International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2024; 8(2): 15-19
Received: 15-12-2023
Accepted: 20-01-2024

Robert B Gherman
Maternal Fetal Medicine Physician Luminis Health System, Annapolis, Maryland, United States

Jennifer Choi
Maternal/Fetal Medicine Physician Stonybrook University Hospital Stony Brook, New York

Adriane Burgess
Ph.D., RNC-OB, CCE, CNE, Program Director, Women and Children Service Line, Well Span Health, Annapolis, Maryland, United States

Shobha Mehta
Maternal Fetal Medicine Physician Well Span Health System, Annapolis, Maryland, United States

Theodore Bell MS
Research Manager, Maternal Fetal Medicine, Emig Research Center Well Span Health System, Annapolis, Maryland, United States

Corresponding Author:
Robert B Gherman
Maternal Fetal Medicine Physician Luminis Health System, Annapolis, Maryland, United States

Are residents confident to manage shoulder dystocia?

Robert B Gherman, Jennifer Choi, Adriane Burgess and Shobha Mehta

DOI: https://doi.org/10.33545/gynae.2024.v8.i2a.1429

Abstract
Background: Data are lacking to determine whether residents are confident in independently managing shoulder dystocia, as the ACGME does not track this condition.
Objective: A 25-question web-based survey was electronically disseminated to program directors of all 243 accredited OB/GYN residency programs in the United States. The survey was sent weekly over a four week period to encourage completion, through April and May of 2018. A Likert scale was used to assess U.S. obstetric and gynecology residents clinical and didactic training experience related to shoulder dystocia. Survey monkey and IBM SPSS Statistics were used to analyze the responses.
Results: Nearly all (97%) of the 116 (total of 5,493) residents who responded (2%) had received formal lecture or simulation training (87%), and most (89%) felt that they had received appropriate didactic training. 64% of residents had participated in < 10 total cases of shoulder dystocia. Only 51.7% and 48.3% agreed that they could currently independently perform delivery of the posterior fetal arm and fetal rotational maneuvers, respectively. Approximately half of the residents (47%) responded that they had never independently managed a shoulder dystocia from start to finish. After completion of residency training, 34.5% and 52.6% strongly agreed or agreed, respectively, that they would feel comfortable independently managing a shoulder dystocia.
Conclusions: Graduating obstetric residents do not appear to be confident to independently manage shoulder dystocia.

Keywords: Shoulder dystocia, internship and residency, education

Introduction
The Accreditation Council for Graduate Medical Education's (ACGME) has established common program requirements to ensure competency-based goals and objectives for each educational experience. These requirements are designed to promote a trajectory to autonomous practice [1]. According to the educational objectives of the Council on Resident Education in Obstetrics and Gynecology (CREOG), management of shoulder dystocia is listed as a core and intrinsic procedure that all obstetrics and gynecology (OB/GYN) physicians are expected to understand and perform independently [2]. However, current CREOG requirements only require obstetric residents to log procedure numbers for spontaneous vaginal deliveries, cesarean deliveries, operative vaginal deliveries, and obstetric ultrasound. We therefore sought to ascertain whether OB/GYN residents felt confident to independently manage a case of shoulder dystocia.

Methods
In 2018, we searched the ACGME website to identify ACGME accredited Obstetrics and Gynecology Residency programs in the United Sates. Two hundred and seventy three where identified. During the time frame of 2017-2018, there were 5,266 obstetrics/gynecology residents in the United States. The study was reviewed by the Institutional Review Board at WellSpan Health and deemed met criteria for exempt status. An electronic survey was created in SurveyMonkey Inc. and sent to the obstetrics and gynecology residency program directors and coordinators using the Association of Program Managers of Obstetrics and Gynecology (APMOG) ListServ with a request to have the electronic survey distributed to individual resident physicians in their program. The survey contained 15 multiple-choice and 11 Likert scale questions. Demographic data including information on the post graduate year level, age, and gender were collected. Further questions about their residency programs including state, number of incoming resident physicians per year, annual deliveries and the frequency of didactic lectures and simulation drills were included.

Questions addressing their personal experiences of managing shoulder dystocia were asked detailing their ability to perform specific maneuvers, satisfaction with their training, level of comfort in managing shoulder dystocia independently and their opinions about implementing increased surveillance to track shoulder dystocia cases through the ACGME.

