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The next step in nephron sparing surgery: vascular positioning system

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The goal of being able to better see the vasculature of the organ that the surgeon wants to operate on has been always a crucial factor behind the development of better radiological imaging technologies.

In urology nowadays, partial nephrectomy for renal cancer is expanding with more cases done with tumors that, in the past, were unthinkable to be qualified for Nephron Sparing Surgery (NSS). It is because we have better pictures of our radiological studies showing localization of tumors in relation to vessels and calyceal system much clearer [1, 2, 3].

The paper by Drewniak et al. [4] describes the methodology of the elaboration of CD images that can very precisely assess the arterial tree within the kidney, which is sure to make the planning of the surgery easier and can allow the urologist to choose to perform NSS in very complicated cases [5].

We as urologists should always encourage our radiological colleagues to develop and use such applications, especially nowadays when the software development is so rapid.

To popularize Dr. Drewniak and colleagues' work, it may be useful to know whether such technology

is available for all radiological centers, if they need anything other than Matlab software and some persistence in using it, or if it is possible to utilize the concept with all CT or MRI images.

Of course, it must be taken into account that the majority of renal cell tumors do not need such sophisticated evaluation, which I understand to be rather time-consuming and expensive. We must be aware that the effort to delineate the ninth level ramification of the vessel that is 0.5 mm in size is practically useless; such a vessel does not create any significant problem during the operation. More important are bigger vessels near the tumor, or even quite big ones that may need to be closed in the super selective nephron sparing surgery. I assume that they will be seen very precisely using the presented method.

In my opinion, the future of such imaging technology is being able to destroy the renal tumor more precisely and safely without operation but with some form of imaging guided ablation technique. Then such precise mapping of the vascular tree will be of great help in the navigation of the ablation probe. I think that it will happen sooner than we expect.

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