Objective
The aim of this retrospective multicenter study was to evaluate the sonographic appearance of open spina bifida (OSB) in the first trimester by Tomographic Ultrasound Imaging (TUI).

Methods
In all cases of suspected OSB from 2013 to 2017 ultrasound volumes of the fetal spine were stored for successive analysis and an early anatomic survey was performed. The volume dataset was manipulated on multiplanar view in order to obtain a midsagittal section of the spine in the plane A, focusing on the fetal defect. This image was used as a reference for TUI to display simultaneously multiple axial views. The number and distance of the TUI slices was set with the aim to visualize vertebrae at different levels of the spine for direct comparison of ossification centers relative position.

Results
8 cases of OSB were included: 3 myeloschisis and 5 myelomeningocele. In 4 cases an abnormal curvature of the spine was noted at the level of the defect. In all cases at the level of the defect the TUI allowed to highlight evident splaying of the two posterior ossification centers of the vertebra compared with normal ones. Postnatal evaluation confirmed the prenatal findings.

Conclusion
TUI allows a direct comparison of vertebrae, highlighting the splaying of posterior ossification centers associated with OSB in the first trimester.