Back and Neck Pain in Gynecologists

Daniel M. Avery, Jr., MD
Daniel M. Avery, III, BS
Marion D. Reed, MD
Jason M. Parton, MA, MS
E. Eugene Marsh, MD

Abstract

Objective: To determine if back and/or neck pain is common in gynecologists.

Study Design: A 19-question survey was sent to 332 gynecologists listed with the state OB/GYN society. One hundred fifty-nine surveys were returned (47.9%). Descriptive statistical analyses were performed on this sample of 159 gynecologists to study the characteristics of those who experience back and/or neck pain.

Results: Ninety-two of the 159 (57.8%) gynecologists reported back and/or neck pain. The percentages were similar for men (57.3%) and women (61.8%). Physicians experiencing fatigue were more likely to suffer from back and/or neck pain than those who did not. Pain increases with years in practice.

Conclusion: This is a small study, but it suggests that back and/or neck pain is common in gynecologists. Robotic procedures could be the ergonomic answer to the occupational hazards of back and/or neck pain in gynecologists, but this will require more study.

Introduction

Back and neck pain are common complaints among gynecologists. The occupational diseases usually described in the literature for gynecologists are psychological stress, hoarseness, needle sticks, thermal burns through gloves, and face shield contamination.[1-10] Back and neck pain can be due to awkward vaginal surgery, long oncology procedures, long laparoscopy procedures, abdominal and pelvic examinations. Surgery can also be fatiguing work, especially with the increased number of laparoscopic procedures, which require more rigid body postures.[11,12] The actual physical effect of the operation on the surgeon is an important complication of laparoscopic procedures today.[13] Gynecologists have very awkward procedures due to prolonged standing during procedures and unnatural positions.[14] While musculoskeletal complaints have been documented among other specialties, very little has been written in the literature about occupational disease in gynecologists,[14] in particular, with respect to neck and back pain. This paper describes the prevalence of back and neck pain in gynecologists.

The most common musculoskeletal complaints in gynecologists and surgeons are fatigue and back and neck pain. While papers can be found addressing these problems in many disciplines, only eleven papers were found discussing occupational disease in gynecologists and only four of these described back and neck pain.[1,3,5-9,14,15,16] A single paper from the United Kingdom in 2001 describing back pain in gynecologists reported that back pain in this specialty had never previously been reported.[14] The prevalence of back pain in gynecologists in this study was 72%.[14] Fifty-three percent of physicians attributed the pain to the practice of OB/GYN.[3] With nearly three-quarters of the study group having back pain and over half attributing it to the physical practice of OB/GYN, the conclusion of back pain in gynecologists resulting in significant morbidity seems appropriate.[14] The purpose of this study was to study the prevalence of back and neck pain in gynecologists.

Materials and Methods

This study was approved by the Institutional Review Board of the University of Alabama in Tuscaloosa. A nineteen-question survey that could be completed in approximately five minutes

Figure 1: Back and Neck Pain in Gynecologists Survey

General Questions:

1. ___Male ___Female

2. In what age range do you belong?

__30-35 __35-40 __40-45 __45-50

__50-55 __55-60 __60-65 __>65

3. How many years have you been in practice?

__0-5 __5-10 __10-15 __15-20 __20-25 __>25

4. Do you perform?

___Open Procedures ___Laparoscopic Procedures

___Both

5. Please mark all that apply to you:

___ Back pain ___ Neck Pain ___ Shoulder Pain

(If you did not check any conditions above, please skip to question 10.)

6. Check all that apply to you

___ Previous traumatic injury to that part of the body

___ Medical condition that predisposes you to pain in this part(s) of the body

___ Outside hobby that puts you at risk for excess use or strain on this part(s) of the body

7. Of the above, how often does the pain occur?

___ 0-2 times/month ___ 0-2 times/week

___ 2-4 times/week ___daily

8. Has the pain caused you to seek medical attention?

___ Yes ___ No (skip to question 10)

9. Have you used or had any of the following for treatment?

___ NSAIDs ___ Prescribed medication

___ Physical therapy ___ Surgical procedure

Surgical Practice and History Questions:

10. If you perform both open and laparoscopic procedures, what is the approximate percentage of open to laparoscopic?

___100% open ___75% open ___50% Lap

___75% Lap ___100% Lap

11. Do you ever experience fatigue during procedures?

___Yes ___No (skip to question 14)

12. How often?

___only on long days ___1-2/week

___most days in surgery

13. Check all that you think apply to this fatigue:

___Long surgery times

___Open procedures

___Laparoscopic procedures

___Decreased sleep

___Stress from work

___Stress from outside work

___Outside hobbies

14. Check all that you have incorporated into the majority of your laparoscopic procedures:

___ Adjustable monitors

___ Table height adjustment

___ Stools to sit while operating

___ Moments to stretch in long procedures

15. When being trained as a medical student or resident, were you taught to keep proper posture during surgical procedures?