The survey was conducted between April through May of 2018. The survey was emailed weekly, over four weeks to increase response rates. A SurveyMonkey link was attached to the electronic mail which disclosed our study objective. Upon clicking on the link, a detailed description of the study including the purpose, risks, benefits and alternatives were described. Data was analyzed using IBM ® SPSS software (Version 24). Descriptive statistics were completed mean and frequency data.

Results

Demographics

A total of 116 resident physicians participated in the survey across 23 states. There was a relatively equal distribution of responses by level of training including PGY-1 (25%, n=29), PGY-2 (29%, n=33), PGY-3 (22%, n=25) and PGY-4 (24%, n=28). The mean age of respondents was 29.6 years (SD 2.68) with a range between 24 to 43 years. Approximately 87% (n=99) of respondents were female. Most responses came from those in residencies programs in the state of New York (13%, n=21) and Pennsylvania (18%, n=15). Program sizes varied between 3 and 11 incoming resident physicians per year. Training. Resident physicians were predominantly (61%; n=69) employed at a hospital with greater than 2500 deliveries annually, and largely (55%; n=63) traveled to multiple sites during their training. Approximately half (49%; n=56) of respondents reported encountering between 1 and 5 shoulder dystocia cases during their training while less (30%, n=35) encountered between 10 and 20 cases. Advancement in PGY level of training did not correlate with the total number of cases encountered. A third of upper-level residents (PGY 3 and 4) (34%, n=18) and more than half (62%, n=38) of PGY-1 and PGY-2 reported experiencing between 1 and 5 cases of shoulder dystocia, while a third (36%, n=19) and a quarter (25%, n=16), respectively reported between 10 and 20 (25%, n=16). Four respondents (3.45%) stated they had not managed any cases of shoulder dystocia during their training, half were PGY-3 (50%, n=2).

Experience

Sixty percent (n=68) of respondents said that their program did not track the number of shoulder dystocia cases experienced by resident physicians. Notably, 53% (n=61) of resident physicians reported they have not independently managed a shoulder dystocia from start to finish. Among them, 34% (n=21) were upper-level residents. Education. Almost all (97%, n=113) of those who participated in the survey reported that their residency conducts formal didactic training on shoulder dystocia. The frequency of didactic training varied between programs, with 57% (n=65) reporting that training occurs once a year, 29% (n=33) once every six months, and 7% (n=8) state once every two to three months. Eighty seven percent of respondents (87%, n=101) reported having simulations and drills as part of their training. Frequency of the simulation and drills varied with half (50%, n=55) reporting a frequency of once a year and less than a quarter (23%, n=25) once every six months.

Comfort. Greater than 97% of resident physicians (97.4%, n=113) reported they can independently perform McRoberts maneuver and suprapubic pressure. Far fewer respondents were able to independently perform higher level maneuvers including the Woods or Rubin man EUVER (48%; n=56), delivery of the posterior arm (51%; n=60), and the Zavanelli maneuver 6% (n=7). Of those who could independently perform Woods or Rubin's maneuvers 64% (n=36) were upper level residents and this was similar for the Zavanellimaneuver (68%, n=41).

Residents. Upon reflecting on their learning, 79% (n=91) of resident physicians agreed or strongly agreed that their program provides them with appropriate clinical training to independently manage shoulder dystocia, 94% (n=109) felt comfortable recognizing signs of shoulder dystocia and 87% (n=101) felt they would be able to independently manage a shoulder dystocia upon encounter. Greater than half (52%, n=53) of residents who reported feeling capable of independently managing a shoulder dystocia were lower level (PGY 1 or PGY 2) resident physicians. Close to half of resident physicians (49%, n=56) surveyed agreed or strongly agreed that it would be helpful for ACGME to track the number of shoulder dystocia cases for completion of residency training. A smaller group (24%, n=28) agreed or strongly agreed there should be a minimum number of shoulder dystocia cases required to graduate from an ACGME residency program.

