



Ablation for Concomitant Atrial Fibrillation

Final report from the BACTS AFib Management Database



1. Introduction and numbers

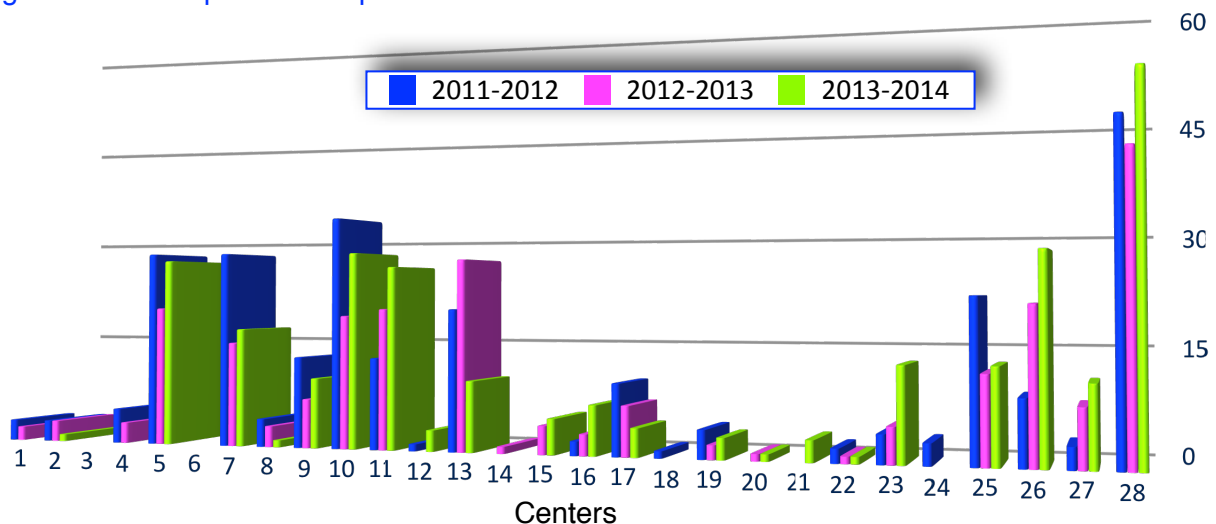
Since the 1st of November 2011 there is a regulation for the reimbursement of the disposable probes for concomitant atrial fibrillation ablation. To be eligible for reimbursement, three follow-up visits (at 6, 12 and 24 months), one echo and one holter are mandatory during two years. Exclusion criteria are permanent atrial fibrillation > 5 years, a left atrial diameter > 65 mm (parasternal long axis view) and percutaneous ablation for atrial fibrillation during the same admission.

As agreed with the RIZIV/INAMI, this report, generated three years after reimbursement, will describe the performed procedures, as well as their outcome and the follow-up per center. The data in this report are generated from the AFib Management Database on the 2th of March 2015 and concern all the ablations performed between the 1st of November 2011 and the 1st of November 2014.

In 2009, before reimbursement of the ablation devices, 211 concomitant atrial fibrillation (AF) procedures were registered in Belgium. We expected this number to increase significantly after reimbursement. However, in the first year of reimbursement (11/2011 until 10/2012) only **264** concomitant ablation procedures were performed. In the second year (11/2012 until 10/2013) this number increased tot **271** procedures and in the third year after reimbursement (11/2013 until 10/2014), this number decreased again to **262** procedures.

The majority of these procedures were performed in 6 out of the 28 Belgian centers (Fig.1).

Fig.1: Number of procedures per center



2. Type of AF treated:

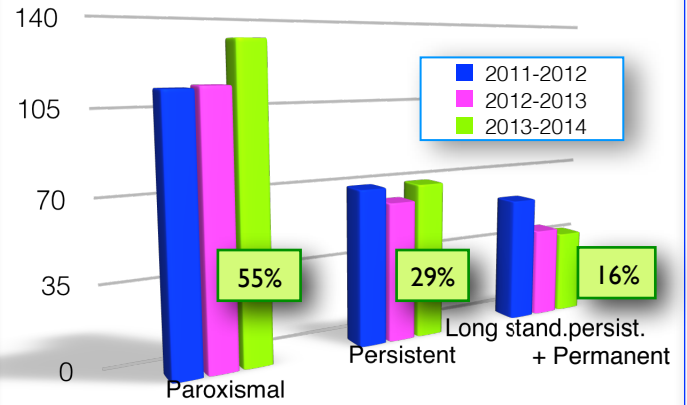
Approximately half of the patients were in paroxysmal AF (Fig.2).

