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BACKGROUND

- Coronavirus disease 2019 (COVID-19) is a highly contagious respiratory disease caused by the novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
- COVID-19 is associated with high perioperative morbidity and mortality among adults.^{1,2}
- The perianesthesia risks associated with COVID-19 among children are unknown.
- Data describing perianesthesia complications among children with SARS-CoV-2 will aid in clinical decision making and expectant management for affected children.

METHODS

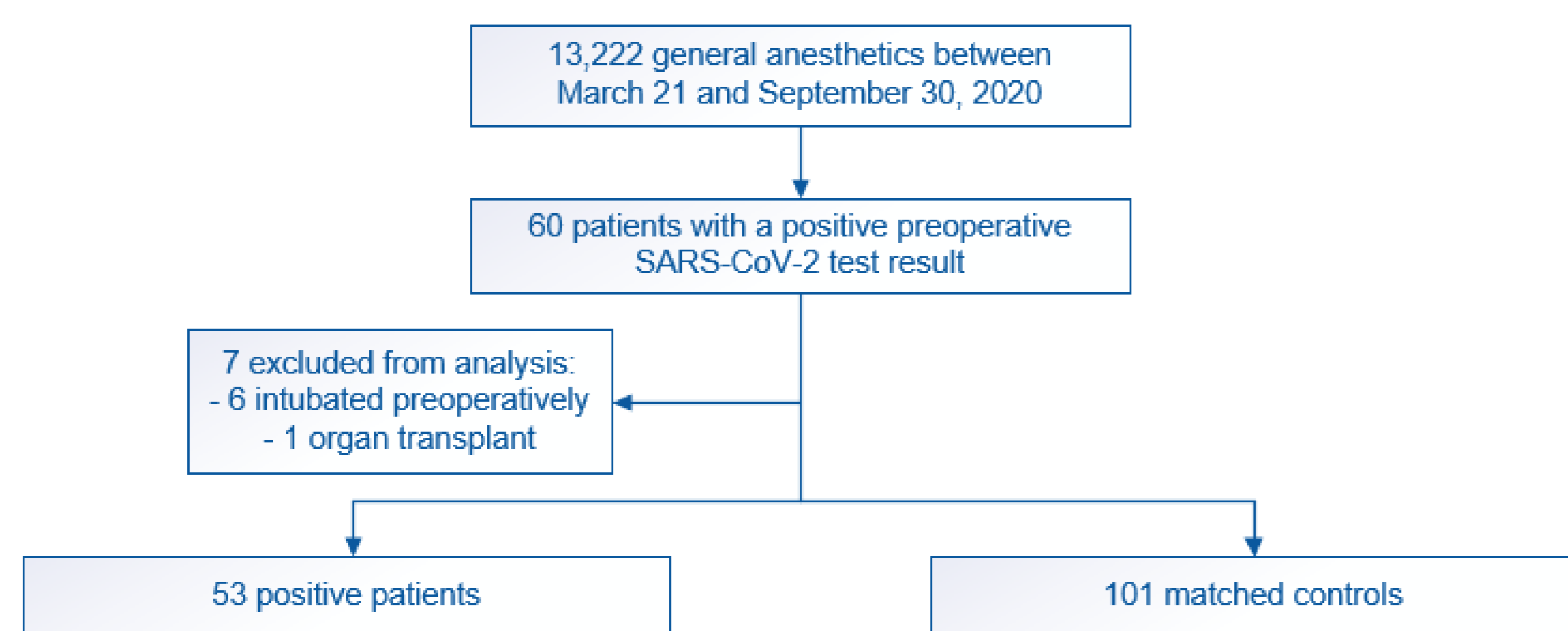


Figure 1. Study flowchart.

Inclusion criteria:

- Age 19 years or less
- Undergoing general anesthesia for a surgical procedure or imaging study

Exclusion criteria

- Patients intubated preoperatively
- Undergoing organ transplant surgery

Primary Outcome: incidence of intra- or postoperative respiratory complications.

