Fetal aortic stenosis: which fetuses are candidates for in utero dilatation: a retrospective review over a decade.

M3C, Hôpital Necker Enfants Malades, Paris, France (1); Service de Gynécologie Obstétrique, Hôpital Necker Enfants Malades, Paris, France (2)

Introduction
Fetal aortic stenosis is a complex disease. The aim of antenatal diagnosis is to offer adequate prenatal and neonatal care.

Objective
We sought to investigate the outcome of fetuses with aortic stenosis in order to determine criteria of bad outcome and define candidate for in utero balloon dilatation.

Material and methods
We retrospectively reviewed data of fetuses with aortic stenosis over a decade (2002 to 2012). Fetuses with other cardiac defects were excluded. Fetuses were classified in three groups according the prenatal outcome and the neonatal strategy (group 1 termination of pregnancy (TOP), group 2 biventricular strategy and group 3 univentricular strategy).

Results
73 fetuses were eligible. Data were available for 71 patients. 30 fetuses had TOP (41%, group 1). 33 (46%) were in group 2 and 8 (13%) in group 3. Patients in group 2 were diagnosed later than those in group 1 and 3 (p<0.05). In group 2, 5 deaths (15.5%) were reported. Left to right shunt across the PFO, retrograde flow in the aortic isthmus, akinetic left ventricle and mitral valve inflow abnormalities were associated with extremely poor outcome (termination, univentricular physiology or death in case of biventricular strategy). When LV was of normal size or dilated, only four patients evolved to hypoplastic left heart syndrome (HLHS). However when considering hemodynamic criteria, no evolution from good form to HLHS was noted. In utero balloon dilatation was performed in 7 fetuses (10%) as an alternative to TOP. After intervention, only 2 had a biventricular physiology at birth, 2 a univentricular physiology and pregnancy was terminated in the remaining 3 cases due to evolution to HLHS.

Conclusions
Fetal aortic stenosis is a severe disease diagnosed at various ages of gestation. Evolution to HLHS can be predicted by full echographic assessment including shunt across the PFO, LV size and function, flow across aortic isthmus and valve and MV inflow. In utero intervention should not be indicated in fetus with good prognosis. The number of eligible fetuses is very low in our experience (around 3 per year). The place of in utero dilatation remains to be precised.