

# **Gender-specific Results of Atrial Fibrillation Ablation in a Private Practice Setting**

John M Mandrola, MD, Vicky A Swift, APRN, Kathryn Grace Thorne, MS, Sean Kettring, David E Mann, MD. Baptist Hospital East, Louisville, KY.

*No Author has any disclosures*

# Abstract

**Introduction:** Most of the data supporting catheter ablation of atrial fibrillation (AF) come from trials performed at academic centers that enrolled mostly men. A few centers have reported that females may fare less well with AF ablation, but no gender-specific data exist from a private practice setting. We report a series of patients who either underwent AF ablation or palliative AV node ablation. **Hypothesis:** We assessed the hypotheses that females are under-represented in AF ablation but overrepresented in AV node ablation, and females with AF may be more difficult to ablate. **Methods:** We reviewed hospital records of patients that had AF ablation in our 500-bed community hospital from 1/2007 to 5/2011. AF was ablated with wide area pulmonary vein isolation (PVI) guided by 3D-imaging, and a lasso-catheter confirmed PVI. Non-PV triggers, complex-fractionated electrograms and organized atrial flutters were ablated at the discretion of the operators (PVI+). For comparison, we included patients referred for AV-node ablation over the same time frame. **Results:** PVI was achieved in 233 of 234 patients (mean age 60±9 years). Acute complications occurred in 4 of 234: tamponade (2), stroke (1), and phrenic nerve injury (1). Palliative AV node ablation was done in 115 patients. Females accounted for 33% (79/234) of AF ablations ( $p < 0.001$ ), but 60% (69/115) of AV node ablations ( $p = 0.03$ ). In the AF ablation group, the mean age of females (62; range 21-80) did not differ from males (60; 34-76), however, in the AV node ablation group, the mean age of females (79; 55-92) was greater than males (74; 51-91) ( $p = 0.003$ ). Ablation beyond standard PVI (PVI+) was performed in 38% (30/79) of females and 31% (48/155) of males ( $p = 0.04$ ). Repeat AF ablations were performed in 29% (23/79) of females versus 25% (39/155) of males ( $p = 0.04$ ).

**Conclusions:** (1) Females with AF were significantly under-represented in the AF ablation group, but over-represented in an older cohort that had AV node ablation. (2) Females were more likely to require repeat AF ablations. (3) Additional ablation, beyond PVI, was more often performed in females. Further studies are needed to determine if these findings are due to gender bias in the management of females or actual differences in the AF substrate between sexes.

# **INTRODUCTION/BACKGROUND**

- There are two general strategies used to treat AF:
  - *Rate-control* or *Rhythm-control*
- AF ablation is now an accepted rhythm-control strategy
- In 2011, AF ablation is commonly done outside of academic medical centers
- The evidence base supporting AF ablation comes from trials conducted at academic medical centers
  - These trials enrolled mostly men
- Though scant data exist on gender-related results of AF ablation, a few centers have reported that females fare less well with AF ablation

**HYPOTHESIS**

# We asked two questions:

In a real-world, private practice setting of two electrophysiologists practicing at a community hospital...

- 1. Are females under-represented in AF ablation but over-represented in palliative AV node ablation?*
- 2. Is AF in females more difficult to ablate?*