___Yes ___No

16. Do you consider your posture while operating?

___Yes ___No

17. Do you use or have you considered using robotic surgery?

___Yes ___No

18. If you currently perform robotic surgery, check all benefits that you feel apply:

___ Increased quality of surgery

___ Decreased recovery time

___ Increased range of surgical candidacy (i.e., can perform on morbidly obese patients)

___ More comfortable as the surgeon

___ Increased surgeries from referrals

19. If considered, for what reason?

___ To stay on leading edge of technology

___ To be well balanced in all gynecological procedures

___ To increase comfort during a long procedure

___ Necessity due to injury

___ Necessity due to age

Table 1: Sample Characteristics

		N (%)
Experience back and/or neck pain		
	Yes	**93 (58.5%)**
	No	**66 (41.5%)**
Gender		
	Male	**124 (78.0%)**
	Female	**34 (21.4%)**
Age Group		
	30-35	**3 (1.9%)**
	36-40	**18 (11.3%)**
	41-45	**17 (10.7%)**
	46-50	**30 (18.9%)**
	51-55	**34 (21.4%)**
	56-60	**28 (17.6%)**
	61-65	**23 (14.5%)**
	>65	**6 (3.8%)**
Number of years in practice		
	0-5	**4 (2.5%)**
	6-10	**21 (13.2%)**
	11-15	**23 (14.5%)**
	16-20	**25 (15.7%)**
	21-25	**38 (23.9%)**
	>25	**47 (29.6%)**

was designed to establish the prevalence of back and neck pain in gynecologists. An attempt was made to prepare a questionnaire that could be completed in a reasonable amount of time about a topic that was of interest to gynecologists and short enough to enhance maximal participation. The survey was mailed to all 332 obstetrician/gynecologists listed with the state OB/GYN association. Second letters and surveys were sent to gynecologists that did not respond after the first mailing. A total of 159 completed surveys were returned (47.9%). The survey is found in Figure 1. The survey was not validated, but there were a number of positive responses by the respondents after completion of the survey by written and oral comments. The high percentage of responses after two mailings (47.9%) may also suggest interest by respondents.

Demographic and general questions were asked relating to age, sex, years in practice, and whether open, laparoscopic, or both types of procedures were performed. Questions were then asked about back, neck, and shoulder pain, contributing factors for that pain, how often pain occurred, and details about treatment for pain. The next group of questions inquired about the mix of open and laparoscopic procedures, fatigue, and precipitating factors for fatigue. Questions were then asked about changes in laparoscopic procedures that may reduce pain and fatigue and whether they received training in proper posture while operating during medical education. The final group of questions inquired about robotic surgery and possible reasons for consideration.

Results

Ninety-two of the 159 gynecologists (57.8%) reported back and/or neck pain. The percentages were similar for men (57.3%) and women (61.8%). Mature physicians and those with fatigue were more likely to suffer from pain. Descriptive statistical analyses were performed on the sample of 159 gynecologists to study the characteristics of surgeons who experience back and/or neck pain (Tables 1 and 2). A chi-square test of independence was performed on eight of the survey questions to examine the relation between sample characteristics and whether or not the physician experiences back and/or neck pain. The three-category variable related to pain was stratified into a dichotomy of only whether the surgeon experienced back and/or neck pain. The results from the chi-square tests of independence resulted in only one significantly different association, that being the relation between physicians experiencing fatigue and experiencing back and/or neck pain ($\chi^2 = 8.989$, $p < .05$). Physicians experiencing fatigue were more likely to suffer from back and/or neck pain than those who did not experience fatigue. None of the other categories, when compared to whether or not the physician experiences back and/or neck pain, resulted in a statistically significant difference ($\alpha = .05$). However, the cross tabulations show trends emerging for the categories of age group, number of years in practice, and if the surgeon was trained to keep proper posture.

