

### Specific Comments To Authors:

A nice topic has been chosen for the review. Some remarks: 1) My main concern regarding this manuscript is its language. Every first letter of the words in the title should be capitalized. Punctuation errors and article misuses are widely seen within the abstract and body of the manuscript. I see several spelling errors in addition. Some parts of the text (primarily the abstract) are not coherent or well-structured through paragraphs. Therefore, I suggest proofreading the manuscript. 2) I see the name "Tugce Taskindere Abbasoglu" in the author list. However, my version of the manuscript contains no affiliation regarding her. 3) The title, abstract, and core tip describe that the purpose of this study is to discuss the vascular anatomy of the liver by computerized tomography angiography. However, many main text sections remain distant from this core subject. For instance, the embryologic, histologic, and physiologic descriptions of the liver, as well as picturing the lymphatic and biliary structures, seem unnecessary parts to be included in this manuscript. Instead, I suggest adding information about the CT/CTA protocols, contrast agents, CT vs. CTA regarding their applicability, and the surgical interventions in which vascular anatomy is critical to know. 4) In the "Hepatic Organization" section, adding the definition of the portal triad better clarifies the context. 5) Again in the above part, the authors mention: "The hepatic lobular system is supplied by the branches of the hepatic artery and the portal vein coarsing the periphery yielding centrifugal blood flow and the central vein coarsing the center of the lobule causing centripedal blood flow." The authors probably intend to describe that the blood flows centrifugally from the portal triad; nevertheless, the text seems vague, implying that the lobular system is supplied via this triad from the center to the periphery. "Centripedal" and "coarsing" are two spelling errors evident herein. I suggest rewriting this part. 6) In the "Portal Vein" section, the authors state: "The portal vein branches consecutively in the parenchyme. It finally empties into two intraparenchymal venules which arise at right angles from a distributive vein and have a diameter less than 0.3 mm." It implies that the whole portal vein empties into two small venules. This part is better to be rewritten. 7) Again in the above part, the second paragraph mentions, "Some anatomic variations in the portal venous system cause contraindications for surgery or increase the risk of postoperative complications." The term surgery seems unclear in this sentence. Do the authors mean all the surgical procedures on the liver or some specific surgeries like transplantation? 8) At the end of the above paragraph, where the variations are stated, can the authors add the frequency of all the five mentioned variations instead of only two? 9) In the "Imaging Findings of Disorders of the Portal Vein" section, diverticulitis is mentioned as a reason for portal vein thrombosis. Diverticula may originate from many gastrointestinal regions. Does it mean colon diverticulitis? 10) The end of the above section mentions: "Portal vein aneurysms are rare, accounting for 3% of all venous aneurysms. However they are the second mostly seen visceral aneurysms after splenic artery." Further in the text, the authors state: "Hepatic artery aneurism is the second common visceral aneurism after the splenic artery." This seems controversial. 11) In the "Hepatic Artery" section, the second line states: "Coeliac trunk is an anterior branch of the abdominal aorta branched just after passing through the hiatus aorticus." This implies that the coeliac trunk passes through the hiatus and then branches. 12) In the "Imaging Findings of Disorders of the Hepatic Artery" section, the authors state that the clinical presentation of the hepatic artery occlusion is different from that of a normal liver. However, I see no mention of the clinical manifestations. 13) Again in the above section, this part appears vague: "Hepatic artery aneurysms are seen on CT as well-defined focal enhancing lesions with enhancement pattern following the attenuation pattern of the hepatic arteries on hepatic arterial, portal venous and delayed phases." 14) Can CTA play a role in identifying hepatic vein disorders? If yes, how? Based on the scope of the manuscript, I suggest addressing these questions. 15) I suggest rewriting the final part of the "Conclusion" section as it seems vague: "Awareness of the imaging findings of hepatic

vascular diseases and parenchymal pathologies are crucial for correct diagnosis to prevent potential bad clinical consequences." 16) Many statements in the manuscript remain uncited. 17) About two third of the cited references were published more than ten years ago. If possible, providing a more updated reference list adds much value to this article. 18) Figure 1 legend indicates separate origins of the common hepatic, splenic, and left gastric arteries. A blue arrow points to an area on the abdominal aorta where these arteries directly originate; however, readers may confuse about what this arrow is trying to indicate. Hence, I suggest defining the three arteries with different arrows. This helps readers quickly understand the authors' point. 19) Figure 1 legend mentions the volume rendering but not the primary modality of the image. 20) Figures 3 and 4 show axial contrast-enhanced abdominal CT images. Routinely, radiologic reports harbor the post-contrast phase in which these images were acquired (as mentioned earlier in the manuscript), but the figure legends lack the relevant information.

