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Perineorrhaphy: Commonly performed yet poorly understood; a survey of surgeons

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Abstract

Introduction and Hypothesis—Perineorrhaphy is performed for prevention of recurrent prolapse, improved sexual function, treatment of pain and cosmesis. Its use is based on expert opinion with little objective data. We aimed to describe factors important to surgeons when deciding to perform perineorrhaphy and to describe variations in surgical technique.

Methods—We administered an anonymous survey to surgeon attendees at the 2014 SGS annual scientific meeting regarding which factors are important when deciding to perform a perineorrhaphy and details of their surgical technique. Surgeons rated the importance of factors; 1-way ANOVA was used to rank the decision factors, post hoc pairwise comparisons with Fisher's least significant difference method were used to evaluate the importance between factors.

Results—183/360 surgeon attendees responded. Most were between ages 36-60 (79%), 56% were female, 64% practiced in an academic environment and 64% had undergone subspecialty training. An enlarged genital hiatus (GH) ranked as the most important factor influencing the decision to perform a perineorrhaphy, followed by a concomitant prolapse procedure ($p < 0.001$).

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Sexual function and cosmesis were rated less important. Decision to perform perineorrhaphy was made with the patient in 65% of cases, and otherwise in the operating room. Significant heterogeneity exists regarding surgeon suture preference and how muscles were re-approximated. Most (81%) reported incorporating structures both proximal and distal to the hymen in their repairs.

Conclusion—GH size and concomitant prolapse procedures ranked highest in surgeons' decision to perform a perineorrhaphy. Significant heterogeneity exists in the indications for and technique used to perform perineorrhaphy.

Keywords

Perineorrhaphy; perineoplasty

Introduction

Perineorrhaphy is a common gynecologic surgery, performed as either a stand-alone operation or in conjunction with other pelvic or abdominal procedures for repair of pelvic organ prolapse. Despite the frequency with which perineorrhaphy is performed little research has investigated the added value this procedure brings to prolapse repair or to other indications it's performed for. The perineum is made up of a muscular portion at the confluence of the superficial transverse perineal muscles and bulbocavernosus (or bulbospongiosus) muscles, as well as the midline connection of the two halves of the perineal membrane [1]. Perineorrhaphy means suturing of the perineum, and is sometimes used synonymously with perineoplasty, which means surgical repair of the perineum. Many textbooks describe a perineorrhaphy as approximation of the perineal body in some fashion [1, 2]. However, the details of the structures incorporated into the repair and the type and number of sutures used are less well established. Surgeons generally fortify the perineal body using suture [1, 2] while some advocate excising tissue [3, 4] when done for indications of dyspareunia or pain. For example, Nichols et al [5] reported that a perineorrhaphy should be performed by reconstructing the "perineal body with a series of horizontal mattress sutures placed in the soft tissues medial to the pubococcygei".

Perineorrhaphy is thought to reinforce the perineal body which may augment pelvic support as the perineal body provides a portion of the level III support of the uterus and vagina [6]. Disruption of the perineal body may allow for descent of the posterior vaginal wall and the distal anterior rectal wall into the vaginal canal during periods of increased intra-abdominal pressure[2]. While some surgeons recommend routinely including a perineorrhaphy with all posterior colporrhaphies, others include it on an "as needed" basis depending on intraoperative findings[7] [3]. Aside from prolapse repair, perineorrhaphies are commonly performed to improve sexual function, by narrowing a "relaxed" introitus or excising sensitive tissue to decrease dyspareunia [4], and to address cosmetic concerns of the patient.

Given the paucity of data regarding this commonly performed procedure and the apparent heterogeneity of how the procedure is performed, the primary aim of this study was to determine surgeons' ranking of the importance of various indications of when to perform a perineorrhaphy. A secondary aim was to describe variations in how various surgeons

perform perineorrhaphy. We hypothesized there would be significant heterogeneity in both the factors that influence surgeons' decisions and in the techniques employed perform perineorrhaphy.

Materials and Methods

We conducted an anonymous survey of attendees of the 40th annual scientific meeting of the Society of Gynecologic Surgeons in March, 2014. Surveys were distributed prior to one of the scientific sessions, and collected at the completion of that session. Respondents were asked to provide the last 4 digits of their primary phone number to avoid double sampling. Survey participants were incentivized with a \$20 Starbucks gift card as a raffle prize to those who turned in a survey. Prior to survey administration, this study was approved by the institutional review board at the University of New Mexico and the research committee of the Society of Gynecologic Surgeons; written consent was waived as the survey was anonymous. We did not receive funding for this study.