- Paroxysmal: self-terminating <7d
- Persistent: 7d-1y, or cardioversion
- Long standing persistent: >1y
- Permanent: only rate control

3. Demographics

The mean age stayed around 68 y (68±11y, 67±11y, 69±10y) and 61% was male.

Fig.2 Type of AF treated (% for 2013-2014)



4. Type of surgery

In approx. 2/3 of cases, the procedure involved mitral valve surgery. (Fig.3)

Fig.3 Type of surgery

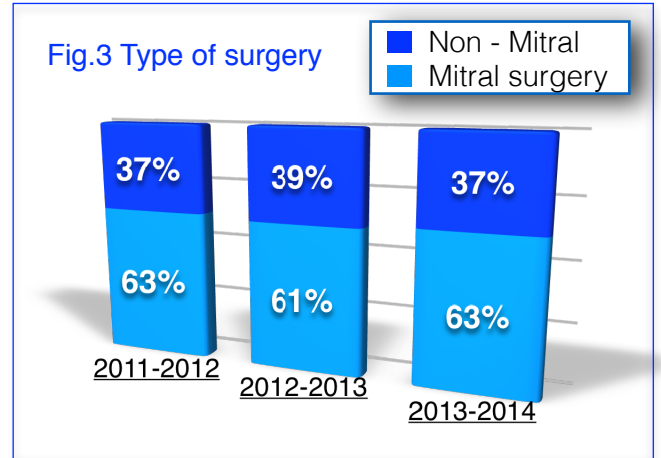
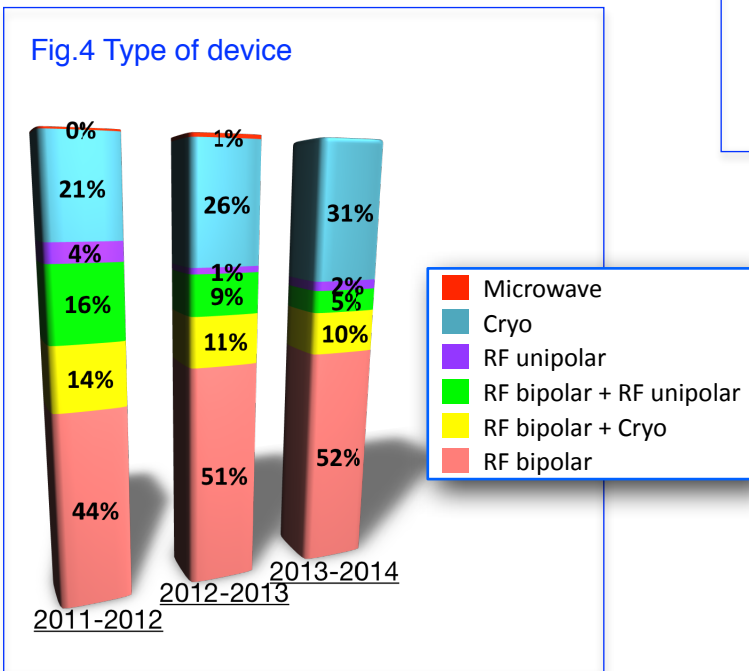


