

Seven Years of Invasive Prenatal Testing at a Single Tertiary Centre: A Comprehensive Safety Analysis of 4,919 Procedures Across Five Procedure Groups

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Objectives

Next-generation sequencing (NGS) techniques have recently transformed the understanding of the overall prevalence of genetic disorders in both the general and high-risk fetal populations.

Our objective was to analyse a 7-year experience at a single tertiary centre with invasive prenatal testing and to compare complication rates across different techniques and trimesters.

Methods

Single-centre retrospective study (2018–2025) of patients undergoing diagnostic invasive procedures: chorionic villus sampling (CVS); standard amniocentesis singleton (SAS, GA 15–22 weeks); standard amniocentesis twin (SAT); late amniocentesis singleton (LAS, GA ≥28 weeks); and late amniocentesis twin (LAT). CVS was performed transcervically in 87.9% of cases and transabdominally in 12.1% (G20 needle 10.3%, G18 needle 1.8%). Procedure-related complications were defined as events occurring within 14 days of the procedure; pregnancy loss was confirmed by chart review.

Results

We analysed 4,919 invasive procedures performed over the study period: CVS (n=497), standard amniocentesis singleton (SAS, n=3,955), standard amniocentesis twin (SAT, n=133), late amniocentesis singleton (LAS, n=326), and late amniocentesis twin (LAT, n=8). Annual volumes remained stable throughout. SAS was performed mainly for maternal age or request (93.2%) and less often for fetal findings (5.3%); LAS was performed mainly for fetal anomaly (65.6%) and suspected fetal infection (8.3%).

4,919 Total invasive procedures (2018–2025)	5 Procedure groups compared
0.1% Pregnancy loss — SAS	0% Losses in CVS, SAT, and LAT
0.92% vs 0.00% PPROM: LAS vs SAS (p<0.001)	1.84% vs 0.33% ER/hospitalisation: LAS vs SAS (p=0.002)

Pregnancy loss occurred only in the SAS group; no procedure-related losses occurred in the CVS, SAT, or LA groups. Chorioamnionitis occurred in 0.03% of SAS procedures. SAT showed numerically higher ER attendance (6.0%) and hospitalisation (1.5%) than SAS, though the difference did not reach statistical significance. No complications occurred after LAT.



Figure 1. Procedures by Group (N = 4,919)

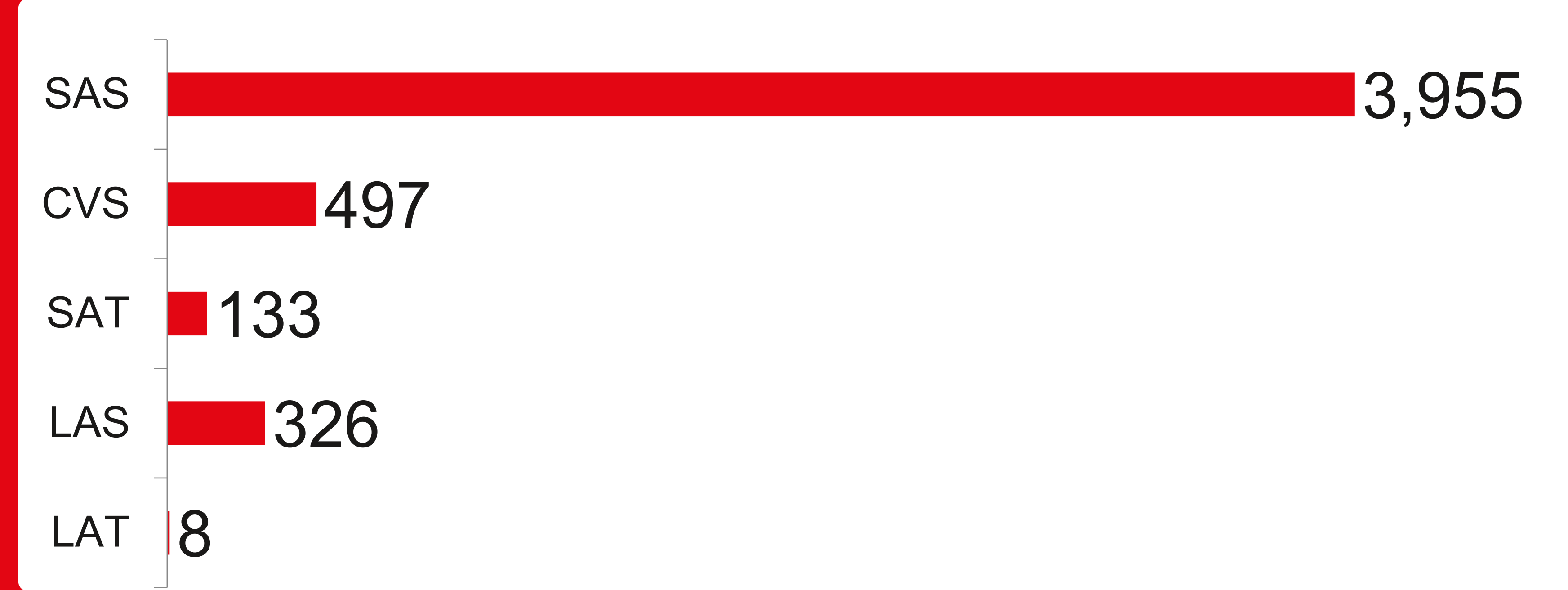


Table 1. Safety Outcomes by Procedure Group

Group	N	Loss %	PPROM %	ER att. %	Hosp. %
CVS	497	0.00	—	—	—
SAS	3,955	0.10	0.00	—	0.33
SAT	133	0.00	—	6.0	1.5
LAS	326	0.00	0.92*	—	1.84*
LAT	8	0.00	0.00	0.00	0.00

* LAS vs SAS: PPRom p<0.001; ER/hospitalisation p=0.002. "—" = not separately reported.

Conclusion This 7-year series demonstrates distinct risk profiles across procedure groups. Transcervical CVS demonstrated a very safe profile, with no procedure-related losses in the presented sample . SAS carries a pregnancy loss rate consistent with contemporary benchmarks. LAS carries a low rate of PPRom and hospitalisation, supporting its safety when late investigation is clinically required — providing a comprehensive contemporary safety reference for invasive prenatal testing counselling. for CVS and twin's procedures larger number are needed to establish a more reliable incidence of complications.

Keywords
invasive prenatal testing · Chorionic villus sampling · Amniocentesis