The survey totaled 5 pages and included 34 questions. Surgeon demographics were queried, including age, gender, experience, training, geographic location, practice type and surgical volume. We specifically asked about number of perineorrhaphies typically performed each month. Surgeons then rated the relative importance of various factors thought to influence the decision to perform a perineorrhaphy. For example, surgeons were queried about whether or not they performed perineorrhaphy to prevent prolapse recurrence, the importance of cosmetic appearance of the perineum to the surgeon and/or patient, possible effects on sexual function, and how a patient's current or desired level of sexual activity might influence the decision to perform a perineorrhaphy. Answers were ranked on importance from "not at all important" to "extremely important", which was converted to a 0-4 scale. Surgeons were also asked if they made the decision to perform a perineorrhaphy during the preoperative office evaluation with patient input, or if the decision was made in the operating room. We requested surgeons specify their surgical technique for performing a perineorrhaphy.

For the analysis of surgeon demographics, write-ins, when allowed, were combined with pre-defined categories when possible, as some respondents had written in answers that were close to the other categories provided as options.

The importance of various factors to surgeons are described using means $\pm$ standard deviations. To determine the relative importance of decision factors, a 1-way ANOVA with each decision factor as a grouping variable was performed. Post hoc pairwise comparisons of the importance between factors was done using Fisher's least significant difference method.

To determine whether surgeon demographics had an effect on the importance of the 16 decision items, we first analyzed the 16 variables together as a profile, using analysis of variance (ANOVA). This was done to assess whether the effect of a particular demographic was strong enough to influence the entire profile, before looking at each separately, to reduce the chance of finding significance due to multiple comparisons. If significance was

identified based on the profile, the differences in importance due to a single demographic (eg gender) were then tested in an ANOVA of the demographic variable and its interaction within the profile.

Results

183/360 surgeon attendees completed the survey. Most were between ages 36-60 (79%), 56% were female, 64% practiced in an academic environment and 64% had undergone subspecialty training (table 1). Time in practice was evenly distributed with all categories (residents, fellows, and those 0-5, 6-10, 11-20, and >20 years from training), with each category having between 12-21% of respondents. For the question about formal training received, pelvic surgery fellowships or unaccredited urogynecology fellowships were added to the “Urogynecology Fellowship” category. Five surgeons with additional training were included in the OB/Gyn residency group; 3 reported completing a minimally invasive gynecology fellowship, 1 a gynecologic oncology fellowship, and 1 a Reproductive Endocrinology and Infertility fellowship. The rationale for this was that none of these fellowships would be expected to provide specific training relative to performing perineorrhaphy, so the training level would probably reflect the training obtained from an OB/Gyn residency. Regarding overall surgical volume, 65% of surgeons reported they performed at least 9 surgeries/month, with 35% reporting over 15 surgeries/month. Sixty-three percent of respondents performed at least 4 perineorrhaphies per month. The geographical distribution of the surgeons queried was mostly throughout the United States, with only 5% of respondents from outside of the US (table 1).

The most important indication to perform a perineorrhaphy for the surgeons surveyed was an enlarged genital hiatus (GH), followed by a concomitant prolapse repair ($p < 0.001$); each of these factors were significantly more important than all other factors evaluated (all $P < 0.001$) (table 2). Compared with the most important indications, sexual function and cosmesis ranked much less important in surgeons' decision to perform perineorrhaphy. The relative importance of other decision factors is listed in table 2, the least important of which was anterior prolapse. Analyzed together as a group, the profile of the importance of the 16 decision factors differed by demographic variables, however, none of the differences in any single decision factor was clinically significant when analyzed with respect to a particular surgeon demographic. That is, differences were all less than 0.6 points on a 4-point scale, which was determined to be the minimally important difference, which we defined as half the standard deviation for importance of decision factors. Separate from the ranking of factors important to perform perineorrhaphy, when surgeons were asked whether they thought perineorrhaphy improves sexual function, the majority (59%) stated that it “sometimes” or “usually” improves sexual function.

When surgeons were asked when they make the decision to perform a perineorrhaphy, 38/183 (20%) stated they made it in the operating room after the exam under anesthesia, while 54/183 (30%) indicated they made it in the operating room at the end of other procedures being performed. About twice as many surgeons 119/183 (65%) noted the decision for this operation was made in the office in discussion with the patient. Some

surgeons indicated the decision may be made in more than one setting, hence the total >100%.

