Italian survey on the residents’ surgical level in gynecology and obstetrics. Italians do it better?

Capozzi Vito Andrea 1, Rosati Andrea2, Sozzi Giulio3, Armano Giulia1, Cianci Stefano2, Chiantera Vito3, Scambia Giovanni2, Berretta Roberto1, Frusca Tiziana1

1 Department of Gynecology and Obstetrics, University of Parma, Parma, Italy
2 Fondazione Policlinico Universitario A. Gemelli, IRCCS, Rome, Italy; Catholic University Sacred Heart, Rome, Italy
3 Department of Gynecologic Oncology, University of Palermo, Palermo, Italy

Abstract: Purpose: The present study aims to investigate the number of surgical procedures performed by Italian residents and their confidence to carry out different surgeries in obstetrics and gynecology. Methods: The present study is a national survey including all Italian gynecology and obstetrics senior residents. A questionnaire including 25 questions was provided. The free Google Forms site was used to create the survey. The study was conducted from April to October 2019. The survey started from the University Hospital of Parma, a tertiary hospital, and was sent to all the Italian post-graduation medical school in gynecology and obstetrics. An e-mail was sent to all representative residents in gynecology and obstetrics in Italy, then forwarded to all the senior residents. Results: Of the 555 residents enrolled, 100 joined the survey (18.2%). The analysis of the different procedures performed by residents has shown that 53%, 57%, and 77% of the residents had never performed a laparotomic, laparoscopic, and vaginal hysterectomy, respectively. The analysis of cesarean section skills has shown that 1% of residents had never performed any simple cesarean section, and 6% of residents had never performed any complex cesarean section. Fifty-two doctors in training had never performed an operative vaginal delivery. Seventy-three and ninety-three residents performed more than thirty uterine curettages and sutures of 1st or 2nd degree tears, respectively. Conclusions: In Italy, senior residents are generally confident with the low-complexity procedures and also with complex cesarean sections. The number of Italian residents confident to perform a hysterectomy is poor. (www.actabiomedica.it)

Keywords: Survey; Resident; Gynecology; Obstetrics.

Introduction

Recently, there is an increasing interest in simulation and training in obstetrics and gynecology. This is mostly due to the availability of simulators, mannequins, and pelvic trainers and to their integration in residents’ training programs in order to achieve adequate surgical skills(1, 2). Worldwide, specific skills have been established for each doctor in training(3, 4). In Italy, similarly to other countries, a training log-book has been established. Each resident must report in his own log-book all surgical procedures performed during the training program (Legislative Decree n. 368 of August 17, 1999). The residents’ skills vary enormously according to personal inclination and facilities offered by the training center. Furthermore, there is no external accreditation system of the surgical level reached by the trainees. In addition, the residents’ skills acquisition and the surgical level reached in different procedures, could greatly depend on personal preferences(5).

Although many studies settled in different European countries have been already published, to our best knowledge a survey has never been made for Italian residents in gynecology and obstetrics(6–8).
The aim of the present study is to investigate the number of surgical procedures performed by Italian residents and their confidence to carry out different surgeries in obstetrics and gynecology.

Methods

An e-mail was sent to all representative residents in gynecology and obstetrics in Italy, then forwarded to all the senior residents of the last two years of specialty training. A questionnaire including 25 questions was provided. The questions aimed to explore residents’ skills to perform all the main gynecological and obstetric procedures (Table 1). Each resident had to specify how many procedures were performed during the training. At the end of each question, the resident had also to specify if he/she felt confident to perform that particular surgical procedure. A cut-off of 30 procedures and 20 procedures was chosen for cesarean sections and hysterectomies based on learning curves for these procedures, respectively(9, 10). The question-

| Small surgery                                                                 |                                                                 |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 1- Office diagnostic and operative hysteroscopy;                             |                                                                 |
| 2- Marsupialization or removal of Bartolini's cysts;                          |                                                                 |
| 3- Dilatation and curettage;                                                  |                                                                 |
| 4- Diagnostic Laparoscopy;                                                    |                                                                 |
| 5- Episiotomy, episiorraphy, laceration suture I-II degree;                   |                                                                 |
| 6- Amniocentesis, chorionic villus sampling.                                  |                                                                 |

