

Study examines cesarean section delivery and autism spectrum disorder

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Quinn, an autistic boy, and the line of toys he made before falling asleep. Repeatedly stacking or lining up objects is a behavior commonly associated with autism. Credit: Wikipedia.

The initial results of a study suggested that children born by cesarean section were 21 percent more likely to be diagnosed with autism spectrum disorder but that association did not hold up in further analysis of sibling pairs, implying the initial association was not causal and was

more likely due to unknown genetic or environmental factors, according to an article published online by *JAMA Psychiatry*.

Autism spectrum disorder (ASD) is thought to affect about 0.62 percent of [children](#) worldwide, although estimates in the United States have been closer to 1.5 percent. ASD has previously been linked to numerous perinatal factors, possibly including delivery by [cesarean section](#) (CS), although ASD could be associated with the indication for CS rather than to CS itself or an unknown genetic factor associated with increased risk of CS and ASD.

Ali S. Khashan, Ph.D., of the Irish Centre for Fetal and Neonatal Translational Research (INFANT), Cork, Ireland, and co-authors looked at the association between modes of delivery, specifically birth by CS, on ASD using Swedish registry data for live births from 1982 through 2010. The study group included nearly 2.7 million children, of whom 2.1 million (80.1 percent) were born by unassisted vaginal delivery, 164,305 (6.1 percent) by elective CS, 175,803 (6.5 percent) by emergency CS and 196,058 (7.3 percent) by assisted vaginal delivery. There were 28,290 children (1 percent) diagnosed with ASD.

The author's sibling control study included 13,411 sibling pairs discordant on ASD status, which means one sibling had ASD while the other did not; and 2,555 pairs were discordant on the method of delivery with one sibling born by unassisted vaginal delivery.

In the conventional cohort study, children born by elective CS were 21 percent more likely to be diagnosed as having ASD. However, in the sibling control analysis there was no association found between mode of [delivery](#) and ASD.

'Although the traditional cohort analysis revealed birth by CS to be associated with ASD, it is not necessarily a cause because the association

could be due to residual confounding. ... Therefore, because the association between birth by CS and ASD did not persist in the sibling control analysis, we can conclude that there is no causal association. It is more likely that birth by CS is related to some unknown genetic or environmental factor that leads to increased risk of both CS and ASD,' the study concludes.

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