Discussion

Graduating obstetric residents appear to be comfortable to independently perform standard procedures, such as cesarean delivery and vacuum assisted delivery [3]. Our study adds additional support to the growing body of literature that suggests that many graduating residents may not be comfortable handling complex procedures. Similarly, Dotters- Katzs (year), reported that 17%, 33%, and 28% of 4th year residents would not feel comfortable performing a fourth degree repair, cesarean hysterectomy, or breech second twin delivery, respectively, post-residency [4]. Insert author name found that by the end of six years of training, only 53% of respondents felt confident to manage a vaginal breech delivery [5]. IGuntupalli (2015) found that only 20% of first-year clinical fellows were able to independently perform a vaginal hysterectomy, 46% an abdominal hysterectomy, and 34% basic hysteroscopic procedures [6].

The exact reason as to why most obstetric residents do not feel comfortable independently managing a shoulder dystocia event is difficult to ascertain, however, it seems to be intimately related to decreased exposure to this obstetric complication.. ACGME duty hour limits and employment of nurse midwives in many institutions have been postulated to affect procedural volumes. In a study involving retrospective analysis of ACGME operative logs, Gupta found that the number of vaginal deliveries declined from 320.8 to 261 (2002-2003 versus 2013-2014) [7]. Similarly, Bennett [8] reported that from 2003 to 2019, the mean number of spontaneous vaginal deliveries performed by graduating residents significantly decreased over time by 20% from 320.8 to 256.1 (p<.001). The currently established minimum thresholds for graduating obstetrics and gynecology residents, as set forth by the Residency Review Committee are just 200 spontaneous vaginal deliveries, 145 cesarean deliveries, and 15 operative vaginal deliveries. From 2015 to 2019, the average number of deliveries reported by graduating residents ranged from 254.3-273.9 [8]. As shoulder dystocia complicates 0.2% to 2.4% of all vaginal deliveries [9], this could potentially mean that a resident could only be involved in at most 1 to 7 shoulder dystocias during their four year training period and even if involved many not have had the opportunity to independently manage.

In this study, we found that residents reported receiving

adequate didactic training on the management of shoulder dystocia, however, this did not translate to feelings of independent clinical competence. In the current educational system for residents, simulation and drills have become a proxy for clinical exposure to infrequent obstetric events [10]. The American College of OB/GYN currently advocates for simulation exercises in an attempt to reduce the complications associated with shoulder dystocia [11]. In a recent systematic review and Bayesian meta-analysis, however, notable variations in shoulder dystocia simulation exercises were noted, including instructor type, whether mannequins were used, the frequency of exercises and whether attendance was mandatory [12]. No simulation study to date has shown an effect with regards to the rate of persistent brachial plexus palsy, the main area of concern [13-14]. Simulation-based educational interventions have been shown to improve resident's performance of technical maneuvers only in simulated shoulder dystocia settings [15]. Our study was not designed to adequately address the impact of simulation training upon the comfort level of residents with regards to maneuver performance.

Considering the low frequency of shoulder dystocia, it will be very challenging to increase the total number of cases to which a resident physician gains exposure. One approach would be the implementation of maintenance of a case log of shoulder dystocia cases, with a minimum requirement for graduation. Case logging is likely to raise awareness among trainers and trainees about the deficiency in clinical experience.

Other suggestions to help address this concern may include a systematic approach for immediate notification to resident physicians upon encountering of a shoulder dystocia and standardized involvement in the delivery of high-risk patients. An alternative approach would be to evaluate learning systems to improve obstetric skills. Health systems that have implemented Relias OB, an online educational program which reveals gaps in knowledge and addresses them with targeted, personalized, and engaging learning modules, have seen a 34% decrease in shoulder dystocia-related injuries [16, 17] Implementation of a targeted quality assurance program has also been shown to improve absolute brachial plexus injury rates from 8.2 to 2.9 per 1,000 vaginal births in an urban tertiary academic medical center [18].

Limitations. The most significant limitation in our study was the small sample size. Although the survey was distributed weekly to all ACGME-accredited obstetrics and gynecology residency programs, response rates were low. In 2018, there were 5,493 total OB/GYN residents. The surveys were electronically sent to the program directors and coordinators which contributed to the challenge for follow-up and assessment of who had and had not responded. However, the resident physicians who elected to respond to the survey represented different parts of the country allowing us to assess diverse residency programs.

Table 1: Resident physician demographics

	N	Percent
Age group (years)		
20-25	2	2
26-30	77	77
31-35	35	35
36-40	o	O
>40	2	2
Gender		
Female	99	86.8
Male	15	13.2
No answer	2	0.0
PGY-1	29	25.2
PGY-2	33	28.7
PGY-3	25	21.7
PGY-4	28	24.4
No answer	1	0.0
Annual Hospital Deliveries		
500-1000	a	7.0
1000-1500	4	3.5
1500-2000	8	7.0
2000-2500	8	7.0
> 2500	69	60.5
Unknown	17	14.9
No answer	2	0.0
Shoulder dystocia Encounters		
o	4	3.5
1-5	56	48.3
6-10	14	12.1
11-20	35	30.2
>20	6	5.17
Unknown	1	0.9

Table 2: Summary of Likert-Scale Responses

	Strongly Agree	Agree	Neutral N (Percent, %)	Disagree	Strongly Disagree
I can currently, independently perform the McRoberts maneuver?	92(79.3)	21(18.1)	1(0.9)	1(0.9)	1(0.9)
I can currently, independently perform suprapubic pressure?	82(71.30)	28(24.4)	5(4.4)	0(0.0)	0(0.0)
I can currently, independently perform a fetal rotational maneuver (Woods or Rubin's)?	29(25.0)	27(23.4)	27(23.3)	29(25.0)	4(3.5)
I can currently, independently perform delivery of the posterior fetal arm?	27(23.3)	33(28.5)	21(18.1)	32(27.6)	3(2.6)
I can currently, independently perform the Zavanelli maneuver?	2(1.7)	5(4.3)	13(11.2)	47(40.5)	49(42.2)
I feel that my residency provides me with appropriate clinical training in order to independently manage cases of shoulder dystocia	33(28.7)	58(50.4)	20(17.4)	3(2.6)	1(0.9)
I feel that my residency provides me with appropriate clinical didactic training in order to independently manage cases of shoulder dystocia	46(39.7)	57(49.1)	10(8.6)	3(2.6)	0(0.0)
I feel comfortable with recognizing signs of shoulder dystocia. (turtle sign inability to deliver anterior shoulder with appropriate traction and maternal expulsive efforts)	68(58.6)	41(35.3)	4(3.5)	2(1.7)	1(0.9)
After completion of my residency training I will feel comfortable independently managing a case of shoulder dystocia.	40(34.5)	61(52.6)	11(9.5)	3(2.6)	1(0.9)
I think it would be helpful for ACGME to track the number of should dystocia cases for completion of residency training.	17(14.9)	39(34.2)	26(22.8)	29(25.4)	3(2.6)
I believe that there is a minimum number of shoulder dystocia case that should be required to graduate from an ACGME residency.	9(7.8)	19(16.4)	31(26.7)	41(35.3)	16(13.8)

Conclusion

More than half of the resident physicians who responded to our survey reported they have not independently managed a shoulder dystocia from start to finish. These findings suggest a potential lack of confidence by the trainee who may rely on more experienced providers or conversely, a lack of trust from the training provider who may interject and complete the process on their behalf. Increased awareness of this juxtaposition is necessary to better engage the trainees and trainers to bridge the gap and improve clinical competence. We believe that a re-evaluation of the current structure of resident education, with establishment of minimum-volume standards for shoulder dystocia (19, 20) is necessary to insure clinical competence.

