

A game changer in CT Colonography

A pioneer in CT colonography, Prof Judy Yee, Chief of Radiology at the VA Healthcare System and Vice Chair of Radiology at UCSF in San Francisco, CA, USA, has many years of experience in the field. Three years ago, her department acquired an advanced medical visualization software solution, the True 3D system from Echopixel. We wanted to find out more about Prof Yee's work in general and the new system in particular, so we caught up with her for a conversation.



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Q Let's start at the institution where you work. Please tell us about your hospital and the patients you see.

I work at several campuses. Across the sites there are approximately 15 CT Colonography (CTC) patients every two weeks. Of these there is about a 60%/40% split between diagnostic cases and screening exams.

Q Since when have you been involved in CT colonography?

I've been involved in CT colonography for more than 15 years. At the beginning, CTC screening was not reimbursed in the US, so I was doing routine clinical work as well as CTC research activities. Over this period of time, I've been able to experience classical visualization and display systems. All of these methods and practices were similar and starting to converge, so I was really struck by the True 3D system and how different it was. Almost 3 years ago, I acquired the True 3D system at UCSF.

Q In what way is the True 3D system so different?

The True 3D system really is a game-changer in the way that the standard 2D data from the CT can be 'lifted' into a 3D space for even better visualization of colonic lesions. Flat lesions, in particular, can be problematic for gastroenterologists and radiologists, and are easier to identify with the True 3D system. Current CTC visualization techniques have limitations in representing the complex 3D relationships present in the colon, a key factor that facilitates polyp

detection. To successfully identify a polyp, radiologists must integrate a series of 2D images in their mind and cognitively extract the relevant 3D relationships that define the colon, neighboring anatomy and polyps. In complex cases, they must visually map 2 or more views of the same data, attempting to recognize similarities between views and confirm that the feature of interest is a true polyp. We are currently carrying out a trial whose goals are to evaluate just how the True 3D system can improve anatomic understanding; increase polyp sensitivity; reduce false-positive findings; increase reader tolerance to image noise and finally reduce interpretation time.

Q Visually the 3D images look stunning but, how do you quantitate the impact of the technology?

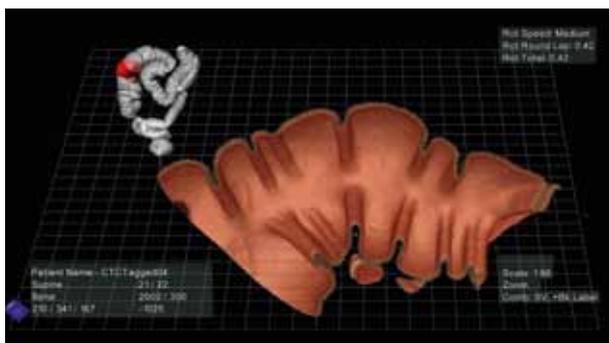
There are many individual metrics that we are evaluating with the True 3D system to measure impact. We are documenting sensitivity, specificity, reading time and reader-to-reader variability, but, overall, the accuracy of the tool is most important. One of our aims is to make CTC as broadly accessible as possible so that trainee radiologists and residents can use the system. It's also worth noting that there are several methods of carrying out CTC. For example, tagged, non-tagged, and non-cathartic methods should all be evaluated by the system.

Q You mentioned that you also carried out research and development in the field. With what specific aims?

We were aiming to reduce radiation dose, we're now down to 3 mSv, which is important in the context of a screening test which is recommended to be repeated every 5 years. Additionally, we need more balance between radiation dose reduction and image quality, specifically for identification of extra-colonic findings. We also want to assess impact of iterative reconstruction. I've also worked on the development of minimally cathartic procedures that may be better tolerated by patients.

Q What about future perspectives?

I'm very happy to hear that EchoPixel is already working on the development of electronic subtraction procedures and the implementation of CAD. All in all, this is an exciting technology that's opening up a variety of new perspectives.



The True 3D system from Echopixel is a game changer in the way that standard 2D data can be lifted into a 3D Space