Fig.4 Type of device



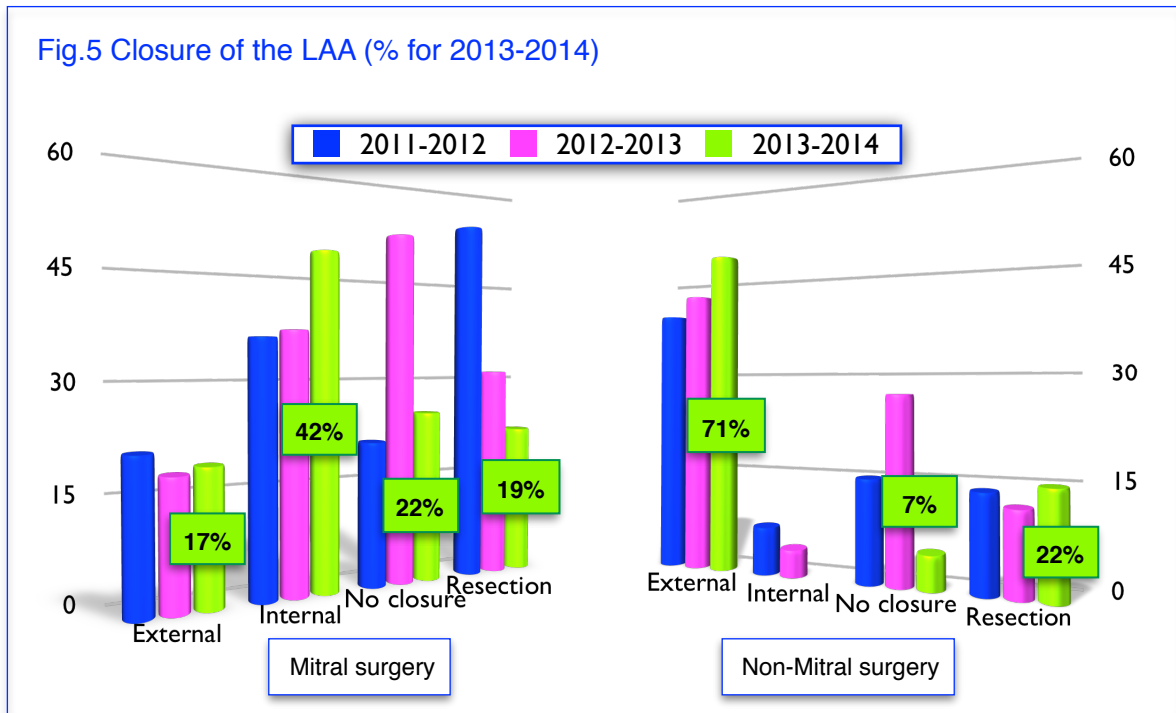
5. Type of device

In the majority of cases, bipolar radio- frequency (RF) was used, alone or in conjunction with cryo or monopolar RF for the left isthmus-line.

6. Closure of the left atrial appendage

Despite the intention to treat the AF by ablation, the left atrial appendage (LAA) is left open in a significant number of cases.

Fig.5 Closure of the LAA (% for 2013-2014)



7. Ablation lines

Once the left atrium is opened (mitral valve surgery), most surgeons perform additional lines besides PV isolation, even in **paroxysmal AF** (Fig.6).

In procedures with **non-mitral surgery** and **Non-paroxysmal AF**, the left atrium is opened for additional lines in 35% of cases (Fig.7)

The additional lines in the left atrium are in most cases a full Cox-Maze IV (CM-IV) lesion set. In the right atrium however, the set of lesions is very heterogeneous.

Fig.6 Ablation lines in **Paroxysmal AF** (% for 2013-2014)

