**Objective:** To evaluate the use of physical 3D fetal models, from images obtained by three-dimensional ultrasound (3DUS) and magnetic resonance imaging (MRI) during the pregnancy and after birth, for evaluation of, counseling, anatomic studies and therapies of conjoined twin pregnancies.

**Methods:** Images from 4 conjoined twin pregnancies were used. Scans were performed using high-resolution 3DUS. MRI was performed on the same day as 3DUS. The images obtained with 3DUS and MRI were exported to a workstation in DICOM format. A single observer performed slice-by-slice manual segmentation using a digital high-definition screen. Software that converts medical images into numerical models was used to construct virtual 3D models, which were physically made using additive manufacturing technologies.

**Results:** Four physical models based upon 3DUS and MRI were successfully generated. One twin pair affected by craniopagus, two affected by thoraco-omphalopagus and one pair affected by dicefalus parapagus were virtual and physically reconstructed. They were similar to the postnatal appearance of the stillbirth fetuses or newborns, with special attention to the anatomical connections of the fetuses.

**Conclusion:** 3D printing of images of conjoined twin pregnancy improve the understanding of the malformations and their anatomical relations, being a useful toll for parental counseling and postnatal planning, including immediate neonatal care and surgical planning.