Objective: In this study, morphometric developments of sphincter of oddi in human fetuses were observed.

Methods: We observed 113 human fetuses consisted of 67 male and 46 female subjects, whose ages varied 14 to 40 weeks that had showed no signs of any pathology or anomaly externally. The common external measurements of fetuses were done followed by the abdomen dissection to determine where the sphincters of oddi had been are localized within the duodenum and pancreas. Histological specimen of tissue samples gathered from the inner wall of duodenum where it was assumed that the sphincters of Oddi had been are localized. The parameters of total external diameters, lumen diameters, wall thickness diameters of ductus choledochus and ductus pancreaticus, and the distance between these two structures, which are also known as the producers of the sphincter of Oddi, were measured by using a light microscope. The standard deviations of the measurements were calculated for each gestational weeks and trimesters.

Results: The calculations suggested that there were statistically significant correlations between gestational age and all of the other parameters with the exception of ductus choledochus (p<0.001). It was observed that the wall thickness of ductus choledochus increased at the first half of the fetal stage and decreased at the second half, as the lumen diameter increased through the 40th week. The gender difference was not statistically significant (p>0.05).

Conclusion: The data we collected in our study were considered as useful for the evaluation of the development of the sphincter of Oddi area and fetal stage.