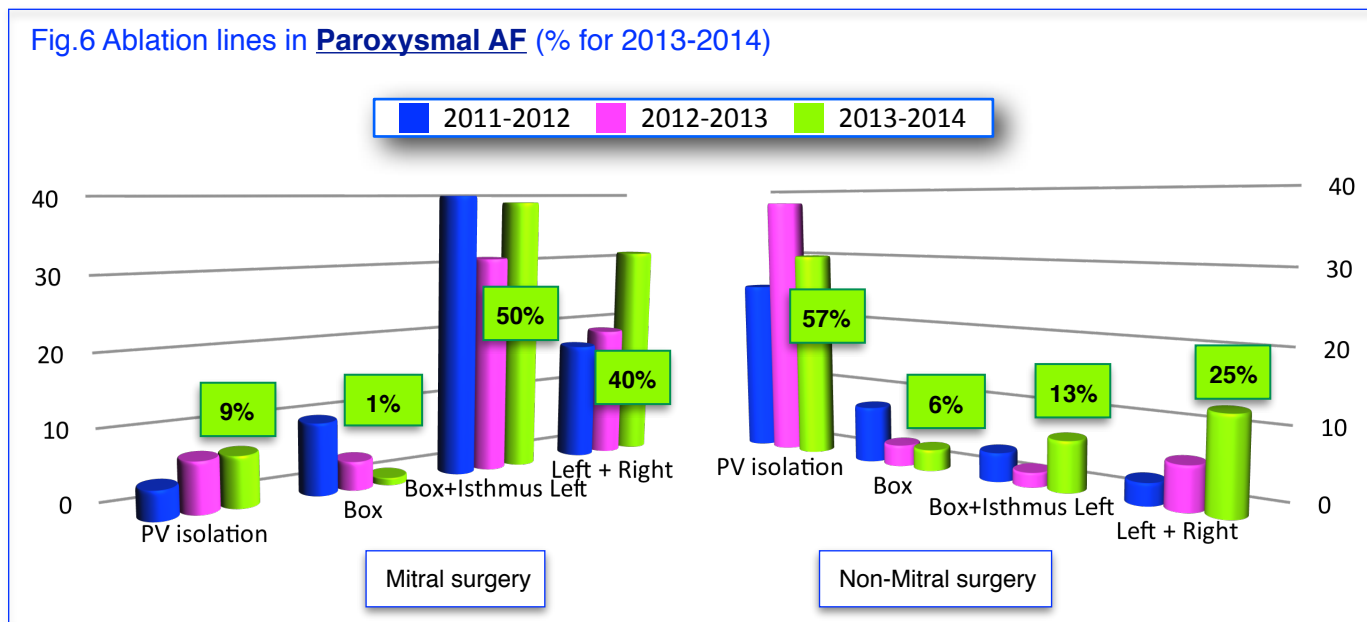
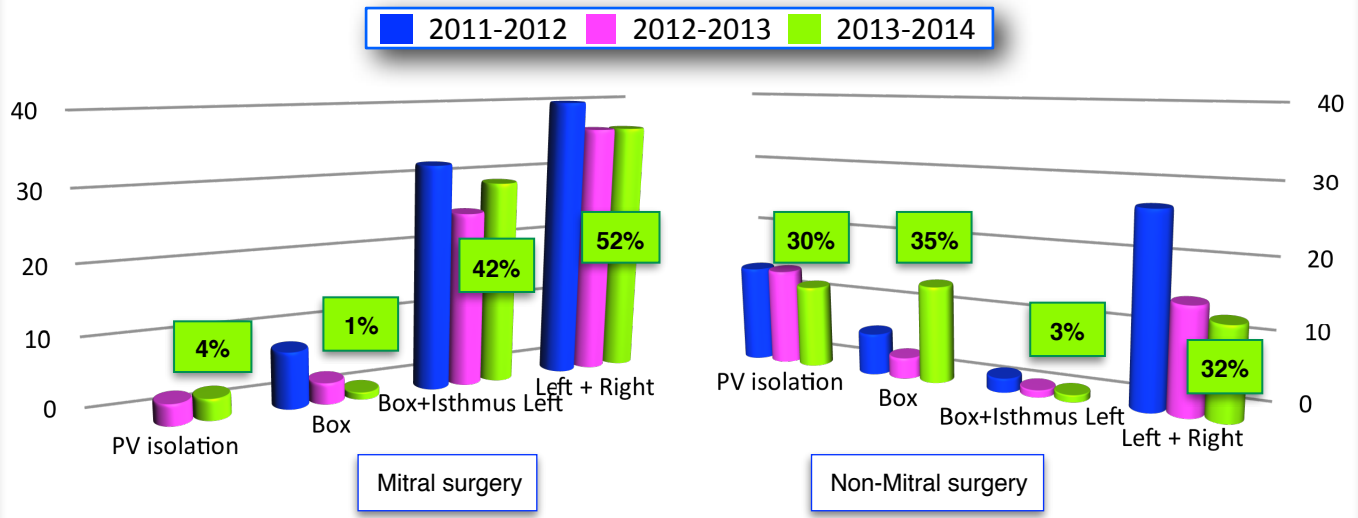


