

## **Bladder Injury During Scheduled Versus Emergent Cesarean Section**

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**Introduction:** Cesarean sections (CS) are one of the most common surgical procedures performed. In 2020, the CS rate in the United States was 31.9%. Bladder injuries at the time of CS are infrequent, with an incidence of less than one percent. Because of the proximity of the bladder to the uterus, however, care needs to be taken by the surgeon to avoid injury.

**Objective:** To identify if there is a difference in the incidence of bladder injury between emergent and scheduled CS as well as primary and repeat CS.

**Methods:** We conducted a retrospective cohort study of adult women who underwent either a scheduled or emergent CS delivery from January 1, 2013 to December 31, 2020 at Ascension St. John Hospital. The primary endpoint was the incidence of bladder injury. When a bladder injury was identified, the operative note was reviewed to see if a bladder flap was completed. Data were analyzed using the chi-squared test and Student's t-test.

**Results:** A total of 8,488 cases were reviewed with 3,838 emergent CS (45%) and 4,650 (55%) scheduled CS. There were 4,292 primary CS (51%) and 4,196 repeat CS (49%). Twenty-eight (0.3%) cases had a bladder injury, and 11 (39%) of these cases had a bladder flap completed. There were no associations between having a bladder injury and maternal age ( $p=0.30$ ), body mass index ( $p=0.28$ ), and gestational age at the time of delivery ( $p=0.68$ ). There were 71 failed operative deliveries, none of which resulted in a bladder injury. There were 25 urogynecology/urology consultations, of which 24 were due to a bladder injury ( $p<0.0001$ ). Those with a bladder injury were more likely to have an emergent CS (64%) than those with no bladder injury (45%),  $p=0.04$ . Those with a bladder injury were also more likely to have a repeat CS (75%) than those with no bladder injury (49%),  $p=0.01$ .

**Conclusions:** Bladder injury at the time of CS is uncommon (0.3%). We found an association between bladder injury and emergent CS as well as repeat CS. If a bladder injury occurs, a urologist or urogynecologist is likely to be called in for evaluation and repair.