### **Response to the Reviewer #1:**

1. The biliary system is excluded from the manuscript as the reviewer suggested.
2. The references were updated.
3. The title was corrected as "Clinical anatomy of hepatic vessels by computed tomography angiography: a review".
4. The functions of the liver were revised as the reviewer suggested.
5. References cited for page 3 and 4 were checked and revised.
6. "supply" term in was replaced by "perfusion" and "carries" term was replaced by "provides" in page 3.
7. In page 6: "veins" term was replaced with "portal veins", for liver veins do not running paralel to.
8. In page 6: "behind the head of the pancreas" was replaced with "behind the neck of the pancreas".
9. In page 6: Portal vein perfusion was rewritten as the reviewer suggested.
10. In page 6: "cystic vein" term was replaced by the cholecystic vein" as in other parts of the manuscript.
11. Reference was added for "Portal venous variants account for about 20% of all important variants" at page 7.
12. In page 7 and page 9: for 1,...2,...3,..."commas" were replaced by "semicollons"
13. In page 8: reference was added for "Portal vein aneurysms"
14. Portal venous disorders were revised as the reviewer suggested in page 7 and page 8.
15. Of 'The Michels' classification of the hepatic arterial anatomy' and 'Classical branching of the hepatic artery is observed around 55% of people' in page 8 & 9, references were added.
16. Grammer mistaes were corrected as the reviewer suggested.
17. In page 11:" lymphatics that coarse at the portal triad" was changed to "lymphatics in the postal triad".
18. Additional address was added to 'Budd-Chiari syndrome'.
19. In page 13: for 1,...2,...3,..."commas" were replaced by "semicollons"
20. Limitations of the identification of liver vascular by CTA and comparison with other medical imaging findings were be added in page 13&14.

**Specific Comments To Authors:** Reviewer's Comments RE: Manuscript NO: 80196 Title: Clinical anatomy considerations on vascular components of liver by using computed tomography angiography: A review Summary: Although clinical conditions of the liver vary widely, including

disorders originating from vascular and biliary systems as well as the parenchyma, the title of this review was 'Clinical anatomy considerations on vascular components of liver by using computed tomography angiography: A review', the the biliary systems do not belong to vascular components of the liver, therefore, the biliary systems should not be discussed. ===== The components of the hepatic vascular system (hepatic arteries, portal and hepatic veins, sinusoids, and lymphatics) [Valla et al. Vascular liver diseases on the clinical side: definitions and diagnosis, new concepts. Virchows Arch. 2018;473(1):3-13.]; [DeLeve, et al. Vascular disorders of the liver. Hepatology. 2009;49(5):1729-64.] The review focuses on (1) vascular anatomy of the liver(normal, variants and anomalies); (2) the imaging findings of some acute disorders of the hepatic vessels(normal, variants and anomalies). Computed tomography angiography (CTA) based imaging findings were addressed. There are many publishings relating to the subject of liver vascular (anatomy) diseases, however, in this review, the references cited were a little limited. Some of the references were out of date, and new references are required. Some specific concerns: Page 1: Of 'Clinical anatomy considerations on vascular components of liver by using computed tomography angiography: A review' ===== It has better to rephrase the title. 'by using' ? Page 3: Of 'The parenchyme of the liver plays the crucial role in bile production, protein synthesis, chemical processing of molecules of the body and foreign substances.' ===== These had better be revised. 'bile production' is not the predominant function. ##### Liver has metabolic, immunological, ... functions ===== The liver performs a wide range of metabolic activities required for homeostasis, nutrition and immune defence. For example, it is important in the removal and breakdown of toxic, or potentially toxic, materials from the blood; the regulation of blood glucose and lipids; the storage of certain vitamins, iron and other micronutrients; the synthesis of proteins and clotting factors; the metabolism of amino acids; and bile production. It is involved in a plethora of other biochemical reactions. Since the majority of these processes are exothermic, a substantial part of the thermal energy production of the body, especially at rest, is provided by the liver. Page 3 and 4: More adequate references had better be cited and checked. Page 3: Of 'The liver has a complex vascular anatomy with its unique dual blood supply. The portal vein provides 70% of the hepatic blood flow, while the hepatic artery supplies the remaining 30%'.===== Please replace 'its unique dual blood supply' with 'its unique dual blood perfusion', replace 'provides 70% of' with 'carries 70% of', or use other expressions, for the role of the portal vein is not to supply blood, its main role is to as a canal. Page 6: Of 'The right and left lobes of the liver have arteries, veins and bile ducts running parallel to each other.'===== please replace'veins' with 'portal veins', for liver veins do not running paralel to... Page 6: Of 'The portal vein is formed by the union of the superior mesenteric and splenic veins behind the head of the pancreas at the level of the second lumbar vertebra.' === please replace 'behind the head of the pancreas' with 'behind the neck of the pancreas' Page 6: Of 'Since the main trunk is short, the blood brought by the superior mesenteric vein supplies the right lobe of the liver; left gastric vein, inferior mesenteric vein and splenic vein bring blood to the left lobe; caudate lobe and quadrate lobe receive mixed blood.' === They were not proper, please refer to different literature and check them. Page 6: Of 'and no anastomosis was observed between the intraparenchymal branches.' === communication between portal vein and veins can be encountered sometimes. [Breen, et al. Intrahepatic arteriportal shunting and anomalous venous drainage: understanding the CT features in the liver. Eur Radiol. 2004;14(12):2249-60.] Page 6: Of 'The cystic vein drains into the right hepatic branch of the portal vein.'===== Please replace 'cystic' with cholecystic, as well as in other parts of the paper. Page 6: Of 'Blood in the branches of the portal vein and the hepatic artery flows into the sinusoidal microcirculation.'===== please change 'flows' to 'flow'. Page 7: Of 'Portal venous variants account for about 20% of all important variants:' === It should have reference. Page 7: 1, ...2,... 3,...4...===== The commas should be replaced with semicolons. Page 7: Of 'Portal vein aneurysms are rare, accounting for 3% of all venous aneurysms.'===== It should have reference. Page 7: More abnormalities of portal vein should be