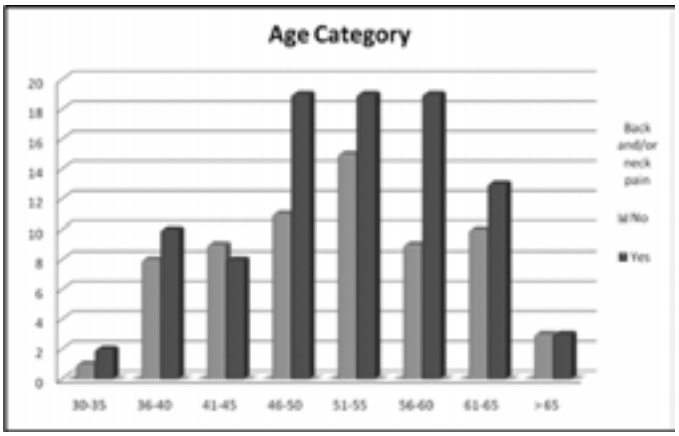
The age group category displayed a substantial spike of experiencing back and/or neck pain for those physicians in one of the age categories, 45-65 years. An explanation for this may be that physicians in younger and older age categories are either too young to experience back and/or neck pain or have utilized techniques to prevent this condition. The category of number of years the physician has been in practice is another variable where a trend seems to emerge. Starting with the 10-15 years category, the proportion of physicians experiencing back and/or neck pain increases until the 20-25 years category. Then the spike reappears at > 25 years in practice. As one would expect, because of the correlation between age category and number of years in practice, this proportional increase is consistent with the descriptive of the age category cross tabulation. The last trend to emerge is the category of whether or not the physician was trained to keep proper posture. Here, the cross tabulation shows physicians who did not have training on correct posture have a higher percent of back and/or neck pain.

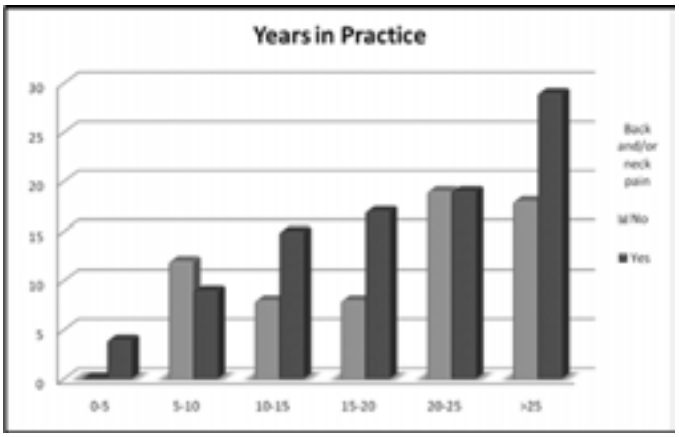
The analysis does show trends emerging from the descriptive cross tabulation but only one statistically significant relationship between the categories of experiencing back and/or neck pain and experiencing fatigue. However, these results do make an argument for a future study with an increased sample size to increase the amount of statistical power. This study sample was

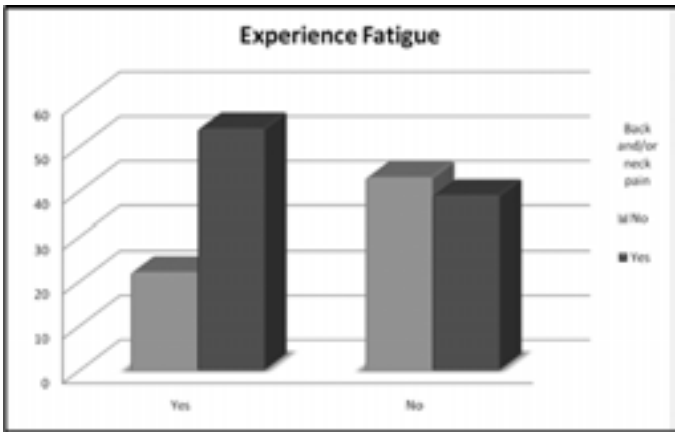
Table 2: Back and/or neck pain *sample characteristics