Fig.7 Ablation lines in **Non-paroxysmal AF** (% for 2013-2014)



8. Complications

Ablation is a very safe procedure with few complications (pacemaker implantation or bleeding) (Fig.8)

Fig.8 Complications (% for 2013-2014)

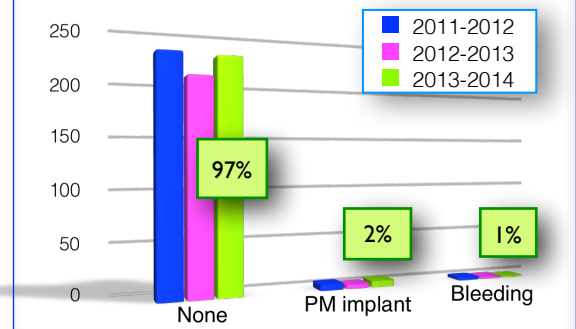
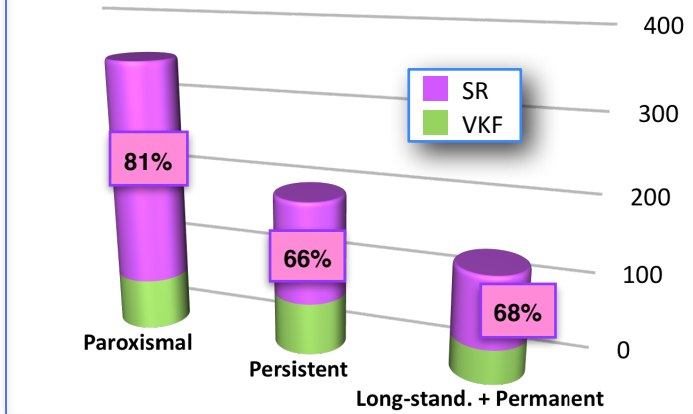


Fig.9 Rhythm at discharge (%SR)



9. Rhythm at discharge (2011-2014, n=797)

In the non-paroxysmal group, the majority of patients was discharged in sinus rhythm (66 % and 68%). (Fig.9)

10. Results after Holter (between 6-24 months)

A Holter monitoring was either performed or deemed not necessary (AF on standard ECG) in **68%** of patients operated on before 2/2014 (Follow-up >1 y).

As expected, PV isolation (or box) is sufficient in treating **paroxysmal AF**. Additional lines do not improve success rate. (Table 1)

In **non-paroxysmal AF**, the % SR was higher with a full lesion set on the left side. Performing additional lines in the **right atrium** seems not to improve success rate. However, in the left atrium most surgeons perform all the lines of a Cox-Maze IV procedure, but on the right side the lesions set is very heterogenous.

