

Thanks for comments from editors and reviewers. The following is my reply.
The manuscript has been re-submitted as “Supplementary Material”. The revisions in the manuscript are marked in red.

For Reviewer 1

Comments and revisions

1. Abstract: -Revise for writing: avoid starting sentences with numbers.

We have made revisions.

2. Core tip: -Mention most important and specific results.

We have made revisions. And we reserved following three sentences. If they don't meet the requirements, we can further revise them.

1. “Consisting of construction, display, simulation and measurement functions, the Hisense computer-assisted surgery (CAS) system is a novel and all-around software based on new generation of three-dimensional (3D) reconstruction.” This sentence shows four main functions and two characteristics of the system. “novel” and “all-around” are two characteristics. Based on new generation of three-dimensional (3D) reconstruction, it is novel, which has been discussed in the fourth paragraph of discussion. It is all-around because that the four functions are integrated into the same system. In previous studies, these functions were usually achieved by combining 3-Matics and Mimics.^[1, 2]

2. “Compared with standard PCNL, CAS-assisted PCNL had advantages in terms of the puncturing success rate and stone-free rate.” Our study is one of a few controlled study on new generation of 3D reconstruction in PCNL. This sentence shows most important results of our study.

3. “The CAS System was recommended to assist in preoperative planning and intraoperative navigation for an intuitive, precise and convenient PCNL.” This sentence shows most important conclusion of our study.

3. Core tip: -Mention the full term of each abbreviation used.

We have made revisions.

4. Materials and Methods: -The type of the study is not clear whether it is a retrospective one.

Yes, it is a retrospective study. We have added additional description in page4, line26-28.

5. Materials and Methods: -Contrast CT is not a routine work for diagnosis of stones. if this study was a retrospective one, how can you explain that all patients had enhanced CT?

According to the guidelines of EAU (European Association of Urology), contrast CT enables 3D reconstruction of the collecting system, as well as measurement of stone density and skin-to-stone distance. Study of Thiruchelvam, N. et al, which was cited by the guidelines of EAU, concluded that CTU and post-processing techniques enables an accurate and confident, reproducible prediction of the site, number and size of stones in complex pelvicalyceal anatomy, optimal site(s) for placing the percutaneous track, and potential hazards when placing the track. So contrast CT, like CTU, can be used for planning percutaneous nephrolithotomy.^[3]

Patients in the study were selected from patients with complex renal stones. It is essential to obtain an accurate plan for percutaneous nephrolithotomy. Accurate plan can improve the stone-free rate and avoid unnecessary reoperation.

So we recommended CTU for patients with complex renal stones in clinical practice. Of course, agreements were obtained from those patients before CTU.

6. Materials and Methods: -The expression (patients who met the inclusion and exclusion criteria and) is not accurate. Instead, use the expression (patients who met the selection criteria).

Thank you for your reminder. We have made revisions in page5, line4-7.

7. Materials and Methods: -The criteria of determination of the calyx of entry may not allow the chance for making a shortest puncture path. So, you should clarify that the shortest path not relative to the whole calyces, but it is relative to this calyx.

Thank you for your reminder. The shortest path is relative to ideal entry calyx. We have made revisions in page6, line11.

8. Materials and Methods: -There is no idea about the costs of this system.

Thank you for your reminder. At present, the system is only used in the study, and the cost of the system is borne by the researchers. And the cost is about 700 yuan per patient. It's a little expensive for patients and we are thinking about how to reduce the cost to promote its clinical application. We have added additional description in page11, line21-23.

9. Materials and Methods: -The system seems to be complex. Is there any way to simplify it?

At present, the system is only used in the study and the procedure is a little complex. Laser^[4]

can simplify the procedure of navigation when surgeons locat the position of puncture point and the direction of the puncture needle. Deep learning network may be a possible option to achieve automatic identification and measurement of structures. Those novel techniques can be used to simplify the system in the future. We have added additional description in page11, line21-23.

10. Materials and Methods: -Revise for writing: for example, terms such as under US supervision, conclusion of surgery are inaccurately used in this section. punctuation use needs revision.

Thank you for your reminder. We have made revisions in page6, line26 and page7, line11-12.

11. Materials and Methods: - Regarding grades of complications, the use of the term to refer Clavien–Dindo grade ≥ 2 seems to be inaccurate. clarify.

Thank you for your reminder. We have replaced the description of “severe complications” with “complications (Clavien–Dindo grade ≥ 2)” in the manuscript.

12. Results: -The difference in decrease of hemoglobin is not equal. The non-significant values may be in doubtful.

According to our analysis, the decrease in hemoglobin did not conform to the normal distribution in the CAS group.(Figure 1) The Mann–Whitney U test was used to analyze the decrease in hemoglobin between the two groups, and the difference was not statistically significant($P=0.300>0.05$). (Figure 2) The procedure of statistical analysis is reasonable.

However, there was a gap in decrease of hemoglobin between the two groups. The doubt about “non-significant values” is reasonable in the case of small sample size. There were only 60 patients in the study, and further study with more patients is needed.