# **METHODS**

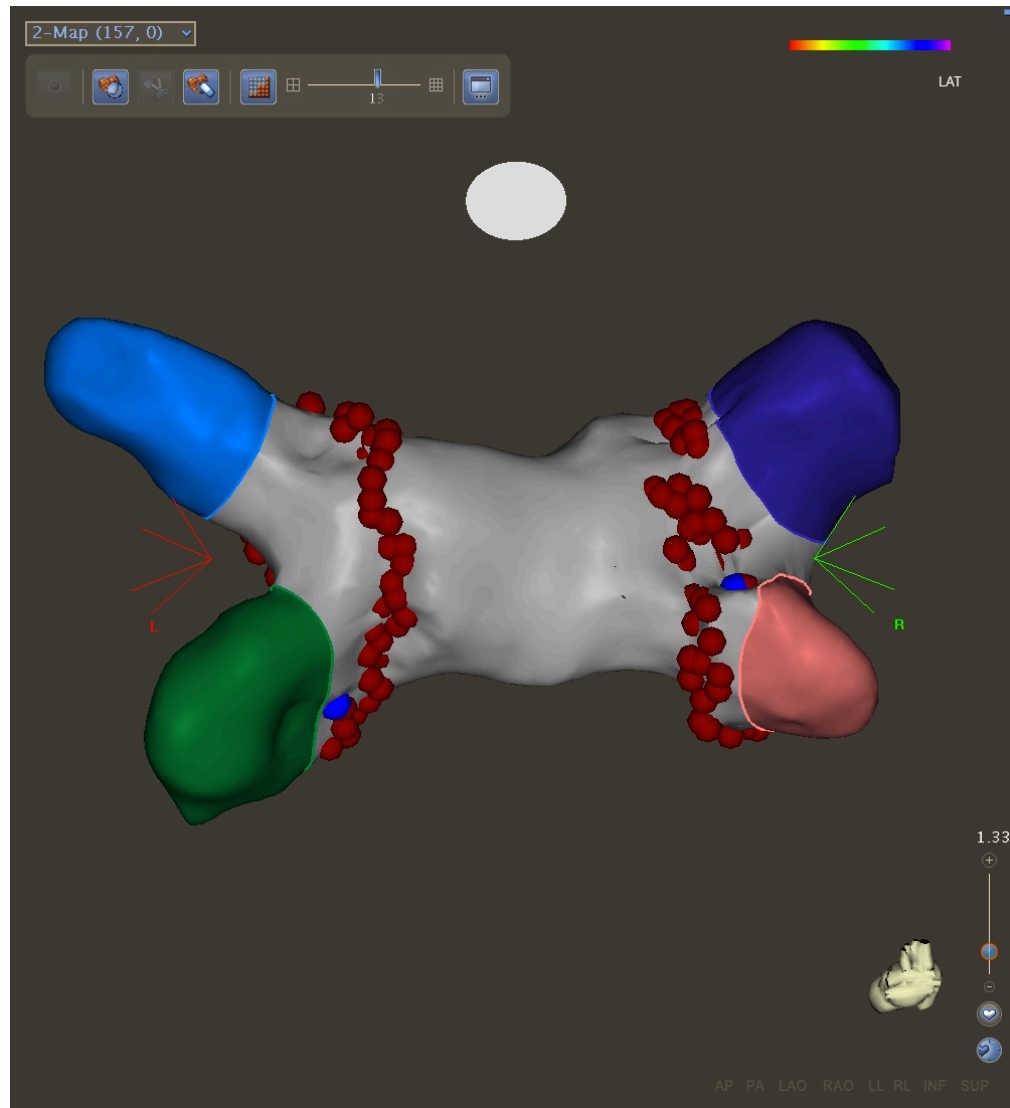
- We reviewed hospital records of consecutive patients that had AF ablation or AV node ablation in our 500-bed community hospital from 1/2007 to 8/2011.
- All procedures were done by two electrophysiologists (JM or DM)
- Patients considered for AF ablation had either paroxysmal or persistent AF
  - Permanent AF was not ablated.
- AF was ablated with wide area pulmonary vein isolation (PVI), guided by 3D non-fluoroscopic imaging (Biosense) and a lasso-catheter confirmed PV isolation



- Non-PV triggers, complex-fractionated electrograms and organized atrial flutters were ablated at the discretion of the operators (PVI+)
  - ***Left atrial ablation beyond standard PVI*** was done either when felt necessary to eliminate persistent AF or when non-AF arrhythmias (left atrial flutter/tachycardia) persisted after PV isolation
- AF ablation success was determined by clinical follow-up:
  - Assessment of symptoms, ECG and ambulatory-ECG monitoring (when indicated)
- Long-term success rates included repeat procedures
- Statistical analysis was performed with chi-square and two-tailed t-tests

# AF ablation--PVI Procedure

- Point by point RF lesions were made with a saline-irrigated tip catheter
- Maximum RF energy used on the posterior wall was 20-25 watts and 40 watts anteriorly
- All patients after June 2009 had general anesthesia
- Nearly all patients underwent AF-ablation with therapeutic INRs ( $\geq 2$ ), or were bridged with low-molecular weight heparin

