Left atrial appendage (LAA) is the source of thrombus in over 90% of AF patients.

<table>
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<tr>
<th>All Strokes (100%)</th>
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<td>80% Ischemic</td>
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<tr>
<td>10% Hemorrhagic</td>
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95% have LAA Thrombi

LAA exclusion reduces AF!

LAA closure: Growing indication!

LAA exclusion: Implications in the US

N=10 patients in Sinus Rhythm
OPCAB, PVI & LAA Clip
Intraoperative Testing
(before/after Clipping)
Its for two crucial reasons

- Prevent stroke!
- Electric isolation

Watchman

- **ENDOCARDIAL**
- PROTECT-AF randomized trial
- PREVAIL randomized trial
- Foreign body remains inside LA
- Approved by FDA 3/13/15
- Available OUS

Watchman: Treatment Failures

=12% not treated!


Percutaneous Devices

Amplatzer Plug

- **ENDOCARDIAL**
- No randomized trials
- Foreign body remains inside LA
- Still unapproved in US
- Available OUS

Leaks – “Edge Effect”
**Percutaneous Devices**

**LARIAT**
- EPICARDIAL
- No randomized trials
- No foreign body remains in LA
- Approved in US (510k)
- Available OUS

**Leaks – “Gunnysack Effect”**

- Bartus et al., Journal of the American College of Cardiology 2012
- = 30% not treated!!!!

**Lariat: Treatment Failures**

- Kanderian et al., JACC 2008

**Issues with Surgical Closure**

- Concomitant ligation in permanent AF
- Endoloop® in 12 concomitant cases
- TEE and pre-discharge CT
- At 3 month FU 75% perfused on CT

**Circular closure: a No No!**

- Virtually no leaks or residual pouches

**Surgical Devices**

**AtriClip**
- EPICARDIAL
- Can be repositioned
- Approved in US
- Available OUS
- 45,000 Implants
The Surgical AtriClip

Thoracoscopic exclusion
LAA Exclusion System

AtriClip: Prospective Device Trial

AtriClip Midterm Safety Trial

TTA during FU
Summary of LAA Closure Devices

- **ENDOCARDIAL Devices:**
  - Watchman - Percutaneous
  - Amplatzer - Percutaneous

- **EPICARDIAL Devices:**
  - Lariat - Percutaneous
  - Tiger Paw - Surgical
  - AtriClip - Surgical

3rd International Symposium on Left Atrial Appendage
Los Angeles, February 6-7 2015

**Consensus**
- The primary efficacy of Watchman device is comparable to oral Warfarin therapy.
- One-third of Watchman devices have a leak > 5mm.
- Leak rates are lower with the AtriClip and LARIAT (Epicardial devices).
- Leak rates are less severe (< 1mm) with the AtriClip and LARIAT (Epicardial devices).

LAA closure - after thoughts!

- 100% LAA closure or removal is mandatory
- Important concept for permanent AF patients
- Effective in stroke reduction in midterm f/u
- Epicardial closure is safe, effective and durable
- Endocardial closure remains challenging
- Pricing crucial for Clinical adoption!!!
- Heart-team approach can take away specialty bias