Supplementary Materials for

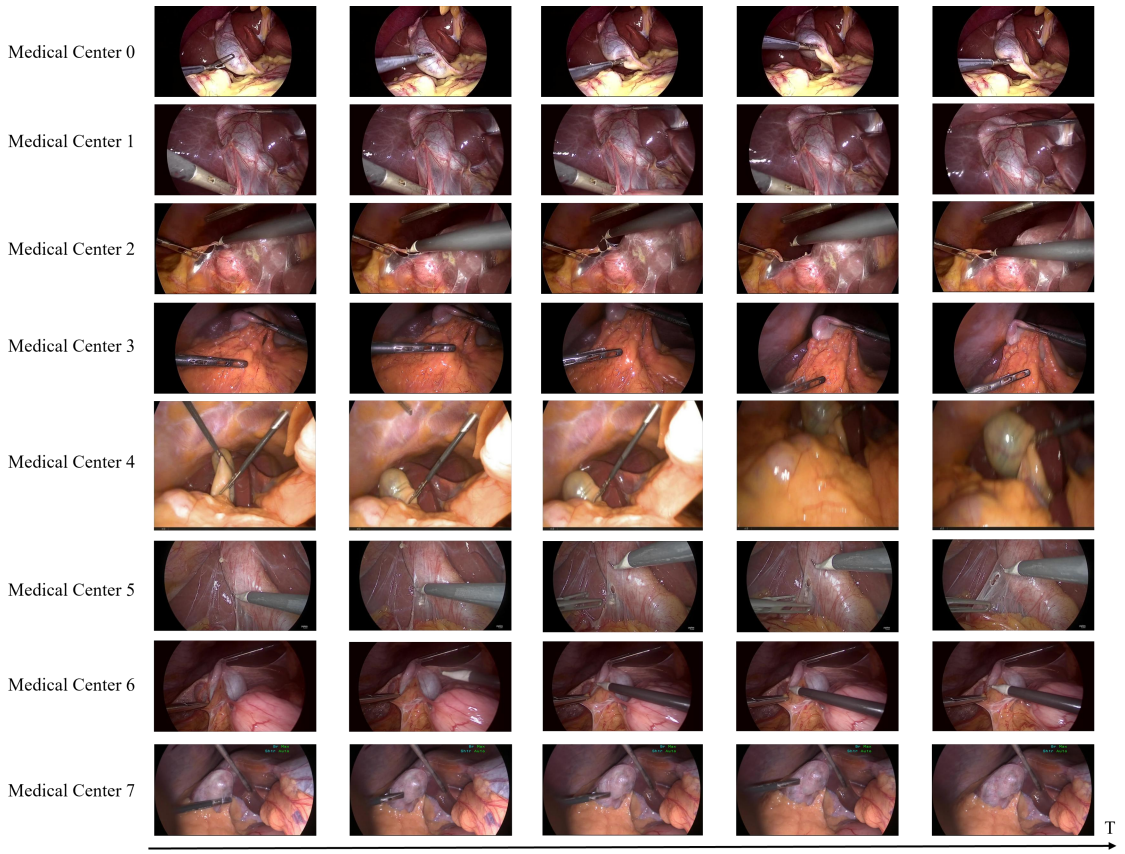
Empowering Surgical Embodied Intelligence: A Blockchain-based Federated Learning Framework for Collaborative Video Analysis

