

Interview Article

Interdisciplinary use of one Hybrid OR

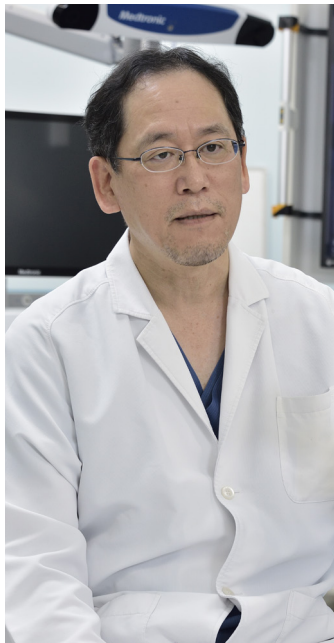
High utilization rate thanks to
flexible operations

siemens-healthineers.com/hybrid-or



Aenean viverra rhoncus pede pellentesque habitant morbi tristique.
Sene cius et netus et malesuada fames ac turpis egestas.





Yoshiyuki Tani, MD



Toshihiko Toma, MD



Takanori Yakua

Customer interviews with Anesthesiology Director and Central Surgery Director: Yoshiyuki Tani, MD; Orthopedic Surgery Director: Toshihiko Toma, MD; Operating Room Nursing Department: Takanori Yakua



**Medical Corporation Tokushukai
Yao Tokushukai General Hospital**

Location:

1-17 Wakakusa-cho,
Yao City, Osaka Prefecture

Number of beds:

415

Main equipment:

ARTIS pheno
Artis zee i BA Twin
SOMATOM Scope Power Sliding Gantry
Arcadis Avantic
Cios Select
ACUSON SC2000

At Yao Tokushukai General Hospital, the aim was to create a fully functional, Hybrid operating room (OR). This has resulted in an OR with a high utilization rate that can accommodate not only cardiovascular surgery, but also orthopedic surgery, neurosurgery, and general surgery. In particular, the number of orthopedic spinal procedures and the scope of operations have significantly improved by connecting the imaging system ARTIS pheno with the navigation system from Medtronic Japan Co., Ltd.



Operating room layout

Please tell us about your anesthesiology department, central surgery department, and orthopedics department.

Tani: Our anesthesiology department always follows safe anesthesia practices. The policy of our central surgery department is to minimize communication errors in order to provide excellent team-based medical care. We are dedicated to establishing an environment that allows patients to undergo surgery safely.

Toma: As an orthopedic surgeon at Yao Tokushukai hospital, I'm part of a team that is required to treat a wide range of trauma patients including those with degenerative diseases of the spine, shoulder, elbow, hip, and knee, and those with associated artificial joints and tumors.

Can you explain to us how your Hybrid OR is operated?

Tani: First, we designed a particular layout for the OR – a donut shape – to simplify the flow from the sterile area to the OR and the collection corridor. This enables efficiencies by eliminating wasted time. In addition, by introducing an OR management system, we're able to create an environment where surgery can be performed efficiently and without delay, even if the number of medical staff is limited.

Yakuwa: At our hospital, we prioritize an environment where the medical staff can move easily and concentrate on their work, which helps to run the OR really efficiently.



Surgery in progress

How do you run your Hybrid OR?

Tani: When we introduced our Hybrid OR, the goal was not to limit ourselves to an angiography room, but rather to create a Hybrid OR – that is, an operating room equipped with an X-ray fluoroscopy/imaging device. We needed to choose equipment that would be able to fulfill flexible purposes. As a result, we can perform open-heart surgery and stent graft insertion in cardiovascular surgery. We can also handle spinal surgery where an X-ray fluoroscopy/imaging device for orthopedic surgery and a navigation system are linked. We can accommodate neuro-spinal surgery, and even appendix resection for general surgeries that don't require X-rays. Thanks to this, the utilization rate of the room is very high, and it's rarely unused.

Yakuwa: With the wall-mounted connector and ceiling mounted-monitor that can be used with an endoscope for endoscopic surgery, the room is designed to be used by multiple departments. This is reflected in the fact that the room has a utilization rate of more than 90%. Also, because the ARTIS pheno imaging system is floor-mounted, there was no need for a ceiling connection. The fact that the construction period was short was also positive.

Please tell us about the type of spinal surgery that relies on ARTIS pheno imaging and a navigation system.

Toma: All spinal surgery requiring instrumentation is performed in the Hybrid OR. Compared with conventional surgery that is performed based only on presurgical images, surgery performed in conjunction with the navigation system is extremely accurate, and there is almost no risk of making mistakes. Therefore, we feel more confident – even in more complex cases. In the past, it took time to synchronize the presurgical CT image with the actual position of a patient at the time of surgery. Now, it's possible to perform surgery based on a DynaCT scan taken during the procedure and transferred to the navigation system since it's no longer necessary to acquire CT images before surgery. This improves our workflow and reduces radiation exposure. Also, when inserting a vertebral root screw into a difficult location, we can check it via a 3D image. This is very useful when aiming a thicker and longer screw for insertion in a very challenging position. The number of spinal surgeries has increased, and we're proud that we can perform procedures that are comparable to large spinal surgery centers. If there is any further improvement that could be made, it would involve increasing the transfer speed of DynaCT images to the navigation system.



Hybrid OR staff

What's your opinion of ARTIS pheno after actually using it?

Tani: As previously mentioned, we also perform general surgery that does not need X-rays in our Hybrid OR all the time during a procedure. ARTIS pheno enables a highly efficient use of the space given how the system is stored when not in use. It doesn't get in the way at all. As a result, multifaceted use of the space is possible: sometimes as a Hybrid OR, sometimes an angiography room, and sometimes a standard OR. This flexibility is exactly what our hospital wanted. In terms of running the OR, I feel that this is the greatest advantage of ARTIS pheno. If you are considering installing a Hybrid OR in a private hospital, I think that a configuration like ours would be the best way to achieve efficient operation.

Toma: The imaging is very clear. In previous surgical images, the spine was difficult to see. And in the upper thoracic spine, the shoulders and arms overlapped and were barely visible. Fluoroscopy with ARTIS pheno provides high-definition images with clear contours. Also, since there is a large amount of open space in the C-arm, it is possible for two surgeons to enter together and perform surgery from the side.

What are your thoughts on the future of the Hybrid OR?

Toma: If robots came in as assistants, I think that even with a minimum number of staff, we would be able to perform surgery smoothly and also reduce the risk of infection.

Yakuwa: If the C-arm could be operated with a simple joystick or by voice, it would be easier to fine-tune the X-ray irradiation position, and the surgeons would be better able to concentrate on the procedure.

(Interviewed on 9 November 2021)

The statements by Siemens Healthineers' customers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital or laboratory and many variables exist (e.g., hospital size, samples mix, case mix, level of IT and/or automation adoption) there can be no guarantee that other customers will achieve the same results.

The customers are employed by an Institution that receives financial support from Siemens Healthineers for collaborations.

The product/feature and/or service offerings (mentioned herein) are not commercially available in all countries and/or for all modalities. Their future availability cannot be guaranteed.

The opinions expressed in this article are solely those of the featured physicians and may not reflect the views of Siemens Healthineers.

Siemens Healthineers Headquarters

Siemens Healthineers AG
Siemensstr. 3
91301 Forchheim, Germany
Phone: +49 9191 18-0
[siemens-healthineers.com](https://www.siemens-healthineers.com)