A 16-year-old girl with a 12 year history of systolic murmur at the apex presented with mitral regurgitation. Two-dimensional echocardiography in the parasternal long-axis view showed the part of the anterior mitral valve (AMV) which near the root was thin without echo drop-out (Panel A, arrowhead). The parasternal short-axis view showed a cleft on AMV (Panel B, arrowhead) and moderate-severe regurgitation through the cleft (Panel C, Supplementary material online, Video S1). Continuous ultrasound scanning from mitral valve tip to root showed the cleft was incomplete (Supplementary material online, Video S2). Three-dimensional echocardiography revealed a better view of the cleft which is a triangular shape without thickening and edge retraction in the A2 region (Panel D). Three-dimensional echocardiography also helped us to measure the width and depth of the cleft. Intra-operative findings confirmed the echocardiography diagnosis (Panel E). One week after the surgery in which the mitral value was repaired without a patch, three-dimensional echocardiography showed that the AMV was integrated (Panel F).

Incomplete isolated cleft of the AMV without any other heart defects even prolapse diagnosed by echocardiography is not reported yet. Preoperative diagnosis is useful for surgical planning.

(Panel A) Two-dimensional echocardiography in the parasternal long-axis view showed the part of the anterior mitral valve (AMV) which near the root was thin without echo drop-out (Panel A, arrowhead).

(Panel B) The parasternal short-axis view showed a cleft on the AMV (Panel B, arrowhead). (Panel C) The parasternal short-axis view showed moderate-severe regurgitation through the cleft (Panel C). (Panel D) Three-dimensional echocardiography revealed a better view of the cleft which is a triangular shape without thickening and edge retraction in the A2 region (Panel D). (Panel E) Intra-operative findings confirmed the echocardiography diagnosis (Panel E). (Panel F) Post-operative three-dimensional echocardiography showed the AMV was integrated (Panel F). L.A, left atrium; L.V, left ventricle; R.V, right ventricle; P.M.V, posterior mitral valve.