Conflict of Interest

Not available

Financial Support

Not available

References

1. ACGME. Common Program Requirements [Internet]. Chicago (IL): Accreditation Council for Graduate Medical Education; 2018 Jun 10; page 17; Available from: https://acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRResidency2019.pdf
2. ACOG. Educational Objectives: Core Curriculum in Obstetrics and Gynecology 11 Edition [Internet]. Washington (DC): The American College of Obstetricians and Gynaecologists; 2016; 32, 39; Available from:http://www.unlv.edu/sites/default/files/page_files/945/OBGYN-CREOG- EducationalObjectives.pdf
3. Banks E, Gressel GM, George K, Woodland MB. Resident and program director confidence in resident surgical preparedness in obstetrics and gynaecologic programs. Obstetrics & Gynaecology. 2020;136:369-76.
4. Dotters-Katz, SK, Gray B, Heine RP, Propst K. Resident education in complex obstetric procedures: Are we adequately preparing tomorrow's obstetricians? American Journal of Perinatology. 2020;37:1155-1159.
5. Chinnock M, Robson S. Obstetric trainees experience in vaginal breech delivery: Implications for future practice. Obstetrics & Gynecology. 2007;110:900-3.
6. Guntupalli SR, Doo DW, Guy M, Sheeder J, Omurtag K, Kondapalli L, Vale F, Harper L, Muffly TM. Preparedness of obstetrics and gynecology residents for fellowship training. Obstetrics & Gynecology. 2015;126:559-68.
7. Gupta N, Dragovic K, Trester R, Blankstein J. The changing scenario of obstetrics and gynecology residency training. Journal of Graduate Medical Education; c2015 Sep, p. 401-406.
8. Bennett C, Chambers LM, Yao M, Chien E, Berghella V. Reported case numbers and variability in delivery route and volume by obstetrics and gynecology residents from 2003 to 2019. American Journal of Obstetrics & Gynecology MFM; c2021.
9. Hansen A, Chauhan SP. Shoulder dystocia: Definitions and incidence. Seminars in Perinatology. 2014;38:184-188.
10. Olson DN, Logan L, Gibson KS. Evaluation of multidisciplinary shoulder dystocia simulation training on knowledge, performance, and documentation. American Journal of Obstetrics & Gynecology MFM.
11. Committee on Practice Bulletins-Obstetrics. Practice Bulletin No 178: Shoulder Dystocia. Obstetrics & Gynecology. 2017 May;129(5):e123-e133. DOI: 10.1097/AOG.0000000000002043. PMID: 28426618.
12. Wagner SM, Bell CS, Gupta M, Mendez-Figueroa H, Ouellette L, Blackwell SC, Chauhan SP. Interventions to decrease complications after shoulder dystocia: A systematic review and Bayesian meta-analysis. American Journal of Obstetrics & Gynecology. 2021;225:484.e1-484.e33.
13. Crofts JF, Lenguerrand E, Bentham GL, Tawfik S, Claireaux HA, Odd D, et al. Prevention of brachial plexus injury-12 years of shoulder dystocia training: An interrupted time-series study. BJOG. 2016;123:111-8.
14. Walsh JM, Kandamany N, Ni Shuibhne N, Power H, Murphy JF, O'Herlihy C. Neonatal brachial plexus injury: Comparison of incidence and antecedents between 2 decades. American Journal of Obstetrics & Gynecology. 2011;204:324.e1-6.
15. Goffman D, Heo H, Pardanani S, Merkatz IR, Bernstein PS. Improving shoulder dystocia management among resident and attending physicians using simulations. American Journal of Obstetrics & Gynecology. 2008;199:294.e1-294.e5.
16. Relias.com [Internet]. Morrisville (NC): [Cited 2019 Sept 19] Available from: http://www.relias.com/press-

room/relias-brings-impact-nation-2019-to-san-antonio
17. Relias.com [Internet]. Morrisville (NC): Available from: www.relias.com/success-stories/committed-to-perinatal-safety
18. Gurewitsch Allen ED, Will SEB, Allen RH, *et al*. Improving Shoulder Dystocia Management and Outcomes with a Targeted Quality Assurance Program. American Journal of Perinatology. 2017 Sep;34(11):1088-1096. DOI: 10.1055/s-0037-1603819. EPUB 2017 Jun 12. PMID: 28605824.
19. Ruiz MP, Chen L, Hou JY, Tergas AI, St. Clair CM, Ananth CV, et al. Outcomes of hysterectomy performed by very low-volume surgeons. Obstetrics & Gynecology. 2018;131;981-90.
20. Ruiz MP, Chen L, Hou JY, Tergas AI, St. Clair CM, Ananth CV, et al. Effect of minimum-volume standards on patient outcomes and surgical practice patterns for hysterectomy. Obstetrics & Gynecology. 2018;132:1229-37.

How to Cite This Article
Gherman RB, Choi J, Burgess A, Mehta S. Are residents confident to manage shoulder dystocia?. International Journal of Clinical Obstetrics and Gynaecology. 2024;8(2):15-19.