| Medium surgery                                                               |                                                                 |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 1- Operative laparoscopy for benign adnexal pathology (ovarian cyst removal,   |                                                                 |
| salpingo-oophorectomy);                                                       |                                                                 |
| 2- Laparoscopic myomectomy;                                                   |                                                                 |
| 3- Middle urethral Sling, tension-free vaginal tape, Transobturator Tape, mini-sling; |                                                                 |
| 4- Resectoscopic surgery;                                                     |                                                                 |
| 5- Laparoscopy / Laparotomy for extra-uterine pregnancy;                      |                                                                 |
| 6- Simple cesarean section;                                                   |                                                                 |
| 7- Operative vaginal delivery;                                                |                                                                 |
| 8- Suture of perineal tears III-IV degree;                                   |                                                                 |
| 9- Manual placental removal;                                                  |                                                                 |

| High surgery                                                                 |                                                                 |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 1- Laparotomic hysterectomy for benign pathology;                           |                                                                 |
| 2- Laparoscopic myomectomy;                                                  |                                                                 |
| 3- Laparoscopic deep endometriosis eradication;                             |                                                                 |
| 4- Laparoscopic hysterectomy;                                                |                                                                 |
| 5- Laparoscopic lymphadenectomy;                                             |                                                                 |
| 6- Laparotomic hysterectomy for malignant pathology;                        |                                                                 |
| 7- laparotomic lymphadenectomy;                                              |                                                                 |
| 8- Vulvectomy;                                                              |                                                                 |
| 9- Vaginal hysterectomy;                                                     |                                                                 |
| 10- Complex cesarean sections (previous Caesarean section, breech presentation, twin pregnancy, full dilatation, placenta accreta). |                                                                 |
naire was anonymous. The name and the University of the residents were blinded. The free Google Forms site was used to create the survey(11).

Cesarean sections requiring higher surgical experience were defined as 'complex' for analysis purposes (e.g. history of previous cesarean section, breech presentation, twin pregnancy, full dilatation, or morbidly adherent placenta).

Informed consent was required and obtained by each participant. The study was conducted from April to October 2019.

Results

Of the 555 residents enrolled, 100 joined the survey (18.2%). In particular, 59 and 41 residents were attending the fourth and fifth year of their specialty training, respectively.

The analysis of the different procedures performed by residents has shown that 53%, 57%, and 77% of the residents had never performed a laparotomic, laparoscopic, and vaginal hysterectomy, respectively. When considering the surgical level reached by residents, only 2 of them managed to perform more than 30 laparotomic hysterectomies. The same number of laparoscopic hysterectomies was performed by only 2 other residents, and only 1 reached a similar number of vaginal hysterectomies. Moreover, 19%, 57%, and 7% of residents felt confident to perform laparotomic, laparoscopic, and vaginal hysterectomies, respectively.

The analysis about cesarean section skills has shown that 1% of residents had never performed any simple cesarean section, and 84% of them performed more than 20 procedures during the training. When moving to the complex type of the procedure, 6% of residents had never performed any complex cesarean section, whereas 68% of them performed more than 20 procedures.

However, 80% and 47% of residents feel confident to perform simple and complex cesarean sections, respectively.

Fifty-two doctors in training had never performed an operative vaginal delivery, whereas only one performed more than 30 procedures. Moreover, 86% of them do not feel confident to perform an operative vaginal delivery.

Seventy-three and ninety-three residents performed more than thirty uterine curettages and sutures of 1st or 2nd degree tears, respectively. Furthermore, 99% of the resident feel confident to perform these procedures.

Table 2. Main results.

| Total 100 residents | Never performed (number) | More than 30 procedures (number) | Confidence to perform (number) |
|----------------------|--------------------------|---------------------------------|-------------------------------|
| Laparotomic Hysterectomy | 53                       | 2                              | 19                            |
| Laparoscopic Hysterectomy | 57                       | 2                              | 57                            |
| Vaginal Hysterectomy  | 77                       | 1                              | 7                             |
| Operative vaginal delivery | 52                       | 1                              | 34                            |
| 1st or 2st degree tears | 1                        | 93                             | 99                            |
| Uterine curettage     | 1                        | 73                             | 99                            |
| Simplex Cesarean section | 1                        | 84                             | 80                            |
| Complex Cesarean section | 6                        | 68                             | 47                            |
Among the participants in the study, 43% of them had a training period in an institution different than their university.

The following link shows all the results and details of the present survey: https://docs.google.com/forms/d/1VlnuMz2Mx3FXyxHC60-mvJ_D9f9Cuc-0iBwLudEhywu0/edit#responses.

The main results are shown in Table 2.

Figure 1 shows the geographic areas of the resident who joined the survey.

Discussion

Our survey shows that 53%, 57%, and 77% of the residents in gynecology and obstetrics in Italy had never performed a laparotomic, laparoscopic, and vaginal hysterectomy, respectively. Almost all residents feel confident in performing surgeries of low complexity, such as uterine curettage or low-degree perineal tears.

Several articles in the literature analyze residents’ expertise in different sub-specialties(12–14). In addition to a natural trend to perform more gynecologic minimally invasive procedures than the classic laparotomy or vaginal surgery, nowadays the residents report a corresponding lower confidence to perform such procedures(6, 15–17).

In our survey, only 23% of the residents had performed a vaginal hysterectomy only one time, consistently with the general reduction of vaginal procedures observed in the last decade worldwide(18). In recent years, the minimally invasive approach has been preferred for an increasing number of procedures, leading to a greater number of laparoscopic surgeries rather than vaginal, performed by residents(19).

Only a small minority of residents (< 2%) performed more than 30 hysterectomies, regardless of the surgical approach. Several studies have shown a learning curve necessary for these kinds of procedures that exceed 20-30 cases(9, 20, 21). It seems consequently reasonable the lack of confidence shown by the vast majority resident in performing hysterectomies. However, it must be considered that part of the participant in the survey could show less interest in gynecological surgery according to their sub-specialty training.

Cesarean section is the most performed surgical procedure in the world considering its impact on fetal outcome in case of distress(22). Soergel et al. reported a learning curve for cesarean section of 10-15 cases(10). Our survey has shown that the majority of the Italian residents performed more than 20 cesarean sections, both simple (84%) or complex (68%). Therefore, we can conclude that the majority of residents achieved satisfactory surgical skills to confidently perform these procedures.

About half (52%) of the participants of the study had never performed any operative vaginal deliveries. Recently, a prospective cross-sectional study has shown that in case of operative vaginal delivery the neonatal and maternal outcomes do not significantly change if the operator is a resident rather than the attending obstetrician(23). Despite this, our data are consistent with what was reported by Bofill et al. in 1992, showing that only 15% of the residents had performed at least one operative vaginal delivery(24).

However, these figures are partially due to the infrequent occurrence of operative delivery and also to the possible medico-legal consequences related to that(25, 26). As a consequence, these procedures result in more difficulty to teach.
On the other hand, almost all (99%) the participants are confident to perform uterine curettage and low-degree tears sutures. This is likely related to the high occurrence of these procedures.

We know that many factors impact on the training process and on the achievement of surgical confidence. In particular, the number of previously observed or assisted procedures, the predisposition to the gynecological surgery, and the supervisor predisposition to teach are important factors related to adequate training.

Despite all these limitations, the pelvic trainer exercise and simulations have been proven to be of paramount importance(27–29).

Another interesting aspect is the number of training hours. In an article by Wanzel et al., the complication rate decreased significantly after 10,000 hours of cardiac surgery among cardiac surgeons(30). Similarly, in the field of obstetrics and gynecology, the availability of the pelvic trainer during the residency could have an impact on the quality of the training(31). The longer is the time spent on the simulator, the greater are the surgical abilities achieved by the resident. Consistently with this view, Rogers et al. proposed an extension of the years of residency, like the European model(32). Furthermore, cadaver courses would increase both anatomical knowledge and resident operative confidence(33).

Conclusions

Resident training is a slow and complex process. In Italy, senior residents are generally confident with the low-complexity procedures and also with complex cesarean sections. The number of Italian residents confident to perform a hysterectomy is poor. Further studies are needed to define strategies to implement the residents’ surgical training and improve their surgical skills.

Ethical approval: No approval from the ethics committee of the University of Parma needed for survey-type studies.

Conflict of interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

Informed Consent: All participants provided their informed consent to participate in the study and to publish the results.

References

1. Ghi T, Rizzo G, E GEO group. The use of a hybrid mannequin for the modern high-fidelity simulation in the labor ward: the Italian experience of the Ecografia Gestione Emergenze Ostetriche (EGEO) group. Am J Obstet Gynecol 2019 Jul 16. https://doi.org/10.1016/j.ajog.2019.07.023
2. Vaughan MH, Kim-Fine S, Hullfish KL, Smith TM, Siddiqui NY, Trowbridge ER. Validation of the Simulated Vaginal Hysterectomy Trainer. J Minim Invasive Gynecol 2018 Sep - Oct;25(6):1101–1106. https://doi.org/10.1016/j.jmig.2018.02.022
3. Du Bois A, Vergote I, Ferron G et al. Randomized controlled phase III study evaluating the impact of secondary cytoreductive surgery in recurrent ovarian cancer: AGO DESKTOP III/ENGOT ov20. J Clin Oncol 2017 3515 suppl, 5501-5501
4. Accreditation Council for Graduate Medical Education. Minimum thresholds for obstetrics and gynecology procedures. https://www.acgme.org/acgmeweb/Portals/0/ProgramResources/220_Ob_Gyn%20Minimum_Numbers_Announcement.pdf. Accessed October 27, 2019
5. Gupta N, Dragovic K, Trester R, Blankstein J. The Changing Scenario of Obstetrics and Gynecology Residency Training. J Gr Med Educ 2015 Sep; 7(3) 401–406. https://doi.org/10.4300/JGME-D-14-00730.1
6. Smith AL, Schneider KM, Berens PD. Survey of obstetrics and gynecology residents’ training and opinions on robotic surgery. J Robot Surg 2010 May;4(1)23-7. https://doi.org/10.1007/s11701-010-0176-0
7. De Win G, Everaerts W, De Ridder D, Peerar G. Laparoscopy training in Belgium: results from a nationwide survey, in urology, gynecology, and general surgery residents. Adv Med Educ Pr 2015 Jan 30;655-63. https://doi.org/10.2147/amep.s75747
8. Gac MM, Duminil L, Bonneau S, Gabriel R, Graesslin O, Raimond E. Gynecology-obstetric resident surgery training: a national evaluation. Arch Gynecol Obst 2019 Nov;300(5):1353-1366. https://doi.org/10.1007/s00404-019-05284-9
9. Mavrova R, Radosa JC, Wagenpfel G, Hamza A, Solomayer EF, Juhasz-Böss I. Learning curves for laparoscopic hysterectomy after implementation of minimally invasive surgery. Int J Gynaecol Obst 2016 Aug;134(2):225-30. https://doi.org/10.1016/j.ijgo.2016.01.017
10. Soergel P, Jensen T, Makowski L, von Kaisenberg C, Hillemanns P. Characterisation of the learning curve of cesarean section. Arch Gynecol Obst 2012 Jul;286(1):29-33. https://doi.org/10.1007/s00404-012-2230-9
11. Google: https://www.https://www.google.it/intl/it/forms/about. Accessed October 30, 2019.
12. Silvestre J, Lin IC, Levin LS, Chang B. Variability in Resident Operative Hand Experience by Specialty. Hand (N Y) 2018 Jan; 13(1) 103–107. https://doi.org/10.1177/1558944716677537

13. Ahmed N, Devitt KS, Keshet I, et al. A systematic review of the effects of resident duty hour restrictions in surgery: Impact on resident wellness, training, and patient outcomes. Ann Surg 2014 Jun; 259(6) 1041–1053. https://doi.org/10.1097/SLA.0000000000000595

14. Hwang H. Does general surgery residency prepare surgeons for community practice in British Columbia. Can J Surg 2009 Jun; 52(3) 196–200

15. Washburn EE, Cohen SL, Manoucheri E, Zurawin RK, Einarsson JI. Trends in reported resident surgical experience in hysterectomy. J Minim Invasive Gynecol 2014 Nov-Dec;21(6)1067–70. https://doi.org/10.1016/j.jmig.2014.05.005

16. Petrikovets A, Davenport A, El-Nashar SA, Sheyn D, Mangel J, Mahajan ST. National survey of urogynecological practice patterns among United States OB/GYN oral board examinees in different practice settings. Int Urogynecol J 2019 Jul;30(7)1153–1161. https://doi.org/10.1007/s00192-018-3636-0

17. Burckett D, Horwitz J, Kennedy V, Murphy D, Graziano S, Kenton K. Assessing current trends in resident hysterectomy training. Female Pelvic Med Reconstr Surg 2011 Sep;17(5)210–4

18. Turner LC, Shepherd JP, Wang L, Bunker CH, Lowder JL. Hysterectomy surgery trends: a more accurate depiction of the last decade? Am J Obs Gynecol 2013 Apr;208(4)277.e1–277.e7