CONTENTS

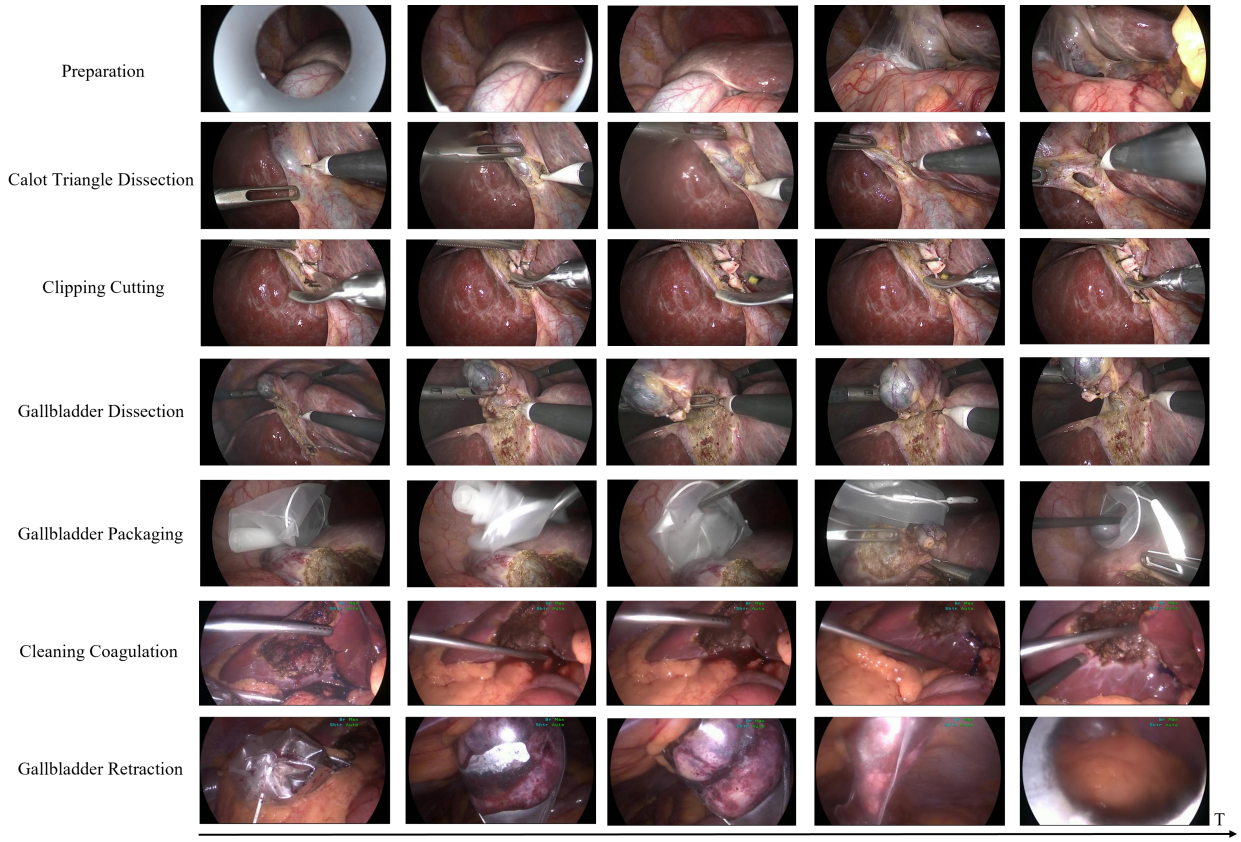
The following items are included in the supplementary material:

- Supplementary Figure 1 to Supplementary Figure 6
- Supplementary Table 1

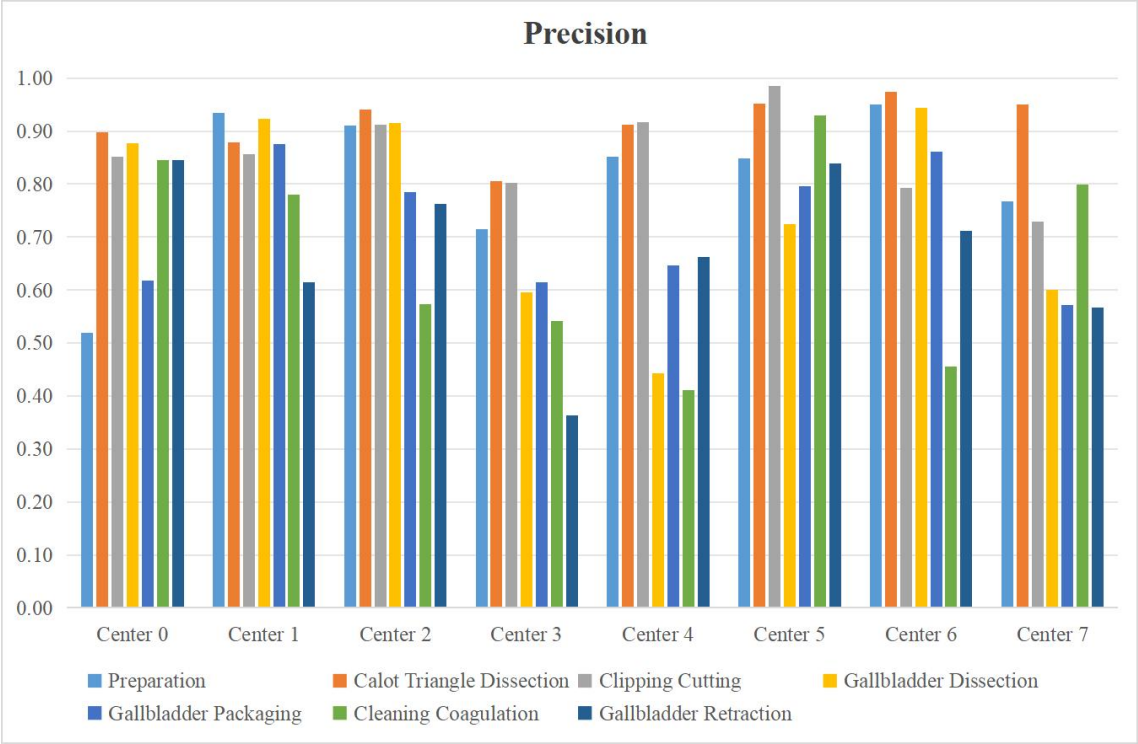
SUPPLEMENTARY FIGURES



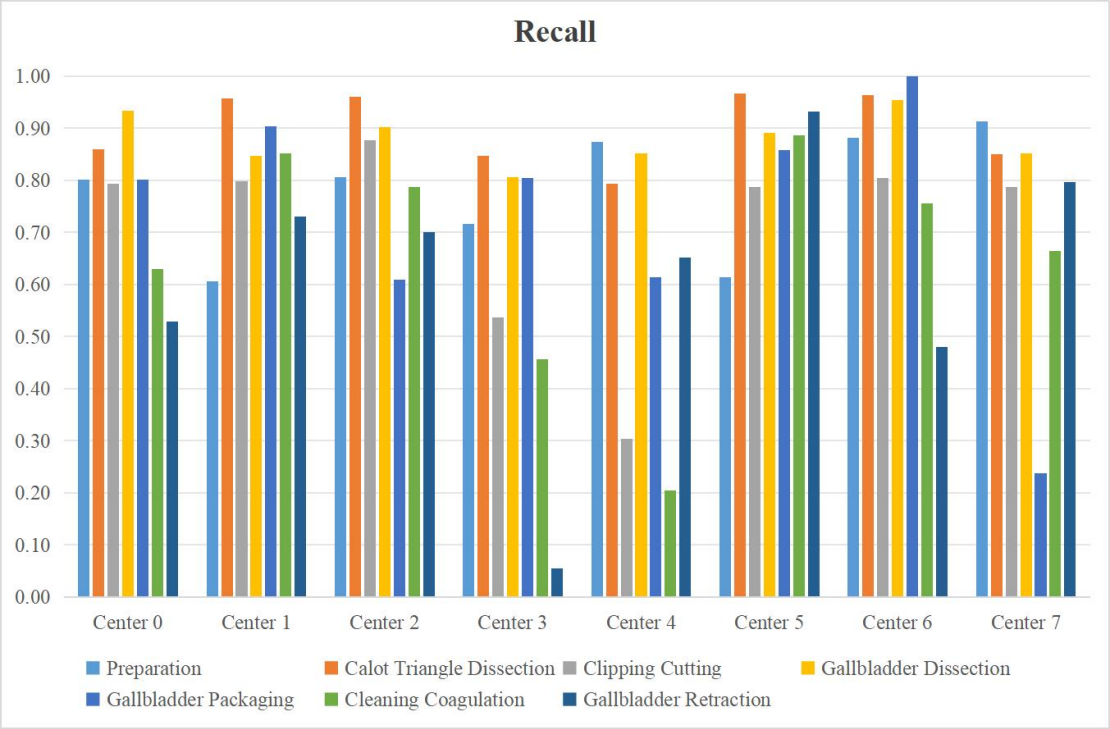
Supplementary Figure 1. Display of data heterogeneity in medical centers. Randomly select 5 consecutive frames from the divided medical centers numbered from 0 to 7 for display.