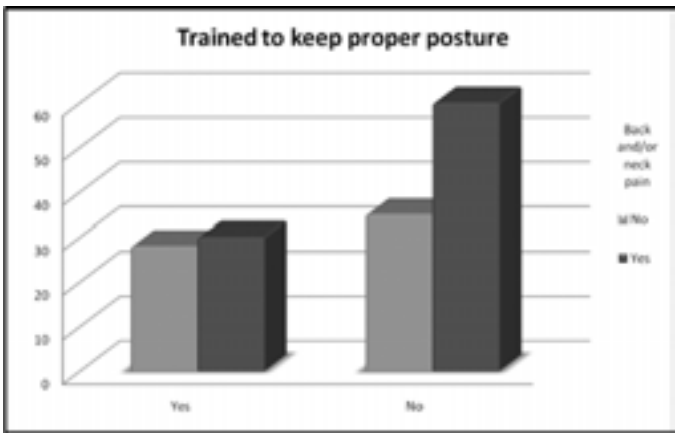
		EXPERIENCE BACK AND/OR NECK PAIN N (%)
Gender		
	Male	71 (57.3%)
	Female	21 (61.8%)
Age group		
	30-35	2 (66.7%)
	36-40	10 (55.6%)
	41-45	8 (47.1%)
	46-50	19 (63.3%)
	51-55	19 (55.9%)
	56-60	19 (67.9%)
	61-65	13 (56.5%)
	>65	3 (50.0%)
Number of years in practice		
	0-5	4 (100.0%)
	6-10	9 (42.9%)
	11-15	15 (65.2%)
	16-20	17 (68.0%)
	21-25	19 (50.0%)
	>25	29 (61.7%)
Procedures performed		
	Open procedures only	3 (50.0%)
	Laparoscopic procedures only	0 (0.0%)
	Both open and laparoscopic	90 (58.8%)
Experience fatigue		
	Yes	54 (71.1%)*
	No	39 (47.6%)
Trained to keep proper posture		
	Yes	30 (51.7%)
	No	60 (63.2%)
Consider posture while operating		
	Yes	64 (59.8%)
	No	26 (57.8%)
Considered using robotic surgery		
	Yes	47 (60.3%)
	No	44 (57.9%)

(* = χ^2 (1, N = 159) = 8.989, p < .05.)









159 yielding a power estimate of 50.3% for the chi-square test of independence.

Comments

Common complaints among gynecologists and surgeons are back and neck pain.[17] While back and neck pain probably increases with age, surgeons and gynecologists who perform laparoscopic procedures have a significant amount of back and neck pain.[11,12,13,14,18] Back and neck pain are a result of static flexion of the neck, awkward positioning to view or manipulate anatomy, or holding retractors for a long procedure. Prolonged positions in lengthy surgical procedures, such as radical oncology procedures, contribute to musculoskeletal stress and back pain.[14] Surgeons often develop intractable neck and back pain, stiffness, painful sensations, and numbness as a result of the procedures they perform, due to the lack of ergonomically favorable conditions.[13] The physical change of the body and suggestion of having increased fatigue in a laparoscopic procedure seems counter-intuitive at first glance. The head and neck positions are usually straight as compared to bent with open procedures, but it is this restricted posture that induces fatigue by requiring fixed head placement. The restricted posture, decreased head mobility, and less weight shifting is also compounded by poor posture, which can cause static muscle loading and fatigue.[12]

Laparoscopic and endoscopic procedures are the surgeries of the future.[20] Almost any traditional operation can be performed endoscopically.[20] Laparoscopic procedures are undoubtedly easier for the patient. Patients have no large incisions, less recovery, shorter hospital stays, and less treatment costs.[20,21] For the patient, laparoscopic surgery involves a "shorter stay, quicker recovery and less analgesic use."[22] However, "one of the most significant complications of laparoscopic surgery is the physical effect on the surgeon himself."[13] Occupational risks and ergonomic challenges are inherent to laparoscopic techniques and instrumentation.[11] Compared to an open procedure, the laparoscopic surgeon assumes a more rigid posture, decreased mobility of the head and neck, and less weight shifting.[11] The more restricted posture readily induces fatigue by limiting the body's natural changes allowable in open procedures.[11] Kant et al. reported that surgeons exhibit frequent static body postures that were harmful and contributed to fatigue.[12]

New procedures place new demands on surgeons. With the increasing evidence of surgeons' fatigue in this new ergonomic environment, changes will need to be made or occupational disease among surgeons will likely increase. But these procedures are evidenced to be more taxing on the surgeon due to tedious instrument techniques and the ergonomic problems mentioned previously. The long instruments manipulated by the surgeon, two-dimensional work space, and limited space are additional factors noted by other authors, which should also be considered in need for recommendations.[18]