Secondary Outcomes:

- Intra- or postoperative non-respiratory complications
- Unanticipated admission to the intensive care unit
- Length of hospital stay
- Mortality

RESULTS

Characteristic	SARS-CoV-2 Negative (N=101)	SARS-CoV-2 Positive (N=53)	P Value
Gender			
Female	47 (46.5%)	23 (43.4%)	0.74 ¹
Male	54 (53.5%)	30 (56.6%)	
Age in years	10 (4,13)	10 (4,14)	0.75 ²
Weight in kilograms	39 (20,58.7)	40.9 (19,65.9)	0.98 ²
ASA Classification			
1	6 (5.9%)	3 (5.7%)	0.97 ¹
2	46 (44.6%)	23 (43.4%)	
3	45 (44.6%)	24 (45.3%)	
4	4 (4.0%)	3 (5.7%)	
Race/Ethnicity			
Non-Latino White	64 (63.4%)	44 (83.0%)	0.04 ¹
Non-Latino African American	16 (15.8%)	5 (9.4%)	
Latino	4 (4.0%)	2 (3.8%)	
Other	17 (16.8%)	2 (3.8%)	
Anesthetic Induction			
Intravenous	93 (92.1%)	52 (98.1%)	0.20 ¹
Inhalation	8 (7.9%)	1 (1.9%)	
Airway Management			
Endotracheal Tube	74 (73.3%)	47 (88.7%)	0.003 ¹
Laryngeal Mask Airway	20 (19.8%)	1 (1.9%)	
Natural or Mask Airway	7 (6.9%)	5 (9.4%)	
Preoperative Fever			
Yes	88 (87.1%)	42 (79.2%)	0.24 ¹
No	13 (12.9%)	11 (20.8%)	

1. Fisher's exact test determined the statistical significance for differences in the distribution of categorical variables between groups.
2. Wilcoxon Rank Sum Test determined the statistical significance for differences between non-parametric continuous variables. Unless otherwise noted, data is presented as median (interquartile range)

Table 1. Descriptive Statistics on Baseline Characteristics Stratified by SARS-CoV-2 Infection Status.

- Positive SARS-CoV-2 test was associated with a **higher incidence of respiratory complications.**
- There was no unanticipated admission to the neonatal or pediatric intensive care unit in either group.
- All children included in the study survived to hospital discharge or were alive through 30 days after the procedure.

RESULTS

Outcome	SARS-CoV-2 Negative (N=101)	SARS-CoV-2 Positive (N=53)	P Value
Respiratory Complications	1 (1.0%)	6 (11.3%)	0.007 ¹
Risk Difference	10.3% (1.3-19.1)		
Risk Ratio	11.4 (1.4-92.5)		
Other Complications	1 (1.0%)	4 (7.5%)	0.05 ¹
Risk Difference	6.6% (-0.8-13.9)		
Risk Ratio	7.6 (0.87-66.5)		
Any Complication	2 (2.0%)	8 (15.1%)	0.003 ¹
Risk Difference	13.1% (3.1-23.1)		
Risk Ratio	7.6 (1.68-34.6)		
Length of Hospital Stay in days	0 (0,4)	2 (0,6)	0.05 ²
Mortality	0	0	n/a

1. Wilcoxon Rank Sum Test determined the statistical significance for differences between non-parametric continuous variables.
2. Fisher's exact test determined the statistical significance for differences in the distribution of categorical variables between groups. Risk difference and ratio are presented with 95% confidence interval. Unless otherwise noted, data is presented as median (interquartile range)

Table 2. Primary and Secondary Outcomes.

CONCLUSION

- Compared to adults, non-intubated children with acute SARS-CoV-2 infection who undergo anesthesia have a low rate of intra- and postoperative adverse events and complications were less likely to be severe.³
- Pediatric patients with positive preoperative SARS-CoV-2 testing had higher rates of perianesthetic complications.
- The incidence and severity of respiratory complications associated with SARS-CoV-2 infection was similar to what has been described in the presence of a general upper respiratory tract infection.⁴

Limitations:

- Unable to adjust for all confounders
- Underestimation of rate of complications due to retrospective nature of study
- A positive SARS-CoV-2 test result may be a result of viral shedding rather than active infection
- Incidence and severity of COVID-19 is variable in distinct regions

References

1. Collaborative CO. Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study. *Lancet*. 2020;396(10243):27-38.
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4. Ramgolam A HG, Zhang G, Hegarty M, von Ungern-Sternberg BS. Inhalational versus IV induction of anesthesia in children with a high risk of perioperative respiratory adverse events. *Anesthesiology*. 2018;128(6):1065-1074.