Creation of a Novel Digital Rectal Examination Evaluation Instrument to Teach and Assess Prostate Examination Proficiency

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OBJECTIVE: To create a validated tool to measure digital rectal examination proficiency and aid with teaching of the examination.

DESIGN: The Digital Rectal Examination Clinical Tool was created using a modified Delphi method with 5 urologists and 5 radiation oncologists. The instrument was then validated in a population of preclinical medical students examining male urological teaching associates, and clinical trainees (third- and fourth-year medical students and urology resident physicians) examining prospectively enrolled subjects. Trainees completed paired examinations with an attending urologist, and responses were scored with reference to the attending responses.

SETTING: The instrument was validated at the University of Virginia in the urology clinic, endoscopic operating room, and main operating room settings.

PARTICIPANTS: We tested the instrument on consenting subjects consisting of male urologic teaching associates (n = 12), clinic patients (n = 4), and operating room patients (n = 64). The participants were undergraduate (n = 302) and graduate (n = 9) medical trainees.

RESULTS: In preclerkship trainees, improved scores in subjects without abnormal compared to those with abnormal findings demonstrated validity. In clinical trainees, scores on the Digital Rectal Examination Clinical Tool increased by 2% for each additional year of training, demonstrating construct validity.

CONCLUSIONS: We used an expert panel to create a novel instrument for measuring digital rectal examination proficiency and validated it with preclinical and clinical trainee cohorts at our institution. (J Surg Ed 1931-7204/$30.00 © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: clinical skills, digital rectal examination, prostate cancer, prostate examination, patient care

INTRODUCTION

The digital rectal examination (DRE) is an essential component of the physical examination that can identify pathologies of the anus, rectum, and prostate. Unfortunately, many graduating medical students enter their
residency with inadequate training in the DRE. Physical examination skills of residents in general have declined over the past decades owing to greater availability of imaging technologies. In Canada, 62% of medical students have performed one or fewer DREs before beginning clinical rotations. Similarly, in Ireland, 24% of medical school graduates had never performed a DRE, and the mean number of DREs performed was only 1.24 per trainee. Furthermore, 30% to 40% of students have no confidence in their findings on a DRE. A multicenter survey of 196 final-year medical students in the United States revealed an average of 7 DREs performed. We speculate that the DRE is not being adequately taught in medical education due to the intimate nature of the examination and difficulty instructing a tactile-only skill. It is an intimate and uncomfortable examination, compared to most other examination maneuvers. Studies have also shown reluctance from medical students to perform DREs due to concern for patient refusal.

Although the positive predictive value of DRE in the prostate-specific antigen (PSA)-based screening era is low, previous work has shown that the stiffness of the prostate correlates with cancer severity. Crawford et al. showed that the combination of DRE and PSA has the highest positive predictive value for detecting prostate cancer. Furthermore, PSA-based screening has decreased since the 2012 United States Preventive Services Task Force gave it a grade D recommendation. The DRE may therefore be increasingly important for detecting clinically relevant prostate cancers that warrant treatment. Unfortunately, since 2012, the proportion of primary care visits where a DRE was performed has decreased from 16% to 5.8%. We speculate that improved teaching of the DRE for prostate pathology can increase use of this examination to detect relevant cancers.

Current teaching practice for the DRE includes both student and instructor examining a patient; the instructor then describes verbally what he or she perceives and discrepancies between student and instructor can be difficult to identify and address. An instrument that would compartmentalize the examination into discrete elements would assist in teaching proper technique and interpretation. Further, once validated, such an instrument could have value in measuring proficiency. Although training with 3-dimensional prostate models has been shown to improve estimation of prostate volume, there is no such objective measure for all aspects of the DRE and such models lack the ability to mimic elastography. Additionally, before the present study, there was no measurement tool that had been validated in vivo to use for evaluation of simulators. We therefore developed a clinical tool to improve teaching of the DRE for prostate pathology.

METHODS

Creation of the Instrument

Institutional review board approval was obtained for validation of the instrument. A modified Delphi method was used to create the Digital Rectal Examination Clinical Tool (DiRECT). Although internists and family practitioners all perform the examination, the physicians most familiar with diagnosing prostate pathology on the DRE are urologists and radiation oncologists. The colorectal surgeons contacted did not feel they focused on the prostate and declined participation. Ten members (5 urologists and 5 radiation oncologists) from varied geographic regions comprised the focus group.

The consensus process was as follows. Initially each expert independently compiled a list of characteristics deemed important on a DRE. These were submitted individually and summarized for uniqueness, as well as overlap. A consensus teleconference was held to discuss the merits of each and narrow the choices to an agreed-upon list. The second step consisted of experts determining which categories could be parsed into subsets. For example, size could be parsed into “large versus small” or into 10 mL increments. The process of dividing the categories is termed creating levels of distinction. After each participant created their list, consensus on meaningful levels of distinction was determined as a group.

Domains with more uniform agreement from the panel were weighted more heavily. We felt these physical examination skills are not “all or nothing” and that partial credit was appropriate. The levels of distinction created the opportunity to give partial credit based on proximity of the student's response to the expert. Finally, a weighted point system was devised to allow partial credit for the palpable, size, texture, and nodule items.

Validation of the Instrument—Content Validity

Preclerkship Male Urological Teaching Associate Module

At UVA, as part of the preclinical curriculum, each second-year medical student is instructed in the DRE by a Male Urological Teaching Associate (MUTA), who simultaneously serves as a live patient model and instructor. Content validity of the DiRECT was determined by an attending urologist completing the DiRECT in paired examinations with preclerkship medical students. This was performed at the annual MUTA activity over 2 consecutive years, with 2 separate attending urologists (T.L.K. and N.S.S.). Six MUTAs were present for the activity each year, and each MUTA provided written informed consent to participate in the study.
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