion:

High Brachial Bifurcation is not an uncommon arterial variation occurring in up to 10% of patients undergoing AVFs. It is associated with higher rate of failure or intervention, statistically significant in this study. Patients with this variation need careful consideration in planning arteriovenous access.