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Letter to the Editor

Comment on The Transition to Microsurgical Technique for Hepatic Artery Reconstruction in Pediatric Liver Transplantation

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To the Editor,

We read the article recently published by Nickel and colleagues, titled "The transition to microsurgical technique for hepatic artery reconstruction in pediatric liver transplantation" published in Plastic and Reconstructive Surgery with great interest.[1] Authors concluded that microsurgical anastomosis using operating microscope (OM) significantly decreased the hepatic artery thrombosis (HAT) and provided higher graft survival when compared with conventional loupe-assisted anastomosis in pediatric liver transplantation (LT).

We would like to share our opinion and critiques about this valuable work:

1. In our opinion retransplantation cases should be included in the studybecause the success of hepatic artery reconstruction (HAR) can be extremely difficult in retransplantation. For this reason this is one of the most important parameters that will show technical success of the hepatic artery anastomosis (HAA) of the center.
2. The authors have contradicted themselves because they have considered the HAT rates within 60 days but did not evaluate the HAT cases due to other causes after that. Majority of HAT cases occur after the first 5 days are unrelated to the technical issues in HAR.[2] Postoperative first 5 days is the optimal interval in any research aiming HAT and the technical aspects of HAR.
3. HAR in partial left lobe liver grafts has some unique technical challenges. Initially, the bulk of left lobe liver grafts can hinder the graft hepatic arteries. This results in technical problems in HAR in infants who have a very small abdominal cavity. In such an environment docking an OM to perform HAR is extremely challenging. Furthermore, the sequence of vascular and biliary reconstructions in left lobe liver grafts is also very important. For this reason, we choose to perform Har before portal vein anastomosis. Following the portal vein anastomosis, the graft is perfused and once the patient is hemodynamically stable, hepatic arterial inflow is provided. In our opinion, using OM in this environment is technically very difficult.
4. The study groups that are compared in the present study is not uniform. In the conventional cohort, the

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authors used 3.5/4.5 times magnified surgical loupes and the 7/0 Polypropylene sutures were used for anastomosis. On the other hand, in the OM group 9/0 Polypropylene sutures were used. The conventional cohort the conditions are unfavorable and therefore the results were inferior to the OM group. Nevertheless, although the authors reported the HAT rates in conventional and OM cohorts as 8.3% and 2%, respectively, these did not reach statistical significance. We suggest using 8.5 times magnified surgical loupes for HAR which has excellent results in our institute.[2]

5. In conventional cohort, the authors reported 15 cases with HAT but they did not include 8 cases with primary non-function who also had HAT. The primary non-function could have been due to the HAT in these 8 patients. If these 8 patients are added, there will be 23 patients (12.8% HAT rate) in the conventional cohort which would be an unacceptably high rate.
6. The authors have stated that "HAR with OM occurs in 39.3 minutes more time". We believe this duration is questionable because docking of OM, performing anastomosis, and undocking of the OM usually takes longer than the extra time that is stated. One important point that needs to be emphasized is the fact that arteries of the left lobe liver grafts are shorter and the anastomosis is technically more challenging under OM. Therefore, our initaial experiences also show that undocking of OM from the operation site prolongs the LDLT procedure by by at least an hour. The prolonged operative time causes a prolonged ICU-stay of the patients; which is what the authors have observed in their study.
7. The autgors have observed higher retransplantation rates in the conventional cohort. We believe this is due to higher rate of Hat (12.8%) observed in this group.
8. In our opinion, it is not correct to assume that shorter cold ischemia times leading to decreased HAT rates in living donor liver transplantation (LDLT). If the HAT rates are high in deceased donor liver transplantation (DDLT), it can be attributed to the technical aspects of HAR such as inappropriate sutures (6/0 Polypropylene) and equipment such as 2.5 and 3.5 times magnified surgical loupes.
9. Using OM for HAR requires microsurgeons to be involved in the operation. They are usually not a part of the transplant team. They are consulted at a alter stage of the procedure. They are not fully experienced with the anatomy of epatic artery. Naturally, they are not aware of the importance of the situation because they are not present from the beginning of the procedure. We do not want to imply that anything about their technical expertise, but liver transplantation is a long procedure that requires a dedicated team. The microsurgeons may not be readily available for prolonged procedures requiring the microsurgeons to come later in the afternoon.
10. Lastly, we would like to stress the importance of microsurgical techniques foer the success of HAR. Therefore, adherence to these methods either using OM or high magnification surgical loupes has paramount importance. The use of high magnification loupes have obtained world-wide acceptance and use of operative microscope has declined.[3]

Disclosures

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