Practicing Intervention

—Improving Workflow through a Human-Centered Design Process—

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To address the growing complexity, sophistication, and diversification in interventions, angiography systems are trending towards increased multifunctionality. Concurrently, for the practice of Minimally Invasive Treatment, reducing procedure time is a crucial factor, necessitating the provision of simpler operability. Our latest angiography system, "Trinias™ series with SCORE™ Opera," incorporates multiple designs aimed at improving operability, contributing to the reduction in procedure time.

Here, we will introduce the operability of the control module surrounding the patient table, which has been redesigned using a human-centered design process.

1 Control Module Designed via the Human-Centered Design Process

In developing the Trinias series with SCORE Opera **(Fig.1)**, we employed a human-centered design process, a cycle involving "user evaluation," "requirements analysis," "prototyping," and "acceptance evaluation," to create functionalities that meet user needs. Among the user requirements addressed this time, those relating to reducing procedure time, such as "too many buttons make the functions confusing" and "moving for operation is time-consuming," were resolved following this process.

Specifically, the direct memory function for registering/calling the C-arm angle and the position change function for operating the C-arm entry position, previously managed with physical buttons, were integrated into the SMART Touch panel. This integration has led to a reduction in the number of physical buttons on the control module around the patient table by over 60%※1, and a reduction in its overall width by over 20%※1 **(Fig.2)**.

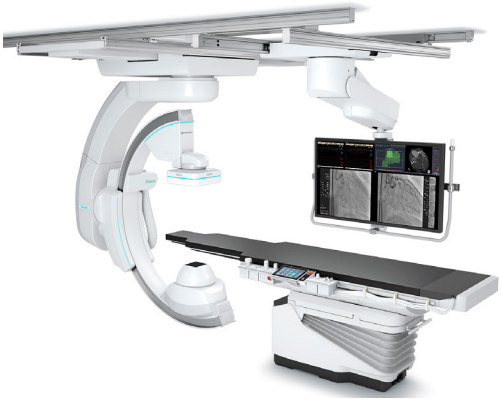

Fig. 1 Trinias™ series with SCORE™ Opera
Photo of a 12-inch FPD equipped ceiling-mounted type

Fig. 2 Control Module Around the Patient Table

2 Seeking Clarity by Integrating Illustrations and Functions

In integrating the position change **(Fig.3)** and direct memory **(Fig.4)** into the SMART Touch, the design was focused on making operations easily understandable. Both functions are arranged around the illustration of a patient lying on the patient table, facilitating an intuitive understanding of the C-arm's movements when a button is pressed. Also, by integrating into the SMART Touch, the button sizes have been increased compared to physical buttons, thereby reducing the risk of errors and aiding in shortening operation time.

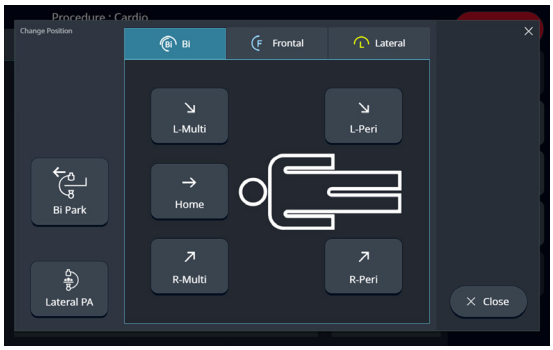

Fig. 3 Position Change

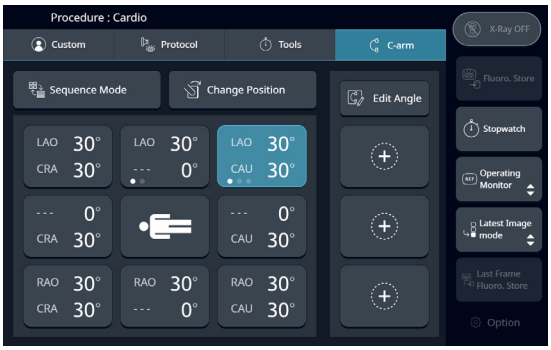

Fig. 4 Direct Memory

3 Stress-Free Reference Image Selection with SMART Dial

In intervention treatments, selecting and displaying reference images **(Fig.5)** appropriate for the treatment process is one of the key factors for accurate treatment progression. The newly designed SMART Dial **(Fig.6)** was developed with a focus on enabling stress-free selection of reference images from the patient table, utilizing the human-centered design process. It allows for image selection by tilting the dial up and down, and precise frame-by-frame control by turning the dial.

Fig. 5

Fig. 6 SMART Dial

4 Conclusion

The Trinias series with SCORE Opera is designed with various functionalities and user interfaces, clearly defined through the human-centered design process to address user requirements. In this article, we introduced the control module around the patient table. We hope that resolving even one of the challenges faced in daily interventions will contribute to improving the quality of medical care provided, concluding our discussion with this expectation.
