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ORIGINAL ARTICLE

Technique of anterior colporrhaphy: a Dutch evaluation

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Abstract
Introduction and hypothesis To evaluate the variation in techniques of anterior colporrhaphy among members of the Dutch Urogynecologic Society.
Methods A questionnaire evaluating the technique of anterior colporrhaphy, preoperative and postoperative care, and use of the POP-Q score was sent out by e-mail.
Results One hundred thirty-three completed questionnaires were received. The response rate was 65%. There are large variations in incisions, use of hydrodissection, method of plication, and excision of redundant vaginal epithelium. The urinary catheter was generally removed on day 2 after surgery and the vaginal pack on day 1. Less than half of the respondents used the POP-Q score routinely.
Conclusions Dutch gynecologists use a variety of surgical techniques to operate on a cystocele. This suggests that there is no widely accepted opinion on the best surgical approach. The lack of differentiation between central and lateral defects is striking and in contrast with the, mostly, American literature.

Keywords Anterior colporrhaphy · Cystocele · Pelvic organ prolapse · POP-Q

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Abbreviations

AUGS	American Urogynecologic Society
POP	Pelvic organ prolapse
POP-Q	Pelvic organ prolapse quantification

Introduction

Pelvic organ prolapse (POP) is known to affect up to 50% of women with a lifetime risk of undergoing surgery for POP or incontinence of 11% [1]. Recurrence rates after surgery are high and especially anterior vaginal wall prolapse is known to recur frequently, with recurrence rates following anterior colporrhaphy anywhere between 0% and 92% [2]. To prevent recurrence of a cystocele after repair, different techniques have been used, for example paravaginal repair (abdominal or vaginal), ultralateral anterior colporrhaphy, and the use of different grafts and meshes. All these different techniques, except the use of grafts, have had disappointing results to date. Studies comparing techniques have shown no differences in the risk of recurrence [3]. In 2008, Shippey described a survey of the American Urogynecologic Society (AUGS) members of the contemporary approaches to cystocele repair [4]. Their research mainly compared the differences between generalist and fellowship-trained urogynecologists.

Since a number of Dutch studies also showed comparable poor anatomical outcome of anterior colporrhaphy, we decided to evaluate the variation in techniques of anterior colporraphy among members of the Dutch Urogynecologic Society in an attempt to get more insight in the variation of techniques and potentially find a reason for the high recurrence [5, 6].

Materials and methods

All members of the Dutch Urogynecologic Society received an e-mail explaining the research question and asking for their cooperation in an internet-based survey. A link in the e-mail directed them to a website containing an internet-based questionnaire. The first e-mail was sent in February 2010. A month later, a reminder was sent to the gynecologists who have not yet responded. A final reminder was sent by ordinary mail instead of an e-mail.

The survey included 40 questions on demographics, current employment, and training background. To evaluate the diagnostic process, we asked if and how they differentiated between central and lateral defects and how this influenced their surgical technique. In addition, their use and opinion on the POP-Q score were questioned. Various questions on techniques used in surgical repair of a cystocele, use of prophylactic antibiotics, and preoperative and postoperative care were included. To identify the precise variation in surgical techniques, we asked about the use and type of solution used for hydrodissection, location and length of incision, technique of dissection, type of suture material, excision of excessive vaginal mucosa, and the way of suturing. Furthermore, questions were asked on postoperative care relating to the use of a catheter and vaginal packing and the day of removal. The survey was conducted anonymously. The respondents were assigned a number in order that reminders could be sent. No financial compensation was given.

Data analysis was performed using Statistical Package for the Social Sciences, version 18.0 (SPSS Inc., Chicago, IL, USA). Continuous variables were compared using the independent-samples t test or Mann–Whitney U test. Categorical variables were compared using the chi-square test. Related samples were compared using the paired-samples t test or the Wilcoxon signed rank test. A p value of <0.05 was considered statistically significant.

Results

In total, 239 questionnaires were sent but 25 respondents did not belong to the target group (retired or resident). Nine questionnaires could not be delivered, leaving 133 respondents (65%). Respondents' characteristics are described in Table 1.

Diagnosis

Three-quarters of the participants (77%) responded that they use the POP-Q, of whom only 52% use routinely. There were no significant differences between the use of the POP-Q and practice type ($p>0.05$).

Thirty-two percent ($n=42$) of the respondents differentiated between central and lateral defects. When they do, differentiation between the two types is made by physical examination whereby the gynecologist usually inspects the presence of vaginal rugae. By the absence of rugae, a central defect is considered more likely. By the respondents who do differentiate between the two types, a change in operation procedure is however only seldom made. In case of a lateral defect, a small number of gynecologists ($n=14$) perform an anterior colporrhaphy with graft augmentation. No vaginal or abdominal paravaginal repair was reported.

Table 1 Characteristics of survey respondents

Characteristics	$n=133$ (%)
Gender	
Male	60 (45)
Female	73 (55)
Years since residency	
<5	45 (34)
5–10	29 (22)
10–20	31 (23)
>20	28 (21)
Practice type	
Academic center	12 (9)
Peripheral training hospital	77 (58)
Peripheral, nontraining hospital	44 (33)

Data presented as number (percentage)

Preoperative care

All respondents use local hormone therapy from time to time in postmenopausal women; 58% use hormone therapy only when they diagnose vaginal atrophy. Routine perioperative antibiotics is given by 80 (60%) of the respondents.

Technique of colporrhaphy

Before the incision, 76% use hydrodissection, for which most commonly a saline solution is used with or without adrenaline (24% and 41%, respectively) (Table 3). Most respondents (77%) make a simple midline incision, although 17% make an inverted T-form incision from the cervix to the urethra. When the participants were asked for the most urethral point of incision, majority (56%) place the incision near the vesicourethral juncture, 19% 1 cm or less from the urethral meatus, and 11% below (proximal of) the vesicourethral juncture.

To dissect the bladder, mainly scissors are used (43%), besides the knife (20%), blunt dissection (7%), or a combination of these techniques (30%). Furthermore, 43% of the participants attempt to dissect the vaginal mucosa as thin as possible from the bladder and 47% consider thickness less important and dissect in the most optimal surgical plane.

Table 2 presents the specifications of the suture material used for plication of the (remnants of) the vaginal fascia.

For closure of the vaginal wall, opinions were divided: 32% used simple interrupted stitches, 32% used a continuous locking stitch, and 35% of the respondents used a running (nonlocking) stitch. Excessive distended vaginal epithelium is trimmed by 51% of the respondents depending on the amount of tissue, 4% never trim vaginal epithelium, and 45% always do so (Table 3).

Postoperative care

The catheter is generally inserted transurethrally (