

Video-Based Teaching in Patient and Instrument Selection for Operative Vaginal Deliveries

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Abstract

Objective: Worldwide, the rate of operative vaginal deliveries has decreased, and as a result trainees are lacking exposure and training. The aim of this study was to determine whether a video-based masterclass can improve trainees' confidence, comfort, and knowledge in performing second stage labour assessments and selecting appropriate patients and instruments for operative vaginal deliveries.

Methods: Current University of Toronto obstetrics and gynaecology residents were invited to participate. The intervention included two videos on second stage assessment: (1) selecting the appropriate patient and (2) selecting the appropriate instrument for an operative vaginal delivery. Trainees' comfort and confidence were assessed pre- and post-intervention. A focus group was conducted that assessed trainees' knowledge acquisition. Descriptive thematic analysis was performed, and common themes were extracted.

Results: On average, residents have performed more vacuum deliveries than forceps deliveries as primary operators (26.4 vs. 7.9). Following the video intervention, there was a statistically significant improvement ($P \leq 0.05$) in trainees' comfort in the following areas: (1) understanding the maternal pelvis, (2) choosing instruments, (3) choosing forceps, (4) deciding the location of delivery, (5) identifying favourable clinical factors, and (6) identifying poor prognostic clinical factors. There was no difference in trainees' self-confidence. Major themes from focus group data included new knowledge gained on second stage assessment techniques, new approaches to existing knowledge, and the multiple challenges and barriers that exist to learning.

Conclusion: Video-based education on second stage labour assessment and operative vaginal delivery improves trainees' comfort and serves as a valuable complementary tool to clinical learning.

Key Words: Forceps, vacuum, education, operative delivery, video

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Résumé

Objectif : Comme le taux mondial d'accouchements vaginaux opératoires a diminué, les stagiaires sont aujourd'hui peu exposés à ce type d'accouchement et manquent de formation sur le sujet. Cette étude visait à déterminer si une classe de maître vidéo pourrait améliorer l'assurance, l'aise et les connaissances des stagiaires quant à l'évaluation du deuxième stade du travail et à la sélection des patientes qui subiront un accouchement vaginal opératoire et de l'instrument à utiliser.

Méthodologie : Les résidents en obstétrique et gynécologie de l'Université de Toronto ont été invités à participer. L'intervention portait sur deux vidéos concernant l'évaluation du deuxième stade : 1) sélection des patientes qui subiront un accouchement vaginal opératoire et 2) sélection de l'instrument à utiliser. L'aise et l'assurance des participants ont été évaluées avant et après l'intervention. Les résidents ont aussi participé à une discussion en groupe visant à évaluer l'acquisition de connaissances. Une analyse descriptive thématique a été faite, et les thèmes communs ont été extraits.

Résultats : En moyenne, les résidents ont effectué plus d'accouchements par ventouse que d'accouchements par forceps en tant que praticiens primaires (26,4 contre 7,9). Après l'intervention vidéo, on a noté une amélioration statistiquement significative ($P \leq 0,05$) de l'aise des participants dans les domaines suivants : 1) compréhension du bassin maternel, 2) choix des instruments, 3) choix des forceps, 4) choix du lieu d'accouchement, 5) détection des facteurs cliniques favorables, et 6) détection des facteurs cliniques indiquant un mauvais pronostic. Il n'y avait pas de différence dans le degré d'assurance. Les principaux thèmes dégagés des données sur la discussion en groupe étaient les nouvelles connaissances acquises sur les techniques d'évaluation du deuxième stade, les nouvelles approches relatives aux connaissances existantes et les multiples difficultés et obstacles à l'apprentissage.

Conclusion : Les cours vidéo sur l'évaluation du deuxième stade et l'accouchement vaginal opératoire augmentent l'aise des stagiaires et sont un outil complémentaire à l'apprentissage clinique précieux.

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INTRODUCTION

In current clinical practice, Caesarean section (CS) rates are increasing and operative vaginal delivery rates are decreasing, despite evidence of the safety and efficacy of operative vaginal delivery.¹⁻³ With the decline in operative delivery rates, trainees lack the appropriate exposure to gain confidence. A survey of U.S. obstetrics residents reported that although 95% of those surveyed felt competent performing a vacuum-assisted vaginal delivery, only 58% felt competent performing a forceps-assisted vaginal delivery.⁴ The American College of Obstetricians and Gynecologists proposed that hospitals with high CS rates should consider introducing training in the appropriate use of obstetric forceps and vacuum in the management of second stage labour arrest at all stages of training and practice.⁵

In performing safe operative vaginal deliveries, understanding patient and instrument selection is important. Although algorithms and mnemonics exist for the technical aspects of operative vaginal deliveries (e.g., the steps of forceps application^{6,7}), teaching trainees the art of second stage assessment and instrument choice remains a challenge.^{8,9} The Royal College of Physicians and Surgeons of Canada recognizes a collective shift toward competency-based education in post-graduate medical education.¹⁰ In keeping with this change, it becomes imperative that we identify and define obstetric competencies, including second stage assessment and instrument selection. What is commonly referred to as the “art” of obstetrics will have to be translated into teachable knowledge and standardized to create appropriate trainee assessment tools.^{10,11}

A recent qualitative study performed at the University of Toronto resulted in the creation of a cognitive task list detailing the steps involved in performing a second stage labour assessment.¹² The rationale for this current study was to formalize resident education in patient instrument selection for operative vaginal deliveries. The task list was used to develop a video-based educational tool for obstetrics and gynaecology residents. The primary objective was to determine whether a video-based masterclass of second stage labour assessment for operative vaginal deliveries could improve trainees’ confidence, comfort, and knowledge in patient and instrument selection. Secondary objectives included assessing the utility of incorporating the intervention into the post-graduate curriculum and assessing residents’ satisfaction with the video as an educational resource.

MATERIALS AND METHODS

Obstetrics and gynaecology residents enrolled in the University of Toronto in PGY-1 s through PGY-5 were asked

to participate between March and May 2015. Research ethics board approval was obtained (Study #31191-February 26, 2015). There were two main components to the study: a quantitative assessment (which included a pre-test survey, an intervention, and post-test survey), and a qualitative assessment (using a focus group).

Quantitative Methods

Participants were given a pre-test survey, which consisted of a 25-item questionnaire (online [Appendix A](#)). They were asked to identify their PGY, previous experience with operative deliveries, baseline self-confidence level with forceps deliveries, and comfort level with various aspects of second stage assessment and instrument selection. Trainees’ confidence was assessed on the basis of their last two to three forceps-assisted vaginal deliveries by using a modified version of a six-item tool previously validated for surgical trainees to measure self-confidence.¹³ Trainees’ comfort was measured on a five-point Likert scale (1, not very comfortable; 2, not comfortable; 3, neutral; 4, comfortable; 5, very comfortable) on 13 different components. The pre-test survey was pilot tested on two staff obstetricians to determine whether questions were clear and accurate. The pre-test survey was distributed to participants as an online survey through Fluid Surveys ([fluidsurveys.com](#)). All responses were anonymous and confidential.

The intervention consisted of two educational videos that were distributed and viewed by participants either online or during a designated academic half-day teaching session. Participation was voluntary, and non-participation did not preclude the participants from accessing the videos. The first video was entitled “The Second Stage Assessment: How to Select the Appropriate Patient for an Operative Vaginal Delivery,” and the second video was entitled “The Second Stage Assessment: How to Select the Appropriate Instrument for an Operative Vaginal Delivery.” The playing time of the videos were less than 30 minutes in total. The content of the videos was derived from a previous study by Hodges et al.¹² The videos were filmed in professional quality and featured volunteer staff obstetricians discussing patient and instrument selection with featured accompanying text, diagrams, and examples performed on pelvic models (online [Videos 1 to 5](#)).

Following the intervention, the participants were asked to complete a 24-item post-test survey that excluded the trainees’ obstetric experience section from the pre-test survey (online [Appendix B](#)). Instead, there were four additional survey questions assessing the trainees’ perceptions of the educational utility and quality of the videos.

Categorical data were represented as frequencies and/or counts. Obstetric experience was presented as interval fre-

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