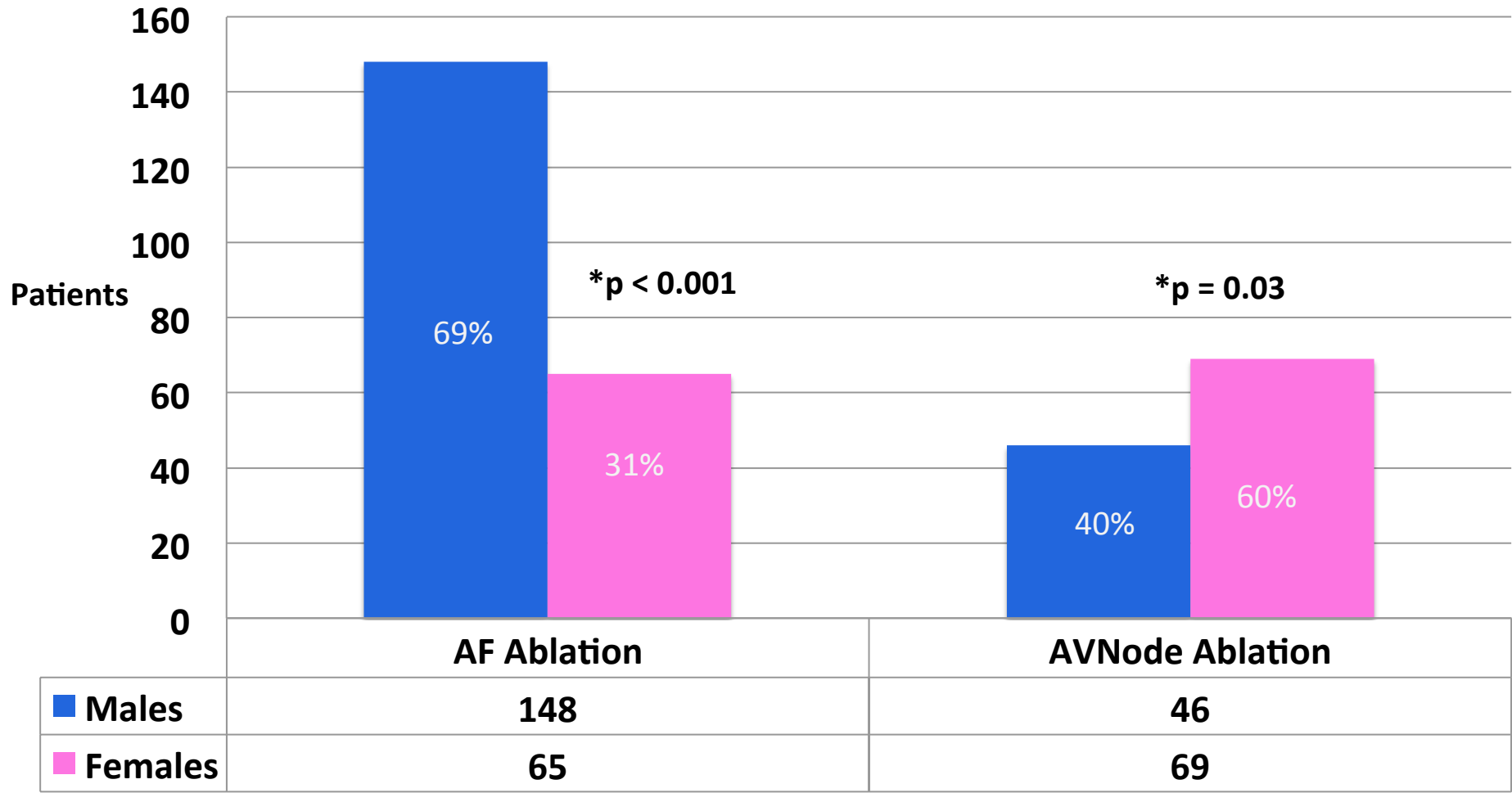


# RESULTS

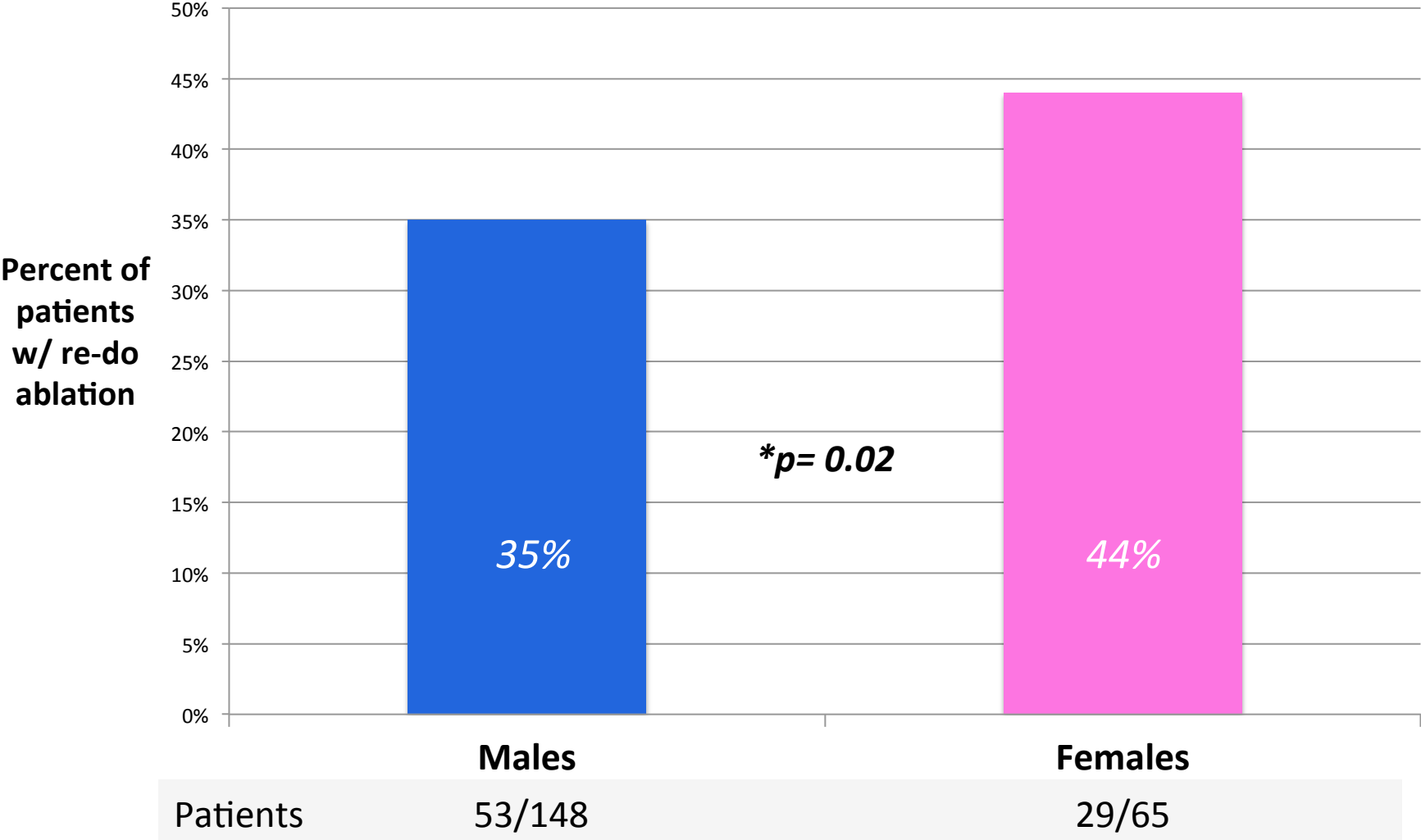
	AF Patients	AF Procedures	AV-Node Ablation procedures	Mean Age (AF Ablation)	Mean Age (AV node ablation)
<b>Males</b>	148	190	46	59 ± 9	74 ± 8
<b>Females</b>	65	92	69	61 ± 10	79 ± 7
<b>Total</b>	213	282	115	P = ns	P = 0.03

- **PVI was acutely successful in 212 of 213 patients**
- **Four patients had severe complications:**
  - 1 Right Phrenic Nerve paralysis (resolved at one year)
  - 1 Stroke (non-lethal)
  - 2 Acute tamponade requiring chest tube drainage
- **No patient died as a result of the procedure**
- **No patient had symptoms or findings of PV Stenosis**

