

# The effect of asymptomatic bacteriuria on preterm birth among monochorionic multiple pregnancies following fetoscopic surgery

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## Introduction

Fetoscopic surgery has emerged as a standard approach for addressing complications arising in monochorionic twins. However, the incidence of preterm prelabor rupture of membranes (PPROM) and preterm birth (PTB), following such interventions, remains significant. No established protocol exists for infection screening or antibiotic treatment following fetoscopic surgery.

## Methods

Retrospective analysis of 107 patients who underwent fetoscopic laser coagulation of the inter-twin communicating placental vessels or ultrasound guided bipolar cord coagulation at a single center from September 2018 to January 2023.

All cultures, including preoperative (beginning the first trimester), operative, postoperative, delivery, and postpartum, were reviewed. In addition, urine and cervical cultures were collected at the diagnosis of PPRM with placental cultures obtained following each PTB. We evaluated bacterial growth, antibiotic resistance, and the association of positive cultures with PTB or PPRM.

CULTURE type	preoperative hospitalization	post operative pregnancy	postoperative hospitalization	labor and PP
positive cultures	17 (15.74%)	4 (3.70%)	36 (33.33%)	22 (20.37%)
Source				
urine	17 (100%)	3 (75%)	32 (88.88%)**	5 (22.72%)
cervix		1 (25%)	3 (8.33%)*	
amnion sac			1 (2.78%)	
placenta & uterus				17 (77.27%)
Major drug resistance (ESBL, CRE)	0	1 (25%)	2 (5.55%)	2 (9.09%)
Total Drug resistance	7 (41.18%)	2 (50%)	19 (52.78%)	9 (40.91%)
ampicilin/macrolid resistance	1 (5.88%)	2 (50%)	8 (22.22%)	5 (22.73%)

## Results

One hundred and seven patients underwent fetal intervention at a mean gestational age of  $19.6 \pm 2.8$  weeks. 77 (71.3%) underwent fetoscopy laser surgery due to twin-to-twin transfusion syndrome (TTTS), and 30 (28.7%) underwent ultrasound-guided bipolar cord coagulation for fetal selective reduction. PPRM before 34 gestational weeks occurred in 28 women (26.1%). Thirteen women (16.9%) had positive urine cultures prior to fetal intervention, which was identified as a significant risk factor for PPRM (odds ratio 5.07, 95% confidence interval, 1.05-24.4). After intervention, 56 women (52.3%) had positive urine or placental cultures, with 50% showing drug resistance. Drug-resistant positive cultures were more common in women delivering before 34 weeks (30% vs. 5.6%,  $p=0.03$ ). In the PPRM<34 weeks group, 32% had positive urine culture at admission, and 28.6% had positive placental culture at delivery, with 55% urine and 62.5% placental cultures showing drug resistance.

## Conclusion

Positive urine culture before invasive fetal therapy in monochorionic twins increases PTB risk. Therefore, we suggest routine pre-intervention screening. Moreover, due to the high incidence of drug resistance, broad-spectrum antibiotics should be considered when PPRM occurs. Further randomized controlled trials and validation are needed.