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Learning surgical reconstruction techniques on the urogenital tract using newly developed organ models made of fleece-based material and the teaching concept (4TM)



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Introduction: The majority of all surgical procedures can generally be standardised. The standardisation of recurring workflows and surgical steps leads to process optimisation. Newly developed organ models made from fleece-based material with tissue-like properties for realistic training were developed.

Materials and methods: Surgical procedures were analysed in detail. Specific recurring work processes and surgical steps were identified and these were divided into the "smallest standardisable surgical steps" (4S) and thus into teaching units to be trained. Simple organ preparations made from inexpensive fleece material were used to teach open, laparoscopic or robotic end-to-end anastomosis, bladder neoimplantation and renal pelvic plasty were used. The theoretical and practical learning process was supported by the specially developed learning concept (4TM - Teaching | Tutoring | Mental Training | Training). The learning success was assessed by means of questionnaires with learning success control, video analyses of the practical exercises and evaluation by the tutor as well as self-assessment by the trainee. The 4 types of vesicoureteral reconstruction could be trained well on the fleece model.

Results: The same specific 4S were taught in groups (n=6) of students, doctors in specialist training and experienced specialists using the 4TM learning concept. The theoretical and practical training time was reduced. Learning curves were flatter depending on the level of training, but were the same in all groups at the end of the training programme.

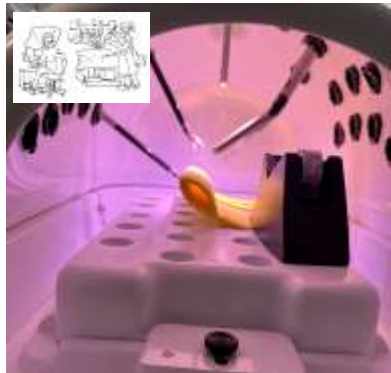
Interpretation of results: Structured, repetitive training on body-like models improves the learning effect and consolidates the necessary procedures. Targeted mental training and 90-second videos enabled the individual work steps to be learnt and consolidated more quickly. The participants were able to reproduce the processes in detail and correctly. Mastering the work processes also improved skills training.

Conclusion: The 4TM training programme with detailed 4S training has proven its worth. On the basis of the realistic training of the The realistic training of the surgical steps using organ preparations made from inexpensive fleece material improved the training.



Training Programme
"Pelvic Floor Surgeon"

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Treating defects in ureteral length
4 Types of vesicoureteral Reconstruction

Ileal ureter interposition
(ileum for complex ureteric reconstruction)

Boari-Plastique (10-15cm)

Pecota-Hitch-Plastique
(5-10cm)

Vesicoureteral
neoimplantation (50cm)

