Nuchal translucency discordance in patients with TTTS requiring laser treatment
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Objective
First trimester nuchal translucency (NT) abnormalities in monochorionic (MC) twins have been shown to be associated with the development of Twin to Twin Transfusion Syndrome (TTTS) and fetal demise in an unselected population. However, the prevalence and relevance of NT abnormalities in patients with TTTS has been less well-studied. We hypothesized that amongst patients with TTTS, a history of NT abnormalities would be associated with more severe TTTS such as earlier presentation and a higher stage at presentation, and would not be associated with an increased risk for genetic abnormalities such as would be expected in dichorionic twins with NT differences.

Methods
This is a retrospective cohort study of patients with complicated MC twins seen at the Johns Hopkins Center for Fetal Therapy. Patients who underwent fetoscopic laser surgery for TTTS and had available first trimester data were included. We identified 295 pregnancies who underwent fetoscopic laser surgery for TTTS from 7/2014 – 12/2020, however only 152 had available first trimester data. Patients who had NT discordances of >= 20% or an abnormal NT >95th percentile (N=63, 41.5%) were compared to patients with normal NT in the first trimester (N=89, 58.6%). All patients were offered genetic amniocentesis at the time of their laser. Groups were compared for maternal and fetal characteristics, TTTS characteristics, obstetric complications, and survival. Multivariate models were used to explore the adjusted relationship between sFGR and abnormal NT.

Results
Abnormal and normal NT groups had statistically similar rates of early diagnosis and advanced stage TTTS, however comorbid sFGR was more common in the abnormal NT group (52.4% vs 32.6%, p=0.01). Multivariate models further suggest abnormal NT is an independent predictor of sFGR after controlling for CRL discordance (>= 20% vs < 20%) (OR: 2.12, 95% CI: 1.09 – 4.15). Genetic testing was performed in a similar percentage of patients in both groups (60.3% vs 63.0%, p=0.75) and the results were overwhelmingly normal in both groups (p=1). There was a trend towards a higher proportion of recipient anomalies in the abnormal NT group compared to normal NT group (22.2% vs 12.4% respectively, p=0.11).

Conclusion
A history of NT abnormalities is common in patients who develop TTTS. Patients who develop TTTS and have a history of NT abnormalities were more likely to have co-morbid sFGR. Genetic abnormalities were not more prevalent in the abnormal NT group. There may be a trend towards an increased proportion of recipient anomalies in the abnormal NT group; this finding warrants further study.