Creation of a Gynecology Surgical Simulation Curriculum for LVHN Ob/Gyn Residents

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BACKGROUND

- Appropriate surgical skill is important in preventing intraoperative complications, reducing operative time, and assuring safe surgical outcomes (Birkmeyer et al., 2013).
- Traditional surgical residency program trainees continue to follow a "see one, do one, teach one" training apprenticeship model, during which residents operate on primarily live patients (Van Hove et al., 2010).
- Teaching surgical technique, skills, and procedures in a simulated environment has become critical in graduate medical education. It offers an environment where residents can safely learn and practice, ultimately optimizing future patient outcomes (De Montbrun and MacRae, 2012).

PURPOSE

To design and develop a structured surgical curriculum for LVHN Ob/Gyn residents that incorporates the following components:

- **L**earning – Didactic teaching and appropriate reading material identifying the indications for and methods of performing the surgical procedure
- **V**ideo – Enforcing surgical principles and technique through standard live case videos
- **H**ands-On Performance – Providing clinical exposure to enhance surgical skills using box trainers, hybrid models, and computer simulation
- K**N**owledge – Evaluating with standardized post-tests

METHODS

Identify common and critical procedures for general Ob/Gyn residents → Develop learning modules of eight common surgeries on Blackboard CourseSites, an online curriculum builder → Design a reusable and sustainable lab simulation model for residents to practice surgical procedures, receive feedback on their technical skill improvement, and test knowledge

RESULTS

- We identified surgical procedures that LVHN Ob/Gyn residents should achieve competency in performing prior to graduation; for which the following training modules were developed:
  1. Ovarian Cystectomy and Oophorectomy
  2. Tubal Sterilization
  3. Pelvic Pain (Endometriosis and Adhesions)
  4. Cystoscopy and Urogenital Surgery
  5. Hereditary Breast and Ovarian Cancer (HBOC)
  6. Ectopic Pregnancy
  7. Basic Hysteroscopy
  8. Cervical Dysplasia (Cone Biopsy and LEEP)
- Each module follows a basic structure with an emphasis on case-based learning and application for the resident, as well as multifaceted evaluation tools.

Step 1	• Overview and Objectives
Step 2	• Evidence-Based Reading Material
Step 3	• Patient Case with Case Workup Questions (pre-test with focus on patient care)
Step 4	• Surgical Procedure Steps • In written form supplemented with videos of competent physicians performing the respective surgery
Step 5	• Introduction to Simulation Model and Procedure (video format)
Step 6	• Clinical Practice (four times per year) • Standard performance of simulated procedure with simulation model in the Surgical Education Center (SEC)
Step 7	• Post Test • 15 multiple choice questions to assess didactic knowledge of module and procedure

Fig. 1: Overview and Objectives

Fig. 2: Reading Materials

Fig. 3: Case with Questions

Fig. 4: Post Test

RESULTS, cont.

- A simple "hybrid" pelvic simulation model was developed using readily available materials, including a plastic fruit as the uterus, common tubing materials as the iliac arteries and veins, and Smooth On© Silicone Rubber as the peritoneum and soft tissue.
- Affordable and easy-to-replicate interchangeable parts represent various pathologies upon which residents can practice:
  - Endometriosis: water balloon covered with Smooth On© Soma Foam (flexible silicone foam) interspersed with plastic kidney beans

Fig. 5, 6 and 7: Development of Simulation Model

Fig. 8: Endometriosis

Fig. 9: Adhesions

CONCLUSIONS

- This simulated surgical curriculum will be introduced in the structured training program for all Ob/Gyn residents.
- Modules are expected to improve residents' technical skills and comfort level with critical gynecology procedures that both optimize true operative performance and protect patients.
- The curriculum also provides attending surgeons a standardized and sustainable means to better evaluate surgical performance and competency while providing remediation for needy trainees.
- Future work includes creation of additional modules.

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