

Predicting Poor Outcomes Following Pediatric Hepatectomy

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Introduction

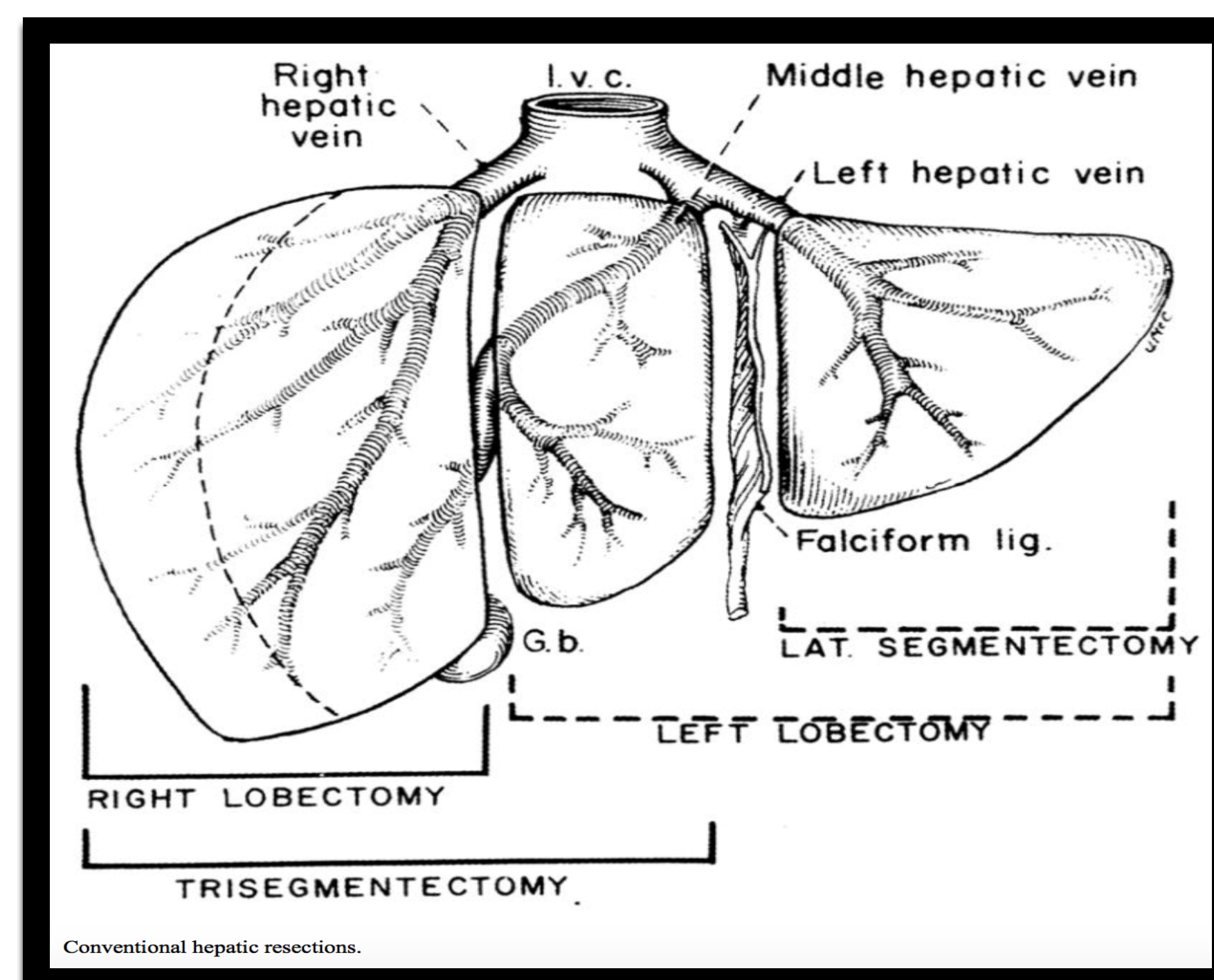
- Despite improvements in care for pediatric patients undergoing hepatectomy, postoperative morbidity and mortality remain high in this population. (1)
- Studies have evaluated outcomes for hepatic resections in pediatric patients with malignancy
- There are no studies identifying predictors for poor postoperative outcomes for all-comers undergoing hepatectomy.

Project Goals

- Determine the preoperative characteristics and intraoperative factors associated with increased risk for poor outcome following pediatric hepatectomy.
- Hypothesis: surgical complexity, increased operative time, larger hepatic resection and malignancy would independently predict for postoperative complications

Methods

- The Ann & Robert H. Lurie Children's Hospital of Chicago Institutional Review Board deemed this study as exempt
- Methods and reporting of the study adhered to the Transparent Reporting of a multivariable prediction model for Individual Prognosis or Diagnosis statement.
- Using ACS NSQIP-P, pediatric patients (<18yo) undergoing hepatectomy from from January 1, 2012 to December 31, 2013, were identified using CPT codes for partial lobectomy, trisegmentectomy, total left lobectomy, and total right lobectomy
- A total of 185 patients were identified. (2)



Composite complication	
Unplanned reoperation	Pulmonary embolism
Venous thrombosis	Cardiac arrest
Sepsis/septic shock	Deep wound dehiscence
Organ space infection/deep incisional infection	Renal insufficiency/acute renal failure
Pneumonia	Prolonged ventilation (>48 hours)
Coma	Death
Reintubation	

Results

Postoperative Diagnosis	N	%
Malignant Neoplasm of Liver Primary	103	56.28
Benign Neoplasm of Liver and Biliary Passages	17	9.29
Malignant Neoplasm of Liver Secondary	7	3.83
Unspecified Disorder of Liver	7	3.83
Other Specified Disorder of Liver	6	3.28

Complication Type	All Patients (185)
Unplanned reoperation	14 (7.57)
Sepsis/septic shock	13 (7.03)
Prolonged ventilation	9 (5.03)
Organ space infection/deep incisional infection	7 (3.78)
Venous thrombosis	3 (1.62)
Reintubation	1 (0.54)
Pneumonia	1 (0.54)

Results

Composite Complication: Independent Predictors (Multivariable Logistic Regression)

	OR	95% CI	P value
White	0.30	0.12-0.72	0.0073
Esophageal/Gastric/Intestinal Disease	3.01	1.1-8.3	0.0323
Active Cancer	2.94	0.98-8.82	0.0540
Vascular Reconstruction	5.37	1.24-23.15	0.0243

Conclusions

- Postoperative complications occur following pediatric hepatectomy with an incidence of 16.22%.
- The most common complications were unplanned reoperation, sepsis, and prolonged postoperative ventilation
- Independent predictors for postoperative complications were concomitant GI disease, active cancer, and vascular reconstruction.
- As in adult studies (3), white race was associated with decreased complications.
- Neither hepatectomy type nor operative time predicted poor outcomes.

References

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3. Nathan H, Frederick W, Choti MA, Schulick RD, Pawlik TM. Racial Disparity in Surgical Mortality after Major Hepatectomy. *J Am Coll Surg.* 2008;207(3):312-319.
4. (Image) Shunzaburo Iwatsuki, MD and Thomas E. Starzl, MD, PhD Hepatectomy in Children *Int Adv Surg Oncol.* 1982; 5: 163-171.