The superiority of the native AVF as a vascular access for chronic HD over an AVG is an accepted fact.

AVFs have better patency rates, lower complication, infection rates and lower overall mortality rates.

- http://www.fistulafirst

KDOQI national practice guidelines recommend greater than 65% of hemodialysis patients have a functioning AVF.

Updated in July 2006

National AV Fistula Rate Reaches 60.2% in November 2011.

http://www.fistulafirst
Q. What percent of your hemodialysis patients have had multiple vascular accesses?
Q. What percent of your hemodialysis patients have exhausted one upper extremity and gone to the other upper extremity for vascular access creation?

Data from Sharon Funk: Biotrend research

% exhausted one extremity & gone to the other extremity for access creation

0% 5% 10% 15% 20% 25% 30% 35% 40% 45%

Creation of Secondary Fistula

Secondary Arteriovenous Fistula

- An arteriovenous fistula that is created after failing of the pre-existing AV access.
  - **Type 1**: Created using the outflow vein the failing AV access.
  - **Type 2**: Created using other vein than the outflow vein.

Indications

- Access thrombosis.
- Frequently recurring stenosis at the vein graft anastomosis.
- Problematic pseudo aneurysms.
Pseudoaneurysm

- Rapid expansion in size
- Pseudoaneurysm exceeds twice the diameter of the graft or fistula
- Viability of overlying skin is threatened = bleeding
- Sites of cannulation are limited by pseudoaneurysm
- Pseudoaneurysm is symptomatic (painful)
- Infected

Evaluation

- Physical Examination.
- Ultrasound.
- Angiogram (Central veins).

Physical Examination

Identification of Candidates

- Vein size measured at the level of the elbow of at least 2.5 mm.
- Feeding artery size at the level of the elbow of at least 2 mm.
- Absence of stenosis within the vein.
- Continuity with downstream unobstructed veins.

*Beatham GA: Seminars in Dialysis 17:233-236, 2004*
2/29/2012

Secondary Fistula: Type I

- No tunneled dialysis catheter!

Communication with vascular surgeon!

- 331 fistulas were created over a 30-month period. 172 Were placed in the upper arm. 41% of the arm fistulas were secondary fistulas. Secondary fistulas did not fare as well as primary ones. The 1-year primary patency rate for primary upper arm fistulas was 75%, while that for secondary fistulas was 58% (p = 0.02).

Group 1: 40 consecutive patients. Cumulative patency was 92.5% at 1 year and 87.5% at 2 years.

Group 2: 102 consecutive patients. Cumulative patency was 94.4% at 1 year and 91.6% at 2 years.

The need for catheters was dramatically less in the patient group with an established SAVF conversion plan.

Secondary arteriovenous fistulas: converting prosthetic AV grafts to autogenous dialysis access.
Slayden GC, Spergel L, Jennings W. Semin Dial 2008;21:474-482

Secondary Autogenous Arteriovenous Fistulas in the “Fistula First” Era: Results of a Longterm Prospective Study

Loopy Salman, MD, Manju Alex, MD, Stephen W Unger, MD, FACS, Gabriel Contreras, MD, Oliver Lentz, MD, Arif Asif, MD

BACKGROUND: The distal arm may be used to create a secondary autogenous arteriovenous fistula (SAVF) when the primary arm fistula is insufficient. The distal arm may be used to create a secondary autogenous arteriovenous fistula (SAVF) when the primary arm fistula is insufficient.
Study Design

- Patients referred for dysfunctional arteriovenous access (access thrombosis, frequently recurring stenosis at the vein-graft anastomosis, problematic pseudoaneurysms) were included in this analysis.
- Complete angiography from the feeding artery to the right atrium was performed by interventional nephrology.
- Vascular mapping was performed if patient had no outflow vein available.


Study Design

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- Vascular mapping was performed if patient had no outflow vein available.


Study Design

- Primary end point:
  - Primary patency.
  - Secondary patency.
- Secondary end point:
  - Number of procedures required for patency.
  - Complications.
  - Need for tunneled dialysis catheter.


Study Design

- Patency rates for secondary fistulas were determined by Kaplan-Meier analysis.
- Primary patency was defined as the time period during which no procedure or intervention was required to maintain patency.
- Secondary patency was defined as patency until the access was clotted, abandoned, or lost to follow up.
- Cumulative patency rates (total life of the access) were also assessed for the two groups.
- Statistical analysis.


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Study Design

- Vascular education about the advantages of a fistula and disadvantages of catheters and grafts was provided to the patients by the interventional nephrology team.
- Patients were referred to a dedicated vascular access surgeon for creation of SAVF.
- Patients were referred for type 1 or 2 SAVF creation based on if an outflow vein was available or not.


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Results – Secondary End Points

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative patency (at 24 &amp; 36 months)</td>
<td>100% &amp; 94%</td>
<td>96% &amp; 91%</td>
<td>(p=ns)</td>
</tr>
<tr>
<td>Required Procedures (Pro./year)</td>
<td>0.123 (Pro./month)</td>
<td>0.133 (Pro./month)</td>
<td>1.476</td>
</tr>
<tr>
<td>Early failure incidence</td>
<td>31.4%</td>
<td>40.7%</td>
<td>(p=ns)</td>
</tr>
<tr>
<td>Early failure salvage rate</td>
<td>100%</td>
<td>100%</td>
<td>(p=ns)</td>
</tr>
<tr>
<td>Tunneled dialysis catheter (infection / dysfunction)</td>
<td>21 (60%)</td>
<td>27 (100%)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>TDC duration (infection / dysfunction)</td>
<td>41 ± 20 (30-100 days)</td>
<td>72 ± 28 (30-140 days)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>TDC complications</td>
<td>3 (2/1)</td>
<td>11 (5/6)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>
Patency at 6 months of SAVF (type 1)

- Primary patency: 87%
- Cumulative patency: 100%


Rasmussen et al. SID. 2008

Secondary fistula type-1 provide a viable option for AVF in patients with failing arteriovenous access. Primary and secondary patency is at least comparable to type-2 secondary fistula and require less procedures annually.

Secondary fistula may assist in increasing the utilization of arteriovenous fistulae with all its advantages.

Decrease need for tunneled catheter.


Table 1: Primary and Secondary Endpoint Results at 6-month Follow-Up

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Roll in Patients (n=15)</th>
<th>Randomized Patients (n=14)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Area Primary Patency</td>
<td>85.3% (13/15)</td>
<td>80.0% (11/14)</td>
<td>0.525</td>
</tr>
<tr>
<td>Procedural Success</td>
<td>94.6% (14/15)</td>
<td>86.3% (12/14)</td>
<td>0.001</td>
</tr>
<tr>
<td>Access Clot Primary Patency</td>
<td>91.7% (14/15)</td>
<td>75.8% (11/14)</td>
<td>0.001</td>
</tr>
<tr>
<td>Access Clot Assisted Primary Patency</td>
<td>88.7% (13/15)</td>
<td>71.4% (10/14)</td>
<td>0.001</td>
</tr>
<tr>
<td>Access Clot Cumulative Patency</td>
<td>83.3% (12/15)</td>
<td>71.4% (10/14)</td>
<td>0.025</td>
</tr>
<tr>
<td>Biliary Redundancy Rate of the Treatment Area</td>
<td>25.6% (4/16)</td>
<td>27.7% (4/14)</td>
<td>0.820</td>
</tr>
</tbody>
</table>


Thank you

for your attention

Rasmussen et al. SID. 2008

Stentula