# Males versus Females in AF ablation and AV node ablation

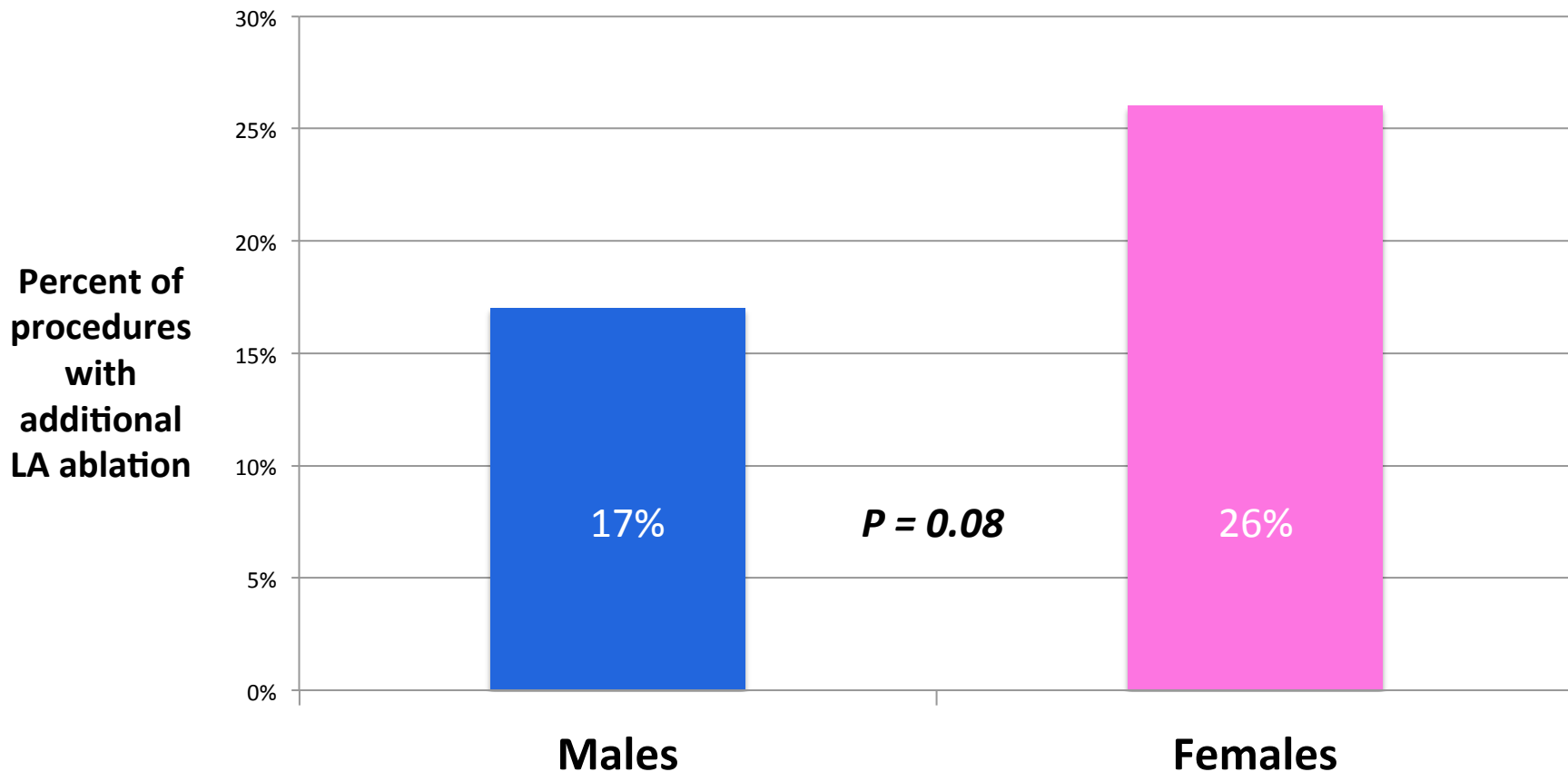


# Repeat AF ablations by gender



*[9 patients (5 Females) had two repeat procedures]*

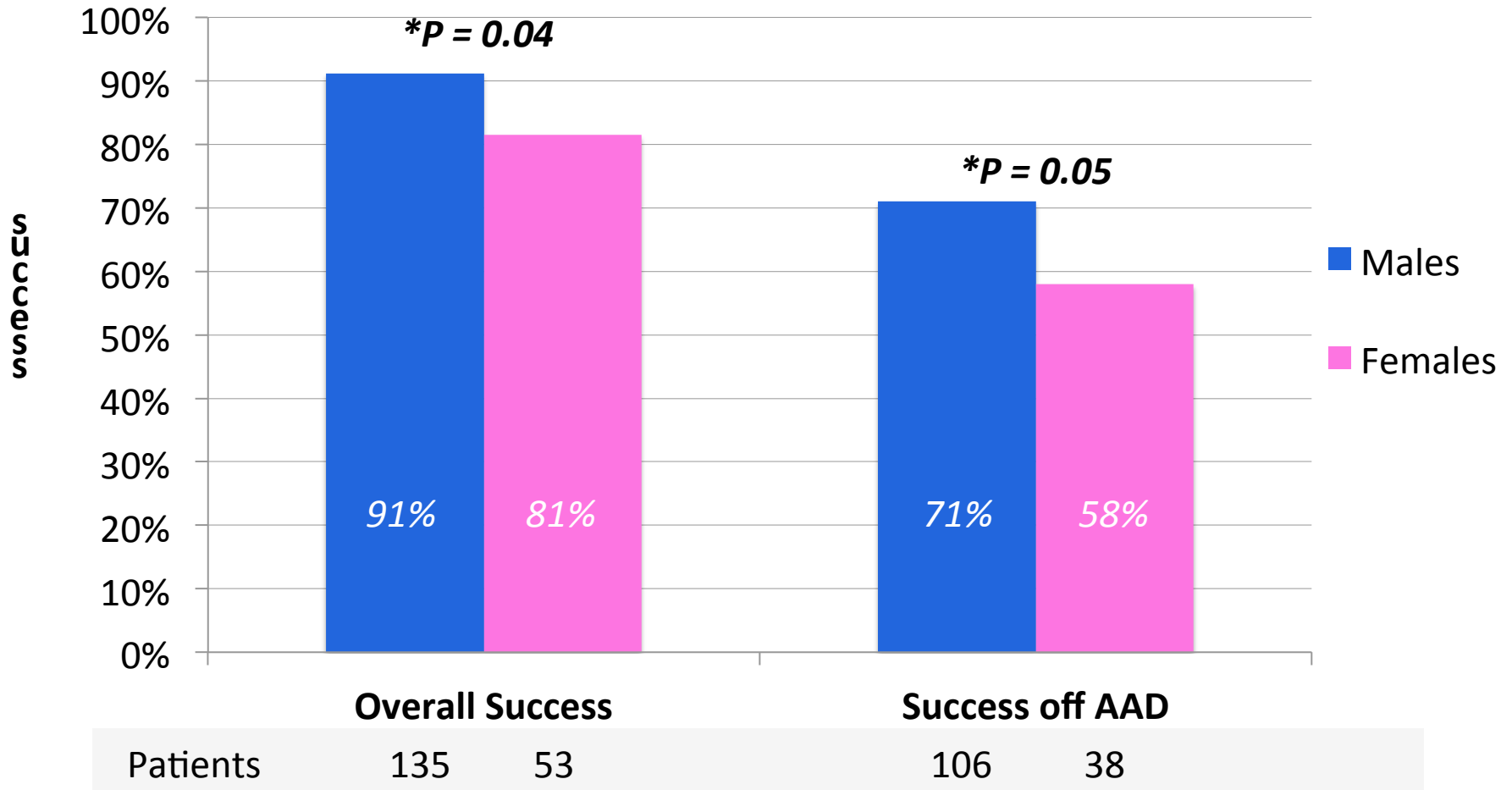
# AF ablation with left atrial ablation beyond standard PVI



<b>Total Procedures</b>	190	92
<b>PVI (+) Left atrium</b>	33	24

# Long-term success by gender

**Follow-up duration:**  
Males: 16.4 months  $\pm$  15.5  
Females: 16.1 months  $\pm$  15.8  
*p=ns*





# **CONCLUSIONS**

- 1. Females with AF were significantly under-represented in the AF-ablation group, but over-represented in an older cohort that had AV node ablation.*
- 2. Females were more likely to require repeat AF ablations.*
- 3. Females had lower long term success with AF ablation, either on or off rhythm-control drugs.*
- 4. There was a trend for females to have additional ablation in the left atrium beyond standard PVI.*

# **CLINICAL IMPLICATIONS**

- Our real-world data, combined with prior studies, suggest that gender-related differences exist in the referral pattern and response to AF ablation.
- These findings have important implications in decision-making when AF ablation is considered in females.
- Further studies are needed to determine if these findings are due to gender bias in the management of females or actual differences in the AF substrate between sexes.