Figure 1

正态性检验

手术方式	柯尔莫戈洛夫-斯米诺夫 ^a			夏皮洛-威尔克		
	统计	自由度	显著性	统计	自由度	显著性
术中丢失血红蛋白 1.0	.102	30	.200 [*]	.942	30	.100
2.0	.196	30	.005	.765	30	.000

*. 这是真显著性的下限。

a. 里利氏显著性修正

Figure 2

曼-惠特尼检验

		秩		
	手术方式	个案数	秩平均值	秩的总和
术中丢失血红蛋白	1.0	30	28.17	845.00
	2.0	30	32.83	985.00
	总计	60		

检验统计^a

	术中丢失 血红蛋白
曼-惠特尼 U	380.000
威尔科克森 W	845.000
Z	-1.036
渐近显著性（双 尾）	.300

a. 分组变量: ^1

13. Results: -The use of the word respectively seems to be inaccurate at the last paragraph of Results.

Thank you for your reminder. We have made revisions in page8, line16-18 .

14. Tables: Table 1; What do you mean by diameter of the collecting system?

It is an inappropriate description. We have replaced “diameter” with “dilation distance”.

15. Tables: Table 1; Capitalize the words hounsfield unit (Hounsfield Unit).

Thank you for your reminder. We have made revisions.

For Reviewer 2 and 3

Comments and revisions

Thanks for comments. There is no revision requested from Reviewer 2 and Reviewer 3.

For Science editor

Comments and revisions

1.This manuscript selects 60 patients with complex kidney stones as the research object to evaluate the effect of the Hisense computer-assisted surgery (CAS) system in PCNL. Whether the type of study was retrospective, contrast-enhanced CT is not routine for diagnosing stones, and if this study is retrospective, how to interpret enhanced CT in all patients.

According to the guidelines of EAU (European Association of Urology), contrast CT enables 3D reconstruction of the collecting system, as well as measurement of stone density and skin-to-stone distance. Study of Thiruchelvam, N. et al, which was cited by the guidelines of EAU, concluded that CTU and post-processing techniques enables an accurate and confident, reproducible prediction of the site, number and size of stones in complex pelvicalyceal anatomy, optimal site(s) for placing the percutaneous track, and potential hazards when placing the track. So contrast CT, like CTU, can be used for planning percutaneous nephrolithotomy.(3)

Patients in the study were selected from patients with complex renal stones. It is essential to obtain an accurate plan for percutaneous nephrolithotomy. Accurate plan can improve the stone-free rate and avoid unnecessary reoperation.

So we recommended CTU for patients with complex renal stones in clinical practice. Of course, agreements were obtained from those patients before CTU.

2.Some language expressions need to be modified.

Language expressions have been modified.

For Company editor-in-chief

Comments and revisions

1. Please provide the original figure documents. Please prepare and arrange the figures using PowerPoint to ensure that all graphs or arrows or text portions can be reprocessed by the editor. In order to respect and protect the author's intellectual property rights and prevent others from misappropriating figures without the author's authorization or abusing figures without indicating the source, we will indicate the author's copyright for figures originally generated by the author, and if the author has used a figure published elsewhere or that is copyrighted, the author needs to be authorized by the previous publisher or the copyright holder and/or indicate the reference source and copyrights. Please check and confirm whether the figures are original (i.e. generated de novo by the author(s) for this paper). If the picture is 'original', the author needs to add the following copyright information to the bottom right-hand side of the picture in PowerPoint (PPT): Copyright ©The Author(s) 2022.

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2. Authors are required to provide standard three-line tables, that is, only the top line, bottom line, and column line are displayed, while other table lines are hidden. The contents of each cell in the table should conform to the editing specifications, and the lines of each row or column of the table should be aligned. Do not use carriage returns or spaces to replace lines or vertical lines and do not segment cell content.

Standard three-line tables have been provided.

3. Please upload the approved grant application form(s) or funding agency copy of any approval document(s).

Documents have been uploaded.

- 1 Huang YS, Zhu XS, Wan GY, Zhu ZW, Huang HP. Application of simulated puncture in percutaneous nephrolithotomy. *Eur Rev Med Pharmacol Sci* 2021; 25: 190-197 [PMID: DOI: 10.26355/eurrev_202101_24384]
- 2 Tsaturyan A, Bellin A, Barbuto S, Zampakis P, Ntzanis E, Lattarulo M, Kalogeropoulou C, Liatsikos E, Kallidonis P. Technical aspects to maximize the hyperaccuracy three-dimensional (ha3d™) computed tomography reconstruction for kidney stones surgery: A pilot study. *Urolithiasis* 2021; 49: 559-566 [PMID: DOI: 10.1007/s00240-021-01262-6]
- 3 Thiruchelvam N, Mostafid H, Ubhayakar G. Planning percutaneous nephrolithotomy using multidetector computed tomography urography, multiplanar reconstruction and three-dimensional reformatting. *BJU Int* 2005; 95: 1280-1284 [PMID: DOI: 10.1111/j.1464-410X.2005.05519.x]
- 4 Wu J, Zhou P, Luo X, Hao Z, Lu C, Zhang H, Zhou T, Xu S. Novel laser positioning navigation to aid puncture during percutaneous nephrolithotomy: A preliminary report. *World J Urol* 2019; 37: 1189-1196 [PMID: DOI: 10.1007/s00345-018-2496-z]