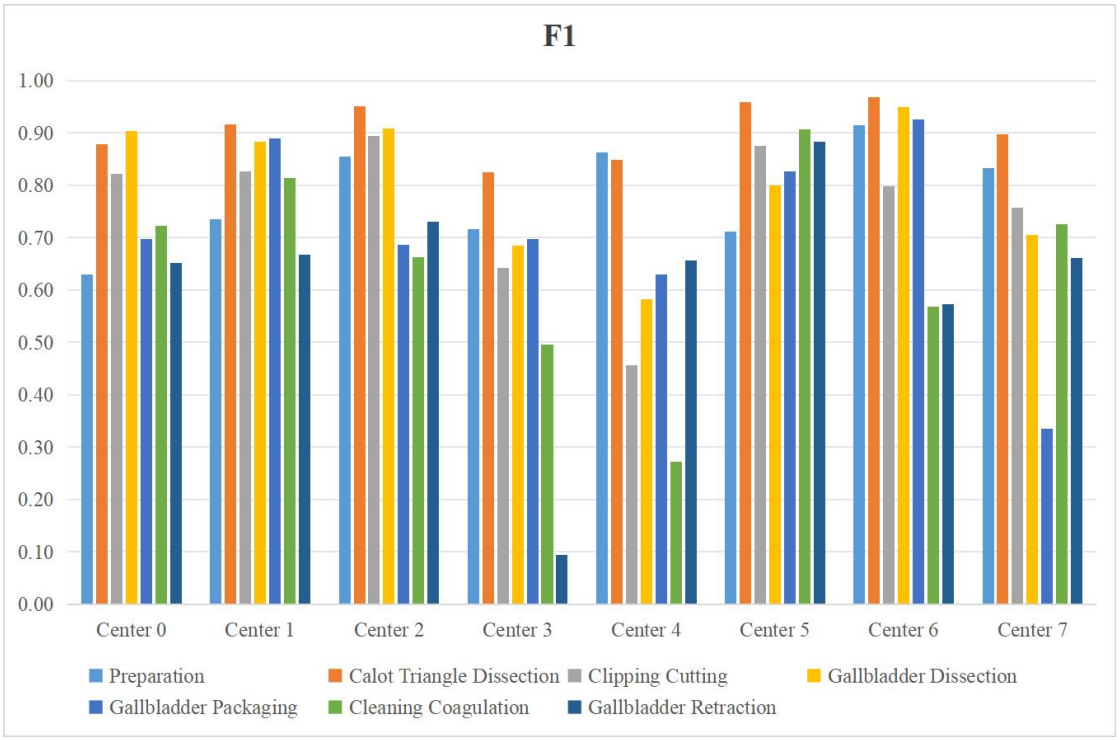
Supplementary Figure 2. The display of surgical phases. Seven different surgical phases in the dataset are shown respectively.



