Title: Traditional Long term Central Venous Access Versus Transhepatic Tunneled Broviacs® In Infants and Young Children.

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Background: Critically ill children with congenital heart disease (CHD) often require long-term central venous access (CVL) as well as a patent venous system for care and procedures. Traditional CVLs carry a risk of venous occlusion in small children. Transhepatic Broviac® (THB) access provides a larger and more durable route for central venous access and does not occupy the lumen of a major vein. Hypothesis: THBs have fewer major complications and superior survival compared to traditional CVLs.

Methods: Institutional retrospective record review identified 19 THB placed in 12 CHD patients from August 2012-September 2015. THBs were compared to patients' other CVLs (right atrial lines, percutaneously inserted cutaneous catheters (PICC) and percutaneously placed central lines). Data included: insertion and removal date, infections, insertion site issues and removal reason. CVLs removed at completion of therapy, or if reason not clear were classified as "elective". Non-elective removals were classified as "forced". Statistical significance was determined using two tailed T-test, Fisher's Exact, Log-Rank and Chi Square tests. Survivability demonstrated via Kaplan-Meier curve.

Results: THBs were placed without complication. THBs had significantly longer survival vs all other CVLs (Figure 1; p=0.03). Functional half life: THBs 200 vs 50 CVLs days. Average days/line: THBs 85 vs CVLs 21 (p<0.01). Longest duration: THB 334 vs CVL 115 days. Days per forced removal: THBs 203 vs CVLs 62. THBs were 7 French (15) after early fractures were noted in the 5 French (4).

Conclusion: THBs provide critically ill patients with superior line survivability, larger lumens for age and preserved venous access vs CVLs. Without options like THB, temporary CVLs (percutaneously placed) are used for longer durations than designed (70% present at 30 days) due to limited options and desire to preserve other sites. THBs provide long term central venous access without these limitations of CVLs.

Figure 1. Survival of Transhepatic Lines vs All Other Central Venous Lines