

Clinical Application Report on Home-made Mitral Valve Balloon

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Rheumatic heart disease mitral stenosis is a common disease in China, especially in the vast rural area. PBMV is an effective method for curing this disease. In virtue of the characteristics of small incision and rapid recovery, it is easily accepted by patients. However, the high price of the imported equipment directly causes a slow popularization and a limited range of application. We have carried out 30 cases of PBMV with home-made mitral valve single balloon catheter produced by SYM, and achieved satisfactory result. For the popularization of the home-made balloon at competitive and reasonable price providing to provide better service to more patients, we report as below:

I. Objects and method

Select the consecutive patients in the catheter room of our hospital during February to September of 1996 as experimental group applied the home-made balloon. Requirements for the candidate cases: moderate and severe mitral stenosis with obvious symptom, NYHA class II ~ class III; No serious valve calcification, serious pathological changes in subvalvular structure, or blood clots in left atrium were found through ultra echocardiography and mitral valve orifice area $\leq 1.3\text{cm}^2$. The followings are regarded as PBMV contraindications: patients with rheumatic activity, history of circulation thrombosis, severe calcification in subvalvular structure, moderate or above level of incompetence of mitral valve or aortic valve, atrium septal acupuncture contraindication (e.g. big right atrium, abnormal rachidian thorax, etc.) There are totally 30 cases in the experimental group (Male: 8 cases; female: 22 cases), at an average age of 35.5(22~55). Heart function (NYHA classification): 14 cases of class II, and 16 cases of class III, 25 cases are with sinus rhythm, and 6 cases are with atrial fibrillation, 8 cases associated with minor mitral valve incompetence, 10 cases of minor aortic incompetence. The average mitral valve orifice area measured with ultra echocardiography is $0.95\text{cm}^2(0.70\sim 1.26\text{cm}^2)$. All the patients with atrial fibrillation were undergone esophagus ultrasound examination, and no left atrium blood clots were found in the left atrium.

The consecutive patients in our hospital during April of 1993 to January of 1996 were selected for the control group. The requirements and contraindications for the case candidates are the same as the experimental group. There are 32 cases in the control group (Male: 10 cases; female: 22 cases), at an average age of 34.2(21~56). Heart function (NYHA classification): 13 cases of class II, and 19 cases of class III, 9 cases associated with minor mitral valve incompetence, 13 cases of minor aortic incompetence. The average mitral valve orifice area measured with ultra echocardiography is $1.03\text{cm}^2(0.70\sim 1.23\text{cm}^2)$. The clinical data for the two groups are of comparability.

Operating method: The operating technique is the same as normal PBMV. The whole group adopts rubber-nylon netting single balloon catheter produced by SYM. The control group adopted the imported INOUE balloon catheter. Performed femoral vein acupuncture for the test of left and right atrium catheters, and measure pulmonary arterial pressure; after the success of acupuncturing through the atrium septa by adopting Mullers atrium septal sheath and acupuncture needle, send two circles and a heal wire into the left atrium; after dilation along the wire, send the balloon dilation catheter into the left atrium: use mitral valve probe to place the balloon mitral valve orifice; inject all the contrast agent into the balloon through the special injector to dilate the mitral valve orifice. When the balloon is fully filled, take out all the liquid from the balloon immediately. The filling time is 2-4 seconds. Record and supervise ECG and left atrium pressure during the whole course. Measure transvalvular pressure gradient before and after dilation. If unsatisfactory, repeat dilation of balloon diameter (0.5~1mm for each dilation) until the desired diameter achieved (Dilation should be immediately stopped in case of more serious mitral valve incompetence caused.). At completion of the operation, repeat examination on the left and right catheter, and the patients were discharged from the hospital after four-day observation and re-check with ultra echocardiography (All the mitral valve orifice areas were measured with pressure half-time by Doppler.)

The values of mitral valve orifice area measured with blood flow dynamics and ultra echocardiography for the

reaction found during operation. The home-made catheter is at competitive price and conforms to the actual condition in China. Therefore, it is recommended for popularization.