When we characterized surgical technique, 55/183 (30%) of surgeons said they re-approximated the bulbocavernosus muscles independently, 64/183 (35%) said they reapproximated the transverse perineal muscles independently, while 110/183 (60%) said they re-approximated the bulbocavernosus and transverse perineal muscles en bloc. The levator ani muscles were noted to be re-approximated as a part of a perineorrhaphy by 29/183 (16%), while the rectovaginal septum was re-approximated to the perineal body in 110/183 (60%). We asked surgeons what they consider a perineorrhaphy in their practice; 18% (30/169) reported the repair takes place distal to the hymen, while 63% (106/169) said the repair takes place both proximal and distal to the hymen, the remaining 15% (25/169) said the repair took place proximal and distal to the introitus. The vast majority of surgeons 157/170 (92%) closed the skin at the end of the procedure, and many 97/171 (57%) considered an obstetrical laceration repair a perineorrhaphy. Suture choice consisted of monofilament for 54/183 (30%) and polyfilament for 113/183 (62%), with 0, 2-0 and 3-0 caliber being used by 51/183 (28%), 95/183 (52%) and 24/183 (13%) of surgeons respectively. A small minority of surgeons used a combination of suture types and calibers.

Discussion

We found that significant heterogeneity exists regarding current perineorrhaphy practice patterns. Decision to perform this operation is driven by a variety of factors, the most important of which is GH size, however many other factors seem to also be reported as at least “somewhat important” in the decision to perform this operation. In addition, significant heterogeneity in surgical technique was reported with regard to the suture type used, repair of structures both above and beyond the hymen and whether the rectovaginal septum is attached to the perineal body. This article is intended to be a springboard towards determining the utility of the perineorrhaphy and optimal technique. Given the paucity of data that exist for this operation, defining the range of indications and surgical techniques employed by experienced surgeons provides a necessary foundation for future research.

As GH and concomitant prolapse procedures were the most important factors identified when deciding to perform a perineorrhaphy, this might imply surgeons are restoring posterior level III support in an attempt to prevent recurrent prolapse. GH size has been shown to have moderate correlation with prolapse severity[8], and perineorrhaphy is suggested by textbooks after colpocleisis or colpexy [2, 3, 7], but data are limited as to whether perineorrhaphy makes a difference in prolapse symptoms or recurrence. In a case-control study comparing patients who needed reoperation for pelvic organ prolapse versus those who did not, Dallenbach [9] found that the absence of a posterior repair predicts an OR of 2.9 in favor of needing a reoperation for pelvic prolapse. It is unclear though in that analysis, what is meant by posterior repair and if that includes a perineorrhaphy, which was not otherwise mentioned in their analysis. If the posterior repairs in this study included a perineorrhaphy, this may imply that perineorrhaphies are protective against prolapse recurrence.

Improving sexual function is another indication for some perineorrhaphies. In fact, revision perineoplasty has been shown to improve dyspareunia and increase coital frequency in a small cohort of women who developed postpartum dyspareunia after initial obstetric repair [10]. Our study indicated that neither dyspareunia nor improving sexual function due to laxity were strong factors in deciding to perform perineorrhaphy, despite the majority of surgeons reporting that perineorrhaphy might improve sexual function (Table 2). Patient request for perineorrhaphy was ranked of higher importance than improvement in sexual function or cosmesis, possibly indicating other reasons for a patient to request this than improvement in sexual function. We did not evaluate patient factors impacting patient request for this operation. The decision to perform this procedure was often made with the patient (65% of the time in the office), but many surgeons report making the decision in the operating room before or after other procedures performed (20 and 30% respectively) which is supported by the importance of intraoperative appearance (table 2) driving this operation. This suggests that some surgeons believe there is a benefit beyond that which is patient-driven.

Regarding surgical technique, surgeons differed on what they called a perineorrhaphy. Though many consider the perineal body to consist of the transverse perinii and bulbocavernosus muscles distal to the hymen, 16% and 60% of surgeons respectively noted they perform a levator plication and attach the rectovaginal septum to the perineal body. This variation indicates differences in the definition of the operation. It is not clear from our survey whether each of these steps are done routinely, or are based on individual patient defects such as in the case of attaching the rectovaginal septum to perineal body. In the case of the levator plication, perhaps respondents intended to indicate that it is only performed during a colpocleisis, but the survey was not designed to assess that level of detail. Levator plication was once performed in order to facilitate pessary placement [5], and perhaps this practice continues to exist in some centers. Though our group does perform a levator plication at the time of a colpocleisis, we would consider it to be separate from the perineorrhaphy operation. Though fibers from the pubovisceralis portion of the levator ani muscles likely attach to the deep perineal body [1], the portion of the levators that are plicated are anterior to the perineal body, and their approximation does not restore or reinforce normal anatomy, but could be used to provide additional support after an obliterative procedure.