One might assume that poor posture suggested to cause fatigue would be related to the outcome. Although the static muscle loading of poor posture causes fatigue as well as impaired psychomotor task performance,[12] one study concluded that poor postural instability does not correlate with poor performance or outcome.[18] The lack of correlation is most likely due to compensatory movements of the surgeon, despite their ergonomic favorability status. The setup for laparoscopic surgery is not typically ergonomic in many fields. Static positioning of the surgeon and stationary monitors set the surgeon up for physical and mental stress leading to neck, shoulder, and even wrist pain.[19]

Robotic procedures could be the ergonomic answer to the occupational hazards of traditional laparoscopy. The robot employs robotic arms with modified laparoscopic instruments to take the full blunt of rigid, static positioning required to use them.[23] The surgeon operates while sitting at a console apart from the operative field in the same suite, which is undoubtedly a more relaxed, ergonomically favorable position. The da Vinci Robotic System® claims more freedom of movement, greater dexterity, and better visualization of the operative field.[23] Reduced discomfort and fatigue, elimination of awkward and static positioning of the surgeon, and comfortable seating make a robotic procedure ergonomically favorable for the surgeon.[24] The role of robotic surgery has exciting potential, which will hopefully be defined in the near future with more research.

One study suggests a treatment approach which includes spatial orientation and hand-eye coordination improvement by sequential phases during residency training.[13] Another more basic recommendation is the development of appropriate posture during laparoscopic procedures, which would theoretically minimize many of the proposed causes of back and neck pain.[13] Other recommendations include self-controlled motorized tables for height adjustment, an endoscopic stool with wheels, and limitation of the number of procedures.[25] But anything that can minimize strain and pain within the realm of the operating room should be considered.[26] Good posture protects the spine.[27] From discussions with colleagues and residents, it seems that more emphasis is being made to students in surgery about proper posture and techniques to reduce discomforts of surgery. Perhaps then bad habits will not be handed down that could develop into some of the detrimental outcomes of surgical specialties, particularly gynecology. The first warning sign of a possible problem is low back pain or strain that does not respond to non-steroidal anti-inflammatory drugs.[27] Rohrich has published a list of recommendations to reduce back and neck pain in surgery:[27]

- Sit when you can in the operating room.
- When sitting, have both feet on the floor.
- Bend the knees when standing for a long period of time and shift weight every 5-10 minutes.
- Operate at the proper table height.
- Keep your head in the middle of your shoulders.
- Take time to stretch the cervical spine and lower back muscles.
- Do extension and flexion exercises for the lower back.[27]

It is important for laparoscopic surgeons who perform long procedures to maintain proper postural stability[18] and to utilize mobile monitors to improve stress on positioning.[19]

Any type of surgery can be physically demanding. Prolonged procedures lead to fatigue and can cause neck and back pain. While laparoscopic and endoscopic surgery touts shorter hospital stays, less cost, and quicker recovery, the effects to the surgeon can be detrimental. Gynecologists negotiate awkward abdominal and vaginal examinations, episiotomy repairs, long radical and laparoscopic procedures that lend to occupational disease. Recommendations are discussed above. Robotic surgery may be part of the answer to the physiologic challenges of laparoscopy, but more research will be needed.

Daniel M. Avery, MD, is Associate Professor and Chair of Obstetrics/Gynecology at the University of Alabama School of Medicine in Tuscaloosa, AL.

Daniel M. Avery, III, BS, is a Senior Medical Student at the University of Alabama School of Medicine, Birmingham. He has a special interest in musculoskeletal disorders and orthopedic oncology.

Marion D. Reed, MD, is Assistant Professor, Chief of Gynecology and GYN Urology, Department of Obstetrics and Gynecology, College of Community Health Services, University of Alabama School of Medicine, Tuscaloosa.

Jason M. Parton, MA, MS, is Epidemiologist and Project Director, Rural Health Institute for Research and Translational Science, College of Community Health Sciences, University of Alabama School of Medicine, Tuscaloosa.

E. Eugene Marsh, MD, is Professor and Dean, Department of Internal Medicine & Division of Neurology, College of Community Health Sciences, University of Alabama School of Medicine, Tuscaloosa.

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