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## TRANSJUGULAR ADJUSTED LIVER BIOPSY

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## ТРАНСЪЮГУЛЯРНАЯ ПРИЦЕЛЬНАЯ БИОПСИЯ ПЕЧЕНИ

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Twenty two patients with contraindications to percutaneous liver biopsy were underwent transjugular liver biopsy, because of requirement for histological assessment was continued. Transjugular approach and endovascular passing through hepatic veins allow achieving the zone of surgical interest and perform liver biopsy able to provide specimens of good quality with possibility of histological examination.

*Keywords: liver biopsy, transjugular approach*

Трансъюгулярная биопсия печени выполнена 22 больным, у которых выявлены противопоказания к проведению чрескожной биопсии, но сохранялась необходимость морфологической верификации патологического процесса. Особенности ангиоархитектоники печеночных вен позволяют прицельно проникнуть в зону диагностического интереса эндоваскулярным путем и получить качественный биопсийный материал.

*Ключевые слова: биопсия печени, трансъюгулярный доступ*

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HCC – Hepatocellular Carcinoma  
HPVG – Hepatoportal Venous Gradient  
TIPS – Transjugular Intrahepatic Portosystemic Shunt

TJALB – Transjugular Adjusted Liver Biopsy  
PLB – Percutaneous Liver Biopsy

**P**ercutaneous liver biopsy (PLB) with ultrasound guidance is characterized as the most common procedure with important diagnostic potential in patients with liver diseases [1]. PLB is a procedure with low complication rate. But in patients with clinically demonstrable ascites, a known or suspected severe coagulopathy, platelet count of less than  $50 \times 10^9/L$  standard liver biopsy associated with high risk of life-threatening bleeding to abdominal cavity [2, 3]. Transjugular approach and following biopsy via the hepatic veins reduces the risk of Glisson capsule's perforating and hemoperitoneum. Moreover, hepatic veins' angioarchitectonics allow to achieve a zone of surgical interest using endovascular approach and receive the tissue samples for diagnostic purposes [4, 5].

Aim of the study was to analyze retrospectively the results of transjugular adjusted liver biopsy (TJALB) and to compare our results with those presented in literature. Also we objective to estimate of possibility to perform TJALB of different liver segments for increase the efficiency of the procedure. TJALB is performed in an interventional radiology operation room with strictly aseptic rules, control of patient's vital signs and heart monitoring to detect arrhythmia during catheter passing through right atrial sinus.

**Material and Methods.** Twenty two patients underwent TJALB in our clinic in 2015–2018. All of these patients have contraindications for using routine PLB due to severe coagulopathy, thrombocytopenia and/or ascites. There were the following indications for TJALB: histological evaluation of the liver in patients with high

risk of hepatocellular carcinoma (HCC) and assistance for make therapeutic decisions in chronic viral liver disease. In 4 patients TJALB was an independent procedure and in 18 patients with liver cirrhosis – as a phase of transjugular intrahepatic portosystemic shunt (TIPS). Our experience of TIPS creation is 230 patients with complicated cirrhotic portal hypertension operated on in 2007–2018, so we haven't any technical difficulties performing TJALB in 2015–2018. The semi-automatic system Quick-Core® Biopsy Needle, which allows to receive less fragmented samples were used in all cases.

**Results and Discussion.** TJALB was technically successful in all 22 (100 %) patients. Seventy five samples were received (3.4 on an average from patient) with mean size of the specimen  $11.6 \pm 3.8$  mm and 90.1 % of following histologic success. The mean number of portal triads (complete portal tracts) per core sample was  $8.1 \pm 2.3$  (range 6–21). According to literature, specimens with more than 6 CPT are reflecting a good quality of procedure. Sample's fragmentation was noticed in 30 %. The difference between cases of liver tissue with and without cirrhosis was no noticed. The mean time of procedure – 34.0 min (range 12–47). Histological assessment revealed HCC in 3 patients, colorectal metastases – in

1 and allowed to establish a stage of viral hepatitis in 17 patients, which provided an effective management. The post-biopsy transitory abdominal pain was only in one case among 4 patients, who underwent the independent procedure. Neck hematoma was noticed in 2 patients. There were no capsular perforations. Careful passes of biopsy needle not too close to the Glisson's capsule may prevent this complication. So, the overall complications' rate was 13.6 % without major complications and death. Postoperative period for patients with combination of TJALB with TIPS was comparable with after TIPS procedure alone. There was no mortality. The measurement of hepatoportal venous gradient (HPVG) during TJALB procedure is possible by measuring of the wedge pressure and hepatic venous pressure. Result of HPVD is actual for treatment of portal hypertension.

**Conclusions.** TJALB is an effective diagnostic procedure for high-risk patients characterized by low morbidity and mortality. It allows performing liver biopsy if patient has any contraindications to standard PLB but requirement in histological assessment continued. TJALB is able to provide specimens of good quality with possibility of histological examination. It's necessary to emphasize that only an experienced interventional radiologist has to perform the TJALB procedure.

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#### Disclosures:

The authors declare no conflict of interest.

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