The authors and our practice group are in agreement that a perineorrhaphy takes place only distal to the hymen, where the perineal body resides. If a repair of the posterior vagina is performed above this point, we define it as a posterior colporrhaphy. We use vicryl suture (usually 2-0) to approximate the bulbocavernosus muscles and reapproximate or plicate the transverse perineal muscles (usually separately). Most members of the group do not close the skin, based on a study of second-degree perineal lacerations, which showed greater analgesic use with this step with similar functional outcomes [11]

Strengths of our study include a relatively large sample size with findings generalizable to gynecologic surgeons practicing in the United States based on participant distribution with respect to surgeon age, years since training and geographic location. However, generalizability may be limited to sub-specialists since approximately 2/3 of surgeons

surveyed work in an academic environment with an equal proportion having completed specialized training in urogynecology. The relatively high surgical volume and number of perineorrhaphies performed per month by this group would appear to indicate a group whose opinions may be valued based on experience, though we do not have numbers on national averages. One weakness is certainly the observational nature of the study. While it allows us to assess current practice, it does not provide further evidence on the utility of the surgery or what is best practice.

To that end, the heterogeneity of practice patterns of perineorrhaphy, both in terms of reasons for performing this operation and techniques for doing so, reflect the lack of evidence for this operation. While current dogma might suggest that a perineorrhaphy could prevent prolapse recurrence or improve sexual function for a patient with vaginal laxity, these beliefs require further investigation. This paper effectively defines the current practice patterns for the perineorrhaphy operation. With this knowledge, future research should be aimed at providing evidence for the use of this procedure for the indications that it is being used for, and perhaps on surgical technique. Though we have shown many surgeons believe a perineorrhaphy is indicated for an enlarged GH or to prevent concomitant prolapse, there is a lack of evidence to support whether this operation benefits patients by measures of improved quality of life, sexual function, or decreased prolapse recurrence. This information is clearly needed to determine whether performing this operation is truly in our patient's best interest.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Brief summary

Surgeons rank GH and concomitant prolapse surgery as important indications for perineorrhaphy. Heterogeneity exists in perineorrhaphy technique and indications.

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Table 1

Surgeon demographics

Demographics	N (%)
Sex	
Male	80/183 (43.7)
Female	103/183 (56.3)
Age	
25-30	23 (12.6)
31-35	36 (19.7)
36-45	54 (29.5)
46-60	55 (30.1)
>60	15 (8.2)
Years since training	
In Residency	22 (12)
In Fellowship	38 (20.8)
0-5	28 (15.3)
6-10	25 (13.7)
11-20	36 (19.7)
>20	34 (18.6)
Practice location	
Northeast	48 (26.2)
Southwest	29 (15.9)
Midwest	47 (25.7)
Pacific Northwest	21 (11.5)
Southeast	29 (15.9)
Outside United States	9 (4.9)
Practice Setting	
University-based or Academic	115 (63.9)
Private Practice or Community Based	35 (19.4)
Private with Academic Appointment	17 (9.4)
Managed Care (i.e. Kaiser)	7 (3.9)
Military	6 (3.3)
Formal Training	
OB/Gyn Residency	65 (35.9)
Urogynecology Fellowship	116 (64.1)
Perineorrhaphies performed per Month	
I never perform perineorrhaphies	7 (3.9)
0-3	59 (32.8)
4-8	65 (36.1)
9-12	31 (17.2)

Demographics	N (%)
12-15	10 (5.6)
>15	8 (4.4)
Surgeries Per Month	
Never	1 (0.55)
4-8	27 (14.9)
9-12	56 (29.8)
12-15	35 (19.3)
>15	64 (35.4)

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Table 2

Relative importance placed on factors for deciding to perform perineorrhaphy by mean score. Decisions factors are significantly different from one another if they do not both contain the same letter.

Decision Factor (N)	Mean score $\pm$ SD
Enlarged genital hiatus (168)	2.96 $\pm$ 0.96 ^A
Concomitant prolapse procedure (168)	2.65 $\pm$ 1.16 ^B
Posterior prolapse (174)	2.49 $\pm$ 1.11 ^{B,C}
Intraoperative appearance (169)	2.25 $\pm$ 1.15 ^{D,C}
Prior failed reconstruction (171)	2.15 $\pm$ 1.12 ^D
Small perineal body (173)	2.12 $\pm$ 1.20 ^D
Patient request (170)	2.02 $\pm$ 1.13 ^d
Sole reason for surgery (166)	1.72 $\pm$ 1.38 ^E
Prolapse stage/grade (172)	1.69 $\pm$ 1.12 ^E
Dyspareunia (174)	1.66 $\pm$ 1.25 ^E
Cosmesis (172)	1.64 $\pm$ 1.10 ^E
Not sexually active (168)	1.59 $\pm$ 1.31 ^{E,F}
Improving laxity for sexual function (174)	1.56 $\pm$ 1.07 ^{E,F}
Surgical route (172)	1.38 $\pm$ 1.31 ^{G,F}
Apical prolapse (166)	1.27 $\pm$ 1.14 ^G
Anterior prolapse (173)	0.91 $\pm$ 1.15 ^H

** Differences between choices were significant between groups (<0.0001), with GH being significantly more important than all other groups, and other significant differences notes as well.