

1. Summary

Atrial fibrillation is the most common arrhythmia. With advancing years of the world population the incidence of atrial fibrillation rises. Most patients suffer of additional cardiac diseases. Often are valvular defects, such as defects of mitral and aortic valve. Atrial fibrillation is because of its complications, most are thromboembolic complications, always an indication for treatment. There are several options for treatment. Starting with medical possibilities for rhythm or rate control over ablations by cardiac catheter to open surgical-ablative therapy. The surgical-ablative therapy for atrial fibrillation gains in more and more. Patients undergo open heart surgeries because of their valvular defects. Those patients are ideal for an ablation in sense of the modified Maze-surgery.

In this present study the success of the modified Maze-surgery in combination with other cardiac operations should be clarified. Two different techniques were used, one with an irrigated and one with a non-irrigated electrode. Datas from 83 retrospective and 20 prospective patients were collected. One part of the patients were operated with a non-irrigated "ball electrode" and the other part of the patients were operated with the irrigated Cardioblate®. In the follow-up examinations the heart rhythm was checked. Patients in sinus rhythm were lead through a transthorcal echocardiography. An opinion about the hemodynamic of the left atrium was made.

The follow-up examination time of the retrospective patients was 24,6 months. From the 83 retrospective patients 43 (51,8%) showed up with an sinus rhythm. Two patients (2,4%) presented an intermittent atrial fibrillation. The remaining 38 patients (45,8%) had an persistent atrial fibrillation. If possible heart rhythm was secured by a long-term EKG.

The 20 prospective patients underwent three follow-up examinations. Follow-up 1 after 1 week, follow-up 2 after 4 – 6 weeks. The last follow-up came off after 3 months. At this time 10 patients (50%) were in sinus rhythm. 9 (45%) more patients presented an atrial fibrillation and 1 an intermittent atrial fibrillation.

In relation to the two used techniques of the operation there were no significant different results ($p>0,05$), neither with the non-irrigated method nor with the irrigated method. By the time of the follow-up examinations, patients with sinus rhythm showed an improvement of the hemodynamic of the left atrium in the transthoracal echocardiography.

The two techniques were also tested on the isolated left atrium of pork hearts. The points of question aimed of the transmuralty of both tools. The two mentioned tools were used for an ablation line from 3 cm. The results showed no significant differences ($p>0,05$) between the irrigated and the non-irrigated technique.

Patients undergoing an open heart surgery can be efficiently treated for atrial fibrillation by the combined modified Maze-surgery to restore sinus rhythm. The additional time is negligible and no other operative complications occurred. The results showed no difference between the two techniques. From there the use of both tools is safe and possible. Concerning the patients with restored sinus rhythm the echocardiographic results showed an immediately atrial contraction and a progress of the hemodynamic. The conversion into sinus rhythm is much more difficult in patients with enlarged left atrium.