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| *Appendix 1: Trocar Placement Scale for Vertebroplasty Procedure* |
| Please assess the surgeons performance among following questions |
| For the **LEFT SIDE** |
| With this trocar position, No-Go-areas (spinal canal, vessels,…) are harmed? | * + no
 | * + yes
 |
|  |
| ENTRY POINT:The entry point on the pedicle is chosen right... (craniocaudal, mediolateral) | appropriate | not appropriate on one axis | not appropriate on both axes |
| POSTIONING ATTEMPT:To find the entry point the trocar is placed \_\_\_\_\_\_\_\_\_ times.I rate this as… | appropriate | too often |
| TROCAR POSITION:The trocar position within the pedicle and the vertebra is... | ideal | not ideal but uncritical | critical |
| PEDICLE PERFORATION:The trocar is... | within the pedicle  | 0-2mm outside the pedicle  | 2-4mm outside the pedicle  | > 4mm outside the pedicle |
| VERTEBRA PERFORATION:The vertebra was perforated...  | no | yes |
| TROCAR DEPTH:For a two-sided cement injection, the depth of the tip of the trocar is... | not deep enough | appropriate | too deep |

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| For the **RIGHT SIDE** |
| With this trocar position, No-Go-areas (spinal canal, vessels,…) are harmed? | * + no
 | * + yes
 |
| ENTRY POINT:The entry point on the pedicle is chosen right... (craniocaudal, mediolateral) | appropriate | not appropriate on one axis | not appropriate on both axes |
| POSTIONING ATTEMPT:To find the entry point the trocar is placed \_\_\_\_\_\_\_\_\_ times.I rate this as… | appropriate | too often |
| TROCAR POSITION:The trocar position within the pedicle and the vertebra is... | ideal | not ideal but uncritical | critical |
| PEDICLE PERFORATION:The trocar is... | within the pedicle | 0-2mm outside the pedicle | 2-4mm outside the pedicle | > 4mm outside the pedicle |
| VERTEBRA PERFORATION:The vertebra was perforated...  | no | yes |
| TROCAR DEPTH:For a two-sided cement injection, the depth of the tip of the trocar is... | not deep enough | appropriate | too deep |

Appendix 2: Group differences for OSATS Pass/Fail evaluations

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Pass(n=6) | Fail(n=5) | Test for group differences |
|  | M | SD | M | SD | Mann-Whitney-U | p-Value |
| OTAS Mean Score | 3.73 | 0.88 | 2.14 | 0.58 | **3.00** | **0.013** |
| OTAS Communication | 3.83 | 1.13 | 2.00 | 0.87 | **3.00** | **0.002** |
| OTAS Coordination | 3.75 | 0.94 | 2.10 | 0.65 | **2.00** | **0.009** |
| OTAS Cooperation/Backup Behaviour | 4.25 | 0.88 | 2.80 | 0.57 | **2.50** | **0.013** |
| OTAS Leadership | 3.83 | 0.75 | 2.00 | 0.61 | **1.00** | **0.002** |
| OTAS Monitoring/Situational Awareness | 3.00 | 1.22 | 1.80 | 0.45 | **4.50** | **0.009** |

Notes: n=11; M, Mean; SD, Standard Deviation; p, Significance; OTAS, Objective Structured Assessment of Technical Skill, Scale Range: 0-6; One-tailed Mann-Whitney-U-Test for group differences; bold if p<0.05.

Appendix 3: Correlations of surgeons’ non-technical skills and technical skills controlled for surgical experience

|  |  |
| --- | --- |
|  | **Associations τ (p)** |
| **Variable** | OTAS Score | OTAS Score (correlation controlled for professional tenure) | OTAS Score (correlation controlled for number of VPs performed) |
| Task specific OSATS score | **0.63** | 0.45 | 0.44 |
| **(0.006)** | (0.094) | (0.100) |
| Global OSATS Score | 0.37 | 0.05 | -0.01 |
| (0.065) | (0.441) | (0.487) |
| Trocar positioning score | **0.60** | 0.36 | 0.38 |
| **(0.007)** | (0.152) | (0.137) |

Note: n=11; p, Significance; OTAS, Objective Structured Assessment of Technical Skill; Scale Range: 0-6; OSATS, Objective Structured Assessment of Technical Skill; Scale Range task specific OSATS score: 0–10; Scale Range global OSATS score: 6–30; Scale Range Trocar positioning scale: 0- 22; one-tailed Kendall’s tau b for correlations; bold if p<0.05.