Table 1. Impact of Lesions-set on success

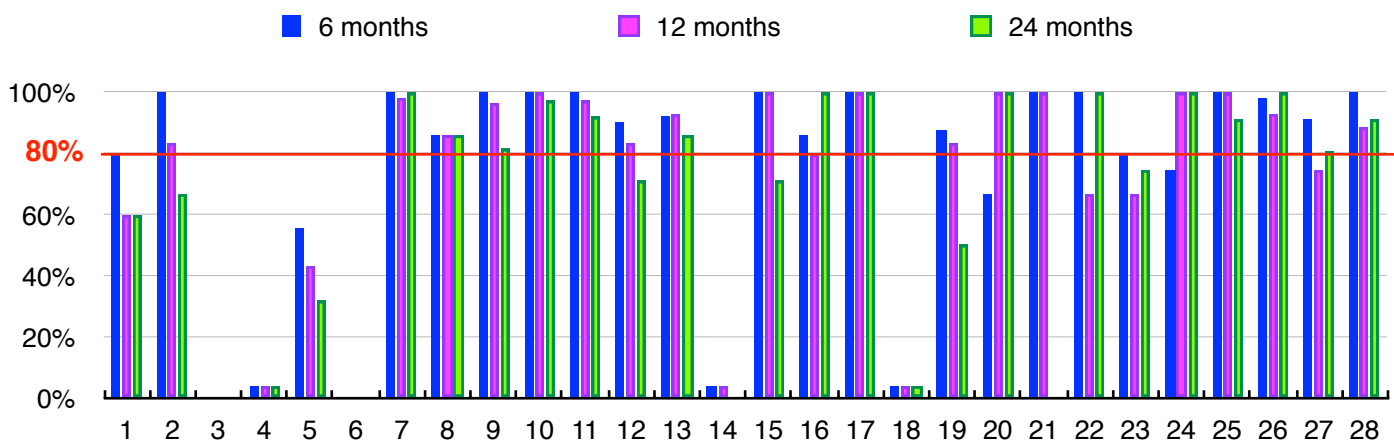
Type of AF	Lesions	SR	(A)typical Flutter
Paroxysmal	PV/Box	92% (80/87)	2% (n=2)
	CM IV Left	84% (72/86)	1% (n=1)
	CM IV Left + Right lesions (<i>true CM-IV 35%</i>)	79% (45/57)	5% (n=3)
Non-paroxysmal	PV/Box	70% (38/54)	7% (n=4)
	CM IV Left	76% (45/59)	3% (n=2)
	CM IV Left + Right lesions (<i>true CM-IV 22%</i>)	75% (73/98)	4% (n=4)

In **paroxysmal AF**, the type of **Energy Source** seems of less importance (Table 2). In **Non-paroxysmal AF**, using only bipolar RF seems inferior compared with RF+Cryo or Cryo alone. The best results are obtained with a combination of RF and Cryo (highest incidence of SR and no flutter). However, numbers are too small to draw any statistically relevant conclusions on superiority of any of the devices.

Table 2. Impact of Energy Source on success rate

Type of AF	Energy Source	SR	Atypical Flutter
Paroxysmal	RF	86% (106/123)	4% (n=5)
	RF + Cryo	83% (20/24)	4% (n=1)
	Cryo	81% (52/64)	5% (n=3)
Non-paroxysmal	RF	65% (66/102)	6% (n=6)
	RF + Cryo	80% (24/30)	0% (n=0)
	Cryo	73% (38/52)	6% (n=3)

11. Follow-up per center



Centers 3 and 6: no procedures registered.

12. Medication

- Amiodarone: After 1 year, 16% of patients with SR on Holter monitoring was still on Amiodarone.
- Anticoagulation : If we exclude valve replacement operations, after 1 year, 26% (62/237) of patients with SR on Holter monitoring still take coumarin and 14% (32/237) take NOAC's: **60 % is free from any anticoagulation**

13. Conclusion

- The **number of procedures** stayed relatively constant over the different years of reimbursement, and differs not so much from the number of registered procedures before reimbursement
- The **rate of succes** is around 80% in paroxysmal AF and around 70% in non-paroxysmal AF, independent of the Energy Source used.
- These numbers are in accordance with the recent international published literature.
- The ablation procedure is save and causes **very few complications**.
- As expected, PV isolation alone is sufficient in paroxysmal AF, but in non-paroxysmal AF, additional lines (certainly in the left atrium) are required.
- 60% of patients who did not receive a valve replacement, are **free from anticoagulation** after 1 year.
- 80% **follow-up** after 6 months is completed in most centers.

14. Recommendations

- the BACTS believes that reimbursement of ablation devices in concomitant AF is justified, given the high success rate with very few complications.
- We observed a relative high number of left atrial appendages (LAA) left open despite the ablation, probably due to fear for re-canalization or bleeding after surgical closure or resection. Since we now have sufficient data that closure of the LAA reduces the risk of thromboembolic events, we believe that reimbursement of an external closure device should be considered.

This report was generated by the BACTS database committee on the 10th of March, and approved by the BACTS Board on the 25th of March 2015.