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| --- | --- | --- | --- | --- |
|  | **Novice (n=7)** | **Advanced Learner (n=17)** | **Expert (n=12)** | **p-value** |
| **Time (seconds)** |  |
| Time to place stent in higher "ureteral orifice"  | 7.0 (6.0-14.0) | 10.5 (7.0-27.8) | 5.5 (3.3-7.0) | 0.013\* |
| Time to place stent in lower "ureteral orifice" | 11.0 (9.0-15.0) | 10.0 (9.0-18.0) | 8.5 (5.5-12.5) | 0.231 |
| Time to place stent over a wire in higher "ureteral orifice"  | 47.0 (45.0-74.0) | 41.5 (36.3-68.5) | 19.0 (15.0-25.3) | <0.001\* |
| Time to place stent over a wire in lower "ureteral orifice"  | 31.0 (23.0-70.0) | 40.0 (34.0-63.5) | 22.0 (14.0-41.0) | 0.053 |
| **GRS Scores (Likert Scale 1-5) ^** |  |
| Respect for tissue | 4.0 (3.0-4.0) | 4.0 (4.0-4.5) | 5.0 (5.0-5.0) | <0.001\* |
| Time and motion | 3.0 (2.0-3.0) | 4.0 (3.0-4.0) | 5.0 (5.0-5.0) | <0.001\* |
| Handling of cystoscope | 3.0 (3.0-4.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| Flow of procedure and forward planning | 3.0 (3.0-3.0) | 4.0 (4.0-4.5) | 5.0 (5.0-5.0) | <0.001\* |
| Use of assistants | 4.0 (3.0-4.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| *Total (out of 25)* | 17.0 (14.0-18.0) | 20.0 (18.0-22.0) | 25.0 (25.0-25.0) | <0.001\* |
| **GOALS Scores (Likert Scale 1-5) ^** |  |
| Depth perception | 3.0 (3.0-4.0) | 4.0 (4.0-4.5) | 5.0 (5.0-5.0) | <0.001\* |
| Bimanual dexterity | 3.0 (2.0-3.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| Autonomy | 3.0 (3.0-3.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| *Total (out of 15)* | 9.0 (8.0-10.0) | 12.0 (11.0-14.5) | 15.0 (15.0-15.0) | <0.001\* |
| **Procedure-specific metrics (Likert Scale 1-5) ^** |  |
| Fluidity of passing stent in higher "ureteral orifice" | 3.0 (3.0-3.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| Fluidity of passing stent in lower "ureteral orifice" | 2.0 (2.0-2.0) | 4.0 (3.5-4.0) | 5.0 (5.0-5.0) | <0.001\* |
| Fluidity of passing stent over a wire in higher "ureteral orifice" | 3.0 (3.0-3.0) | 4.0 (4.0-4.5) | 5.0 (5.0-5.0) | <0.001\* |
| Fluidity of passing stent over a wire in lower "ureteral orifice" | 2.0 (2.0-2.0) | 4.0 (3.0-4.0) | 5.0 (5.0-5.0) | <0.001\* |
| Ability to trouble shoot/adaptability while placing stent | 3.0 (3.0-3.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| Stent fully inserted (direct stent placement) | 3.0 (3.0-4.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| Stent and wire fully inserted (stent placement over wire) | 3.0 (3.0-3.0) | 4.0 (4.0-5.0) | 5.0 (5.0-5.0) | <0.001\* |
| *Total (out of 35)* | 19.0 (18.0-21.0) | 28.0 (26.0-32.5) | 35.0 (35.0-35.0) | <0.001\* |
| **Totals  ^** |
| Traditional metrics (GRS+GOALS) (total 40) | 27.0 (22.0-27.0) | 32.0 (29.5-36.5) | 40.0 (40.0-40.0) | <0.001\* |
| Modified metrics (GRS+GOALS+Procedure-Specific) (total 75) | 45.0 (43.0-46.0) | 61.0 (56.5-68.5) | 75.0 (75.0-75.0) | <0.001\* |

GRS = Global Rating Scale, GOALS = Global Operative Assessment of Laparoscopic Skills

\* denotes statistical significance

^ all values are median (IQR)