

1-Hour Recovery Time in Subjects Undergoing Percutaneous Liver Biopsy: A Quality Improvement and Patient Safety Project

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Abstract Text

Background: Liver biopsy is an important diagnostic tool in the evaluation and management of liver disease. Currently, there are no guidelines on post biopsy recovery times. This is a prospective observational Quality Improvement and Patient Safety (QIPS) project to assess the safety of a 1-hour post percutaneous liver biopsy recovery time.

Methods: The QIPS project aimed to prospectively evaluate the safety of a 1-hour liver biopsy recovery time in subjects undergoing a clinically indicated liver biopsy at a single medical teaching institution. Consecutive subjects were enrolled between December 2016 and May 2018. All percutaneous biopsies were performed using a 14 gauge Bard® Monopty® core biopsy needle after a site was localized using bedside ultrasound. Biopsies were performed by varying degrees of trainees and staff physicians. Pre and post procedure pain assessment was performed by nursing staff. Subjects received a phone call 24 hour post procedure for reassessment. The electronic medical record was reviewed at least 1 week after the procedure to identify any subjects that presented to the emergency department with procedure related complications.

Results: A total of 456 liver biopsies were performed. The main indication was evaluation of hepatic steatosis. The majority of subjects were Caucasian (69%) with a mean BMI of 33.3 kg/m². A spinal needle was used in 20% of cases to achieve adequate local anesthetic at the level of the liver capsule. 75.5% reported no pain post procedure. Less than 8% of subjects reported a pain level above 5 and 13.2% required post-procedure pain medications. There were three serious complications: two cases of hemorrhage and one pneumothorax. All complications were detected during the 1-hour recovery time. Subjects with serious complications had a higher BMI (35 kg/m² vs 33.3 kg/m²) and hepatic steatosis was the indication for liver biopsy. 79% of subjects were discharged in less than 90 minutes post procedure, and 50% of subjects were discharged 1-hour post intervention. Overall complication rate after 24 hours was (0.7%). There were no mortalities.

Conclusion: Our Quality Improvement and Patient Safety project demonstrates that a 1-hour recovery time identifies all major complications. The most common complication was pain level above 5 requiring additional medications that prolonged recovery. A 1-hour liver biopsy recovery time appears to be adequate to identify major complications and shorten post procedure stay.

Table 2. Descriptive Statistics for the study variables

Variable	Mean (SD)	N (%)
Age	33.3 (9.38)	
BMI	33.3 (6.10)	
Race		
Caucasian		344 (69.5%)
African American		50 (10.0%)
Asian		20 (4.0%)
Other		42 (8.4%)
Ethnicity		
Non hispanic		301 (60.4%)
Hispanic		155 (31.1%)
Indications		
NAFLD		381 (76.5%)
Alcohol related hepatitis		21 (4.2%)
Viral hepatitis		1 (0.2%)
Other		53 (10.6%)
Pre procedure Pain		
No pain		448 (98%)
Pain level 1		5 (1.0%)
Pain level 4		2 (0.4%)
Pain level 7		1 (0.2%)
Pre Biopsy Procedure		
None		341 (88.5%)
Oxycodone		22 (5.4%)
CSP		65 (13.3%)
USS		23 (4.8%)
Attending Physician		
Paredes		309 (72.1%)
Morales		47 (9.4%)
Other		50 (10.0%)
Follow		
None		122 (24.5%)
PDR		223 (44.8%)
PDR1		90 (18.2%)
PDR2		21 (4.2%)
Number of Pains		
1		426 (85.5%)
2		29 (5.8%)
3		1 (0.2%)
Sedation		
None		11 (2.2%)
Versed/Demoral		109 (22.0%)
Versed/Demoral/		275 (54.8%)
Lidocaine		53 (10.6%)
Spinal Needle		
No		357 (71.7%)
Yes		99 (19.9%)
Immediate Complication Post procedure		
No		453 (91%)
Yes		3 (0.6%)
Pain 1-hr Post procedure		
None		376 (75.5%)
Pain level 1		7 (1.4%)
Pain level 2		14 (2.8%)
Pain level 3		9 (1.8%)
Pain level 4		11 (2.2%)
Pain level 5		11 (2.2%)
Pain level 6		10 (2.0%)
Pain level 7		7 (1.4%)
Pain level 8		6 (1.2%)
Pain level 9		2 (0.4%)
Pain level 10		1 (0.2%)
Post Intervention Meds		
None		396 (79.5%)
NSAIDs		44 (8.8%)
Opioids		12 (2.4%)
Other		2 (0.4%)
Other		1 (0.2%)
Recovery time (hr., min)		
<1		252 (50.6%)
1:15		59 (11.8%)
1:30		81 (16.2%)
1:45		28 (5.6%)
2		31 (6.2%)
>2		1 (0.2%)
Complications after 24 hours		
No		453 (99.3%)
Yes		3 (0.7%)

Continuous data is reported as mean (SD) and categorical data as n (%)

Disclosures

The following people have nothing to disclose: Amilcar L. Morales-Cardona, Angelo H. Paredes, Guy Dooley, Billy Joe Liane
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