

Background

Cryoballoon ablation has emerged as a technique for pulmonary vein isolation in patients with atrial fibrillation with a similarly efficacy yet safer approach in comparison to radiofrequency point to point ablation

Our centre started the ongoing program of cryoballoon ablation in March 2018 without previous experience in the field of pulmonary vein isolation

It appears to be the technique of choice for low volume centres such as ours, but real world patients differ from controlled cohorts which could impact the reported efficacy and safety rates of this procedure

Objective

We aim to present our low volume center experience in this technique regarding its safety and efficacy in real world patients in comparison with the current literature

Methods

We performed a retrospective chart review of patients with symptomatic atrial fibrillation that were submitted to pulmonary vein isolation with single-shot technique by cryoballoon ablation using the Arctic Front Advance™ (Medtronic™) balloon-catheter (*Figure 1.*) between March 2018 and December 2020 in our centre

Demographic and clinical data was registered.

Results were compared with the current literature for recurrence rates and procedure complications

Results

44 patients were reviewed:

- 45% (n=20) were female
- Median age of 66 (32-76) years

The commonest risk factors were:

- Hypertension (70%, n=31)
- Diabetes mellitus (7%, n=3)
- Coronary artery disease (7%, n=3)
- Heart failure with reduced ejection fraction (5%, n=2)

Procedure complications occurred in 11% (n=5)

- Contrast leaking during transeptal puncture (9%, n=4)
- Cardiac tamponade (2%, n=1)

39 Cryoballoon ablations were carried out without periprocedural complications. No late complications were reported

In patients with a minimum follow-up period of 6 months (n=32), atrial fibrillation recurred in 31% (n=10)



Figure 1a. Arctic Front Advance™ (Medtronic™) balloon-catheter



Figure 1b. FlexCath Advance Steerable Sheath™ (Medtronic™)

Conclusion

In regarding to safety all our centre complications are related to transeptal puncture. Only one patient fulfilled the criteria for major complication (cardiac tamponade). In the current literature, cardiac tamponade/perforation is reported in 0,1-3,2% of cases, being the most common life-threatening complication

In regarding to atrial fibrillation recurrence, recent review articles reported rates close to 50% after cryoballoon ablation in a 36 months follow-up period. Our recurrence rate of 31% is relative to a 6 months follow-up

Discussion

Catheter ablation for atrial fibrillation is one of the most complex interventional electrophysiologic procedures and is associated with a number of periprocedural complications

It has been reported to be a safe and efficacious alternative to radiofrequency ablation in low volume centres by having a lower steep learning curve and less operator dependence

Since the start of our pulmonary vein isolation program one limiting factor has been the acquisition of proficiency in the transeptal puncture, a step required in both alternatives for catheter based ablation

We have yet to compare recurrence rates in longer follow-up periods

Disclaimer

- The authors report no conflict of interest