added. Page 8: Of 'gives the cystic artery branch first.'==== The 'cystic' should change to 'cholecystic'. Page 8: Of 'The Michels' classification of the hepatic arterial anatomy' and 'Classical branching of the hepatic artery is observed around 55% of people.' ===== They should have references. Page 9: 1, ...2,... 3,...4...5...,6...,7...,8,...== The commas should be replaced with semicolons. Page10: Of 'Spontaneous dissection may be relted with hyperension'===== The word 'relted' may be incorrect. Page10: Of 'Hepatic artery aneurism is the second common visceral aneurism after the splenic artery. ===== please change 'aneurism' to 'aneurysm'. Page 11: Of 'The lymphatic fluid inside the perisinusoidal and periportal spaces drains into the lymphatics that coarse at the portal triad.' ===== please replace 'coarse' with other word. Page 12: Of 'At its coarse it unites with the cystic duct and form the common bile duct.' ===== please replace 'coarse' with other word. The 'cystic' should change to 'cholecystic'. Page 12: The part of 'hepatic veins' should be moved to next to the part 'hepatic artery' or to the part 'portal vein'. Page 12: Of 'The clinical condition is called the Budd-Chiari syndrome if larger hepatic veins are obstructed.' ===== Additional address should be added to 'Budd-Chiari syndrome'. Page 13: 1, ...2,... 3,...4...== The commas should be replaced with semicolons. Page 13: Limitations of the identification of liver vascular by CTA should be added. A brief comparison with other medical imaging findings may added.

## Response to Reviewer #2:

1. Every first letter of the words in the title were capitalized.
2. Punctuation errors and article misuses within the abstract and body of the manuscript were re-edited.
3. Affiation of "Tugce Taskindere Abbasoglu" was checked.
4. Information about the CT/CTA protocols, contrast agents were added.
5. In the "Hepatic Organization" section, the definition of the portal triad was explained in details.
6. "The hepatic lobular system is supplied by the branches of the hepatic artery and the portal vein coarsing the periphery yielding centrifugal blood flow and the central vein coarsing the center of the lobule causing centripedal blood flow." Sentences were corrected and rewritten.
7. : "The portal vein branches consecutively in the parenchyme. It finally empties into two intraparenchymal venules which arise at right angles from a distributive vein and have a diameter less than 0.3 mm." This part is rewritten.
8. Portal vein distribution section was rewritten.
9. In portal vein thrombosis section: colon diverticulitis was corrected.
10. "Portal vein aneurysms are rare, accounting for 3% of all venous aneurysms. However they are the second mostly seen visceral aneurysms after splenic artery." Further in the text, the authors state: "Hepatic artery aneurism is the second common visceral aneurism after the splenic artery." These controversial parts were rewritten with reference.
11. Coeliac trunk is an anterior branch of the abdominal aorta branched just after passing through the hiatus aorticus." Sentence was corrected.
12. In the "Imaging Findings of Disorders of the Hepatic Artery" section, clinical manifestations part was excluded.
13. "Hepatic artery aneurysms are seenon CT as well-defined focal enhancing lesions with enhancement pattern following the attenuation pattern of the hepatic arteries on hepatic arterial, portal venous and delayed phases." Sentences were reevaluated and corrected.
14. Figures and figure legends were updated.

Thank you for your patience and support.

Your sincerely

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## Round 2

**Specific Comments To Authors:** Some specific concerns: Citations in the body of the review involve 36 references, while there are only 32 references. Please check the references and the citations, making it sure that they are appropriate and accurate. In the section of 'HEPATIC ORGANIZATION': The word 'arrangement' in the lobular cell arrangement is not observed, and this arrangement develops after birth should be corrected as 'arrangement'. In the section of 'HEPATIC ORGANIZATION': The word 'hepatic duct' in The hepatic duct, hepatic artery, portal vein, lymphatics and nerves open horizontally into the porta hepatis, should be corrected as 'biliary duct'. In the section of 'Hepatic artery': The word 'acesory' in Presence of accesory right hepatic artery originating from the superior mesenteric artery;' should be 'accessory'. In the section of conclusion: the word 'Avareness' in 'Avareness of the imaging findings of hepatic vascularization' should be 'Awareness'.-----Please revise in the attached file "80196 Auto\_edited" and reply within seven days, thank you!

**Response to Reviewer #1:** 1. References were checked and corrected. 2. The misused words were corrected ('arrangement' and 'biliary duct' in the hepatic organization section; 'accessory' in the hepatic artery section; 'awareness' in the conclusion section).