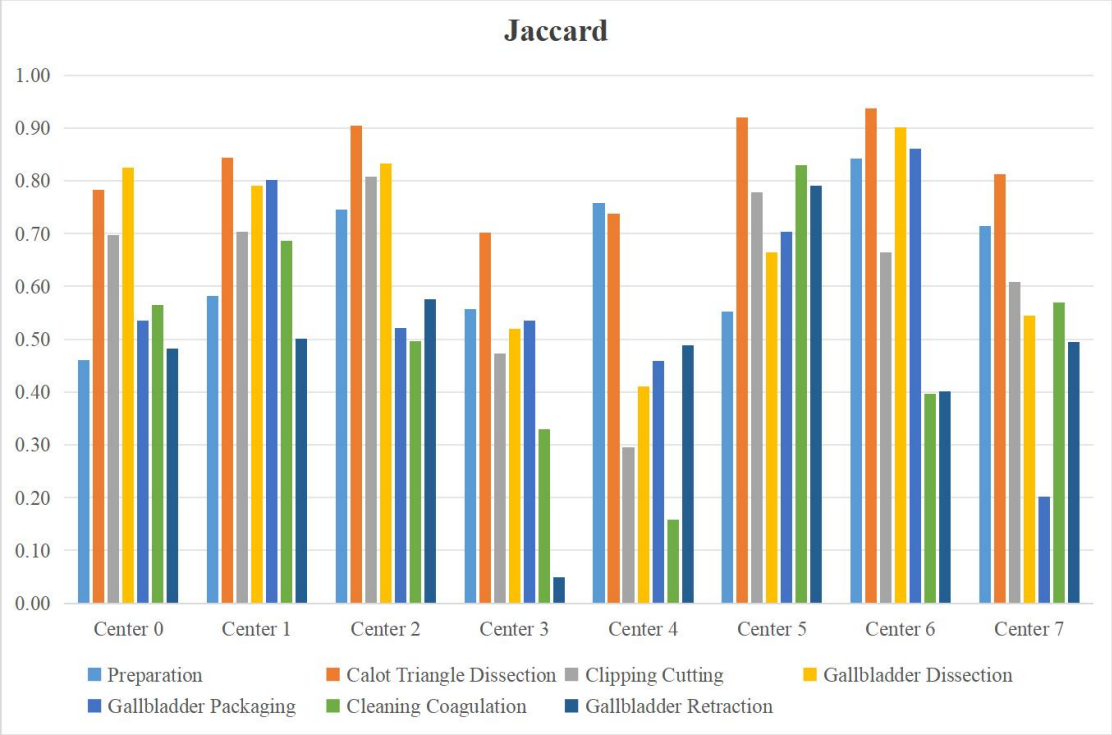
Supplementary Figure 3. Display of the fine-grained precision results for each phase of each client.



Supplementary Figure 4. Display of the fine-grained recall results for each phase of each client.



Supplementary Figure 5. Display of the fine-grained f1 results for each phase of each client.



Supplementary Figure 6. Display of the fine-grained jaccard results for each phase of each client.

SUPPLEMENTARY TABLES

Supplementary Table 1. Specific division of training and testing video IDs for each client.

	Dataset	Train_Video	Test_Video
Medical Center 0	Cholec80	4, 12, 13, 24, 25, 37, 45, 46, 47, 48, 49, 53, 70, 72, 73, 76	7, 8, 19, 23, 26, 33, 67
Medical Center 1		1, 2, 5, 6, 9, 15, 16, 17, 29, 32, 36, 41, 42, 43, 50, 51, 58, 61, 62, 66, 69, 77, 78, 39, 43, 52, 55, 56, 74, 79	11, 27, 30, 54, 63, 68
Medical Center 2		3, 10, 18, 20, 21, 22, 31, 34, 38, 44, 60, 64, 71, 75, 80	14, 28, 35, 40, 57, 59, 65
Medical Center 3	HeiChole	1, 2, 3, 4, 5, 6, 7, 8, 9	10, 11, 12
Medical Center 4		13, 14, 15,16, 17, 18, 19, 20, 21	22, 23, 24
Medical Center 5	m2cai16-workflow	11, 12, 13, 14, 15, 17, 23, 35	36, 40, 41
Medical Center 6		2, 4, 18, 19, 24, 25, 26, 27	34, 38, 39
Medical Center 7		1, 3, 5, 6, 7, 8, 9, 10, 16, 20, 21, 22, 28, 29	30, 31, 32, 33, 37