Introduction: Arterial and central venous catheterization may be difficult in infants due to the small diameter of the vessels. It may be even harder in patients with Down Syndrome, which is associated with congenital abnormalities or defects affecting almost all organs including vascular and musculoskeletal systems. In this retrospective study, our aim was to compare the difficulties in vascular access interventions in infants with or without Down Syndrome undergoing congenital heart surgery.

Methods: Anesthesia records of infants with Down Syndrome aged between 0-36 months and scheduled for congenital heart surgery (Group I, n=61) were reviewed and compared with age and pathology matched control group without Down Syndrome (Group II, n=61) undergoing congenital heart surgery. Age and weight of each patient; peripheral venous, arterial and central venous cannulation sites; anesthesiologists performing each procedure and whether the performer is a resident or attending; the number of performers and attempts for each catheterization; time to complete all cannulations were recorded. Statistical analysis was performed with Mann-Whitney U and Chi-square tests.

Results: Both groups were similar with respect to age and weight. Incidence of external jugular or femoral vein cannulation as a result of unsuccessful peripheral venous cannulation in either of the four extremities were higher in Group I (p=0.026). The success rate of radial artery cannulation, which is the site of preference in our clinic, was lower in Group I (p=0.048). Altough total number of attempts for arterial cannulation was higher in Group I, the difference was not statistically significant (p=0.058). However, the number of attempts of the performer who could cannulate the artery was significantly higher in Group I (p=0.011). There was no difference between the groups when the site and number of attempts for central venous catheterization were compared, but with respect to performers, attending/resident ratio was higher in Group I (p=0.037). Time to complete all cannulations were similar in both groups.

Conclusion: Although abnormal arterial patterns in the forearm of patients with Down syndrome have been previously reported, there is no evidence based data regarding catheterization skills in infants with this syndrome. Our findings demonstrate difficulty in peripheral venous, arterial and central venous catheterizations in infants with Down Syndrome and may further indicate the need for more experienced physicians to perform the cannulations in these patients.

References: