

Creating Arteriovenous Fistulas for Children in Guatemala

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Background: Childhood renal failure in the United States

- 9,921 children were treated for ESRD in the USA on Dec 31,2013.
- The most common ESRD treatment modality among children overall was hemodialysis (56%).
- The leading causes of ESRD in children were: cystic/hereditary/congenital disorders (33.0%), glomerular disease (25%), and secondary causes of glomerulonephritis (13%).
- The number of children listed for incident and repeat kidney transplant was 1,277 in 2013.

<https://www.niddk.nih.gov/health-information/health-statistics/kidney-disease>

Background: Bridge of Life

- Bridge of Life (BOL) is a non-profit charitable organization working with chronic kidney disease, renal failure patients, dialysis care, and screening programs since 2006.
- 128 missions in 25 countries worldwide.
- 13 vascular access surgery missions have been completed with more than 500 operations,
- BOL volunteers work with local surgeons, nephrologists, nurses, and other caregivers to leave a sustained impact at each site and maintain lines of communication for teaching and support.



Background: The Guatemalan Foundation for Children with Kidney Diseases

- Established in 2003 by Randall Lou-Meda MD as the only comprehensive pediatric nephrology unit program and hemodialysis unit in Guatemala.
- Bridge of Life was instrumental in supplying equipment, training and support during formation and maintenance of the hemodialysis unit.
- Pediatric permanent vascular access (VA) expertise had not been established and non-cuffed dialysis catheters provided all vascular access, many through subclavian vein access sites.
- Assistance was requested for establishing a VA surgical program and BOL responded by leading their team of experienced VA surgeons to create safe and functional arteriovenous fistulas in these children.
- This study analyzes the BOL pediatric VA missions to Guatemala.

- Three surgical pediatric VA missions were completed in Guatemala from 2015-2017.
- Each mission included 2-3 vascular access surgeons.
- All supplies, equipment (including ultrasound units) were taken as part of each mission.
- Extensive cannulation and AVF examination training was included in missions.





Becky McGlawn



Dr Gradman



Dr Lucas



Dr Jennings
Don Woods



Lavonna Sanders
Sara Hendron



Dr Mallios

- The BOL surgical vascular access team works with local surgeons, nephrologists, and dialysis nurses to establish collegial relationships and foster long-lasting teaching interactions.
- We retrospectively review outcomes data for these missions.



Dr Raul Sosa (pediatric surgeon) completed additional training with Dr. Mallios who facilitated the Sonosite ultrasound donation for the surgery/nephrology teams.

Results:

- 54 new pediatric patients had an AVF constructed.
- Ages were 8-19 years (mean=14 yrs),
- Patients weights were 17-50 kg (mean=30 kg)
- # dialysis catheters/patient were 2-9 (mean = 3)
- Height 109 -158cm (mean = 130cm)
- BMI 12-27 (Mean = 17)



Results:

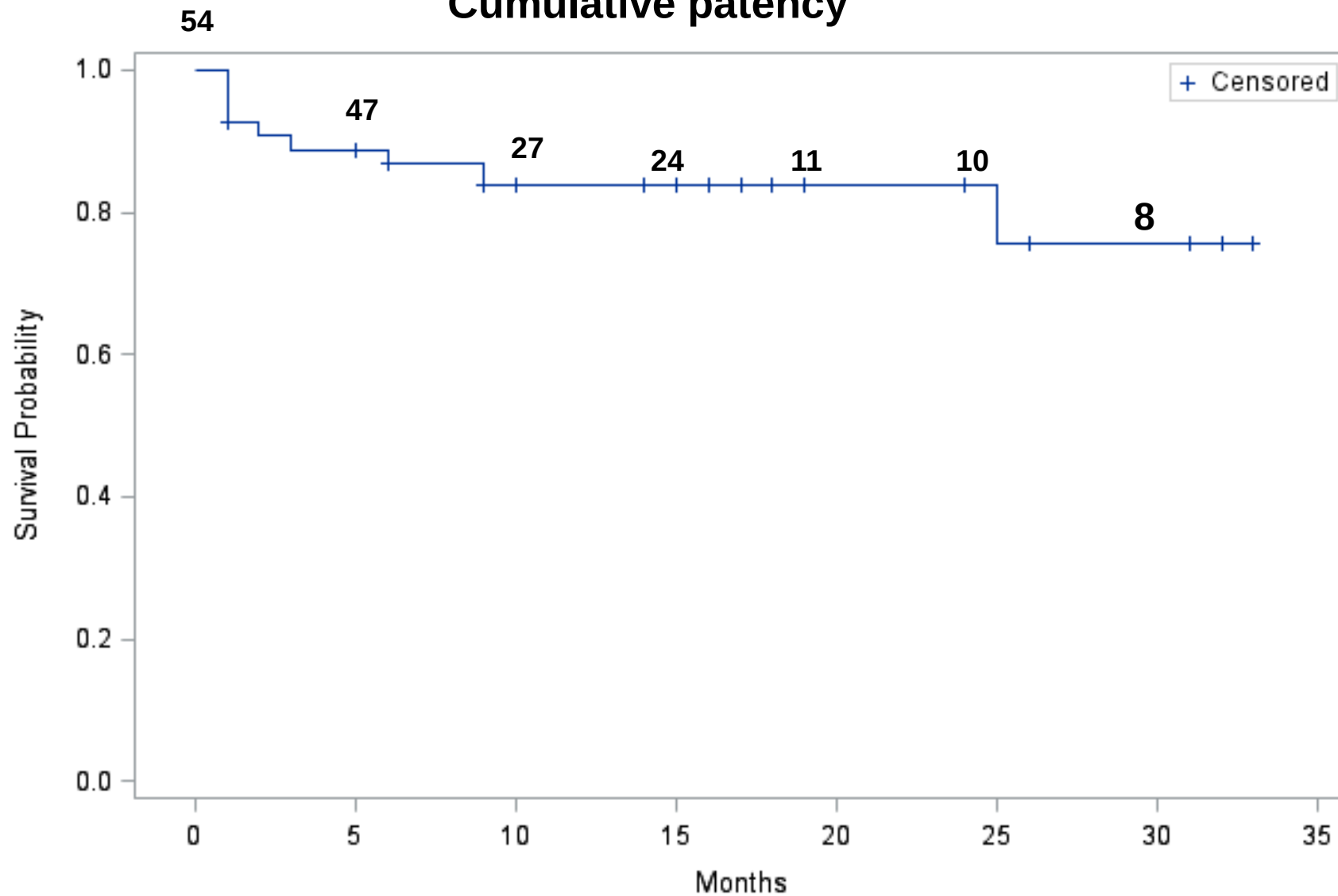
- Distal radiocephalic AVFs 21 (39%)
- proximal radial artery AVFs in 12 (22%)
- brachial artery access in 6 (11%) and femoral artery inflow in one patient.
- 15(28%) patients had transpositions or translocations.
- Eight AVFs failed at 1-19 months (mean 6 mos).
- 46 AVFs (85%) were functional at 2 years with follow-up of 6-34 months (mean=12 months).
- Intervention options were not available for AVF dysfunction or access salvage, except for BOL return visits.
- Two patients were lost to follow-up with functioning AVFs at 1 and 12 months.



- 2 BOL surg interventions: aneurysm+declot, outflow patch angioplasty
- 6 patients died during the study period, none related to AVFs.
- There were no operative deaths or major complications.
- 2 patients received a living related transplant



Cumulative patency



Thanks to: DaVita Healthcare, Ethicon, Gore Medical, Sonosite, Avenu Medical, and all our wonderful volunteers and donors!

Information links:

- <https://www.bridgeoflifeinternational.org/about-us/>
- <https://www.bridgeoflifeinternational.org/country/guatemala/>
- <https://www.bridgeoflifeinternational.org/country/jamaica/>
- https://www.bridgeoflifeinternational.org/wp-content/uploads/2014/04/Bridge_of_Life-Outcomes-Impact-Fact_Sheet.pdf

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