

The Impact of Intrauterine Growth Restriction on Outcomes of Congenital Heart Surgery

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Introduction

- ✦ Intrauterine growth restriction (IUGR) is a common pregnancy complication that has been linked to perinatal morbidity and mortality.
- ✦ IUGR has the potential to impact outcomes of congenital heart surgery.
- ✦ To date, this issue has not been addressed in the literature.
- ✦ We explore this potential impact using a retrospective chart review.

Methods

- ✦ Matched-pair case control study
- ✦ Patients from Children's Hospital of Wisconsin (CHW)
- ✦ **Cases:** 39 IUGR patients with congenital heart surgery under 1 year of age from 1/2000 to 1/2013.
- ✦ **Controls:** appropriately matched (1:1) non-IUGR control
- ✦ Gestational age, age at procedure, diagnostic category, and case complexity (RACHS).
- ✦ Assessment of accuracy of matching and comparison of clinical outcomes (Table 1, Figure 1).

Results

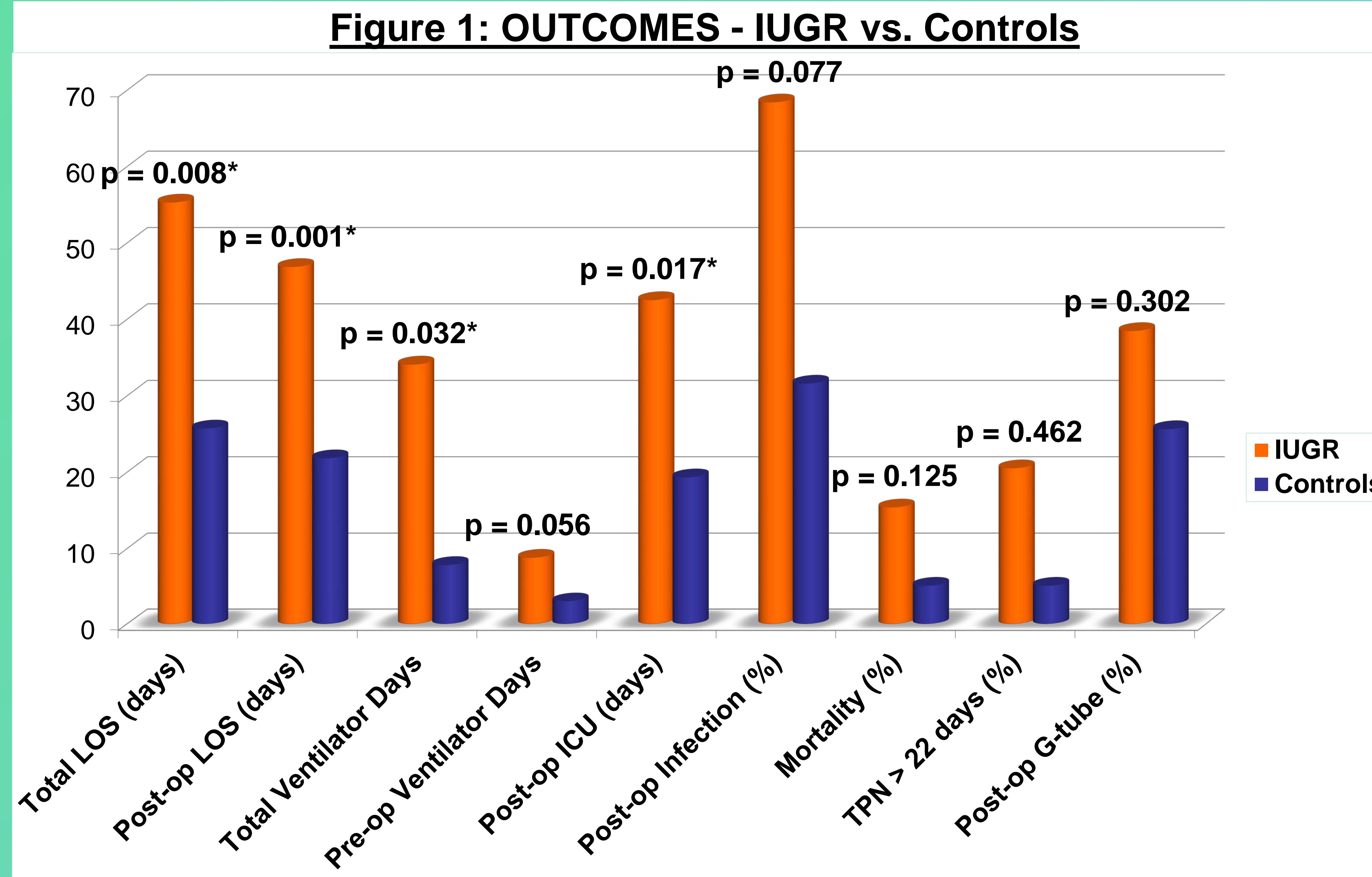


Table 1. Preoperative Characteristics and Assessment of Matching of Cases and Controls

	Cases (n = 39)	Controls (n = 39)	P-Value
Gestational age (no, %)			
<32 weeks	9 (23.1%)	6 (15.4%)	0.223
32-37 weeks	11 (28.2%)	14 (35.9%)	
>37 weeks	18 (46.2%)	18 (46.2%)	
RACHS Score (no, %)			
1	4 (0.3%)	5 (12.8%)	0.223
2	9 (23.1%)	9 (23.1%)	
3	15 (38.5%)	15 (38.5%)	
4	2 (5.1%)	3 (7.7%)	
5/6	3 (7.7%)	3 (7.7%)	
Not Categorized/Eligible	6 (15.4%)	4 (10.3%)	
Diagnostic Group (no, %)			
SV Norwood	5 (12.8%)	6 (15.4%)	>0.9
SV NonNorwood	4 (10.3%)	4 (10.3%)	
Bivent Cyanotic	6 (15.4%)	7 (17.9%)	
Bivent Acyanotic	23 (59.0%)	22 (56.4%)	
Other	1 (2.6%)	0 (0.0%)	
Age at Procedure (no, %)			
0-31 days	19 (48.7%)	20 (51.3%)	0.074
1 month – 6 months	17 (43.6%)	11 (28.2%)	
6 months – 1 year	2 (5.1%)	7 (17.9%)	

Results

- ✦ IUGR group had a significantly longer total length of hospital stay (LOS) (\bar{x} = 55.3 days, p = 0.008), a longer post-operative LOS (\bar{x} = 46.9 days, p = 0.001), and post-operative ICU LOS (\bar{x} = 42.5 days, p = 0.017).
- ✦ The IUGR group also had a significantly higher total number of mechanical ventilation days (\bar{x} = 75.7 days, p = 0.032).
- ✦ Non-significant increase in nutritional support measures.
- ✦ In-hospital mortality not significantly different.

Conclusions

- ✦ In this preliminary analysis, IUGR status was associated with significantly longer ICU and total lengths of stay, as well as longer duration of mechanical ventilation.
- ✦ Implications for resource utilization and defining benchmarks.
- ✦ Need for further investigation:
 - ✦ Increase numbers in matched cohort
 - ✦ Extended follow-up with additional outcome measures
 - ✦ Assessment of total charges

Acknowledgements

Funding: American Association for Thoracic Surgery (AATS) and MCW Department of Surgery
 Statistical Analysis: Ray Hoffman, PhD, Quantitative Health Sciences, MCW
 Input and Guidance: Mary Krolikowski, RN, MSN