19. Orhan A, Ozerten K, Kasapoglu I, et al. Laparoscopic hysterectomy trends in challenging cases (1995–2018). J Gynecol Obs Hum Reprod 2019 Jul 26. https://doi.org/10.1016/j.jogoh.2019.06.007

20. Kumar P, Kapur K, Bhat PM, Karkhanis N. Learning curve of laparoscopic hysterectomy in a zonal hospital setting: a retrospective analysis of 102 cases operated by a single surgeon. Int J Reprod Contracept Obs Gynecol 2017 Jun;6(6)2479–2484. https://doi.org/10.18203/2320-1770.ijrcog20172335

21. Ghomi A, Littman P, Prasad A, Einarsson JI. Assessing the learning curve for laparoscopic supracervical hysterectomy. JSLS 2007 Apr-Jun; 11(2) 190–194. https://doi.org/10.1016/s1931-7204(02)80206-7

22. Visser GHA, Ayres-de-Campos D, Barnea ER, et al. FIGO position paper: how to stop the caesarean section epidemic. Lancet 2018 Oct 13;392(10155)1286–1287. https://doi.org/10.1016/S0140-6736(18)32113-5

23. Sentilhes L, Madar H, Ducarne G, Hamel JF, Mattuizzi A, Hanf M. Outcomes of operative vaginal delivery managed by residents under supervision and attending obstetricians: a prospective cross-sectional study. Am J Obs Gynecol 2019 Jul;221(1)59.e1-59.e15. https://doi.org/10.1016/j.ajog.2019.02.044

24. Bofil l JA, Rust OA, Perry KG, Roberts WE, Martin RW, Morrison JC. Operative vaginal delivery: A survey of fellows of ACOG. Obs Gynecol 1996 Dec;88(6)1007-10. https://doi.org/10.1016/S0029-7844(96)00328-6

25. Keriakos R, Sugumar S, Hilal N. Instrumental vaginal delivery—back to basics. J Obs Gynaecol 2013 Nov;33(8)781-6. https://doi.org/10.3109/01443615.2013.813917

26. Murphy DJ. Medico-legal considerations and operative vaginal delivery. Best Pr Res Clin Obs Gynaecol 2019 Apr;56:114-124. https://doi.org/10.1016/j.bpobgyn.2019.01.012

27. Macedonia CR, Gherman RB, Satin AJ. Simulation laboratories for training in obstetrics and gynecology. Obs Gynecol 2003 Aug;102(2)388-92. https://doi.org/10.1016/S0029-7844(03)00483-6

28. Goff BA. Training and assessment in gynaecologic surgery: The role of simulation. Best Pr Res Clin Obs Gynaecol 2010 Dec;24(6)759-66. https://doi.org/10.1016/j.bpobgyn.2010.03.006

29. Nezhat C, Lakhi N. Learning Experiences in Robotic-Assisted Laparoscopic Surgery. Best Pr Res Clin Obs Gynaecol 2016 Aug;3520-9. https://doi.org/10.1016/j.bpobgyn.2015.11.009

30. Wanzel KR, Ward M, Reznick RK. Teaching the surgical craft: From selection to certification. Curr Probl Surg 2002 Jun;39(6)573–659. https://doi.org/10.1007/1067/mog.2002.123481

31. Dubuisson J, Vilmin F, Boulvain M, Combescure C, Petignat P, Brossard P. Do laparoscopic pelvic trainer exercises improve residents’ surgical skills? A randomized controlled trial. Eur J Obs Gynecol Reprod Biol 2016 Nov;206177-180. https://doi.org/10.1016/j.ejogrb.2016.09.026

32. Rogers RM, Julian TM. Training the gynecologic surgeon. Obs Gynecol 2005 Jan;105(1)197-200. https://doi.org/10.1097/01.AOG.0000150578.60931.a6

33. Jajja MR, Lovasik BP, Kim SC, et al. Can a Structured, Video-Based Cadaver Curriculum Demonstrating Proficiency Enhance Resident Operative Autonomy? J Surg Educ 2019 Sep 20 pii S1931-7204(19)30149-7. https://doi.org/10.1016/j.jsurg.2019.08.004

Correspondence:
Received: 20 April 2020
Accepted: 12 May 2020
Capozzi Vito Andrea, MD
Department of Gynecology and Obstetrics
University of Parma
Via Gramsci, 14, 43125, Parma, Italy
Phone: +39 0521702030
E-mail: vitoandrea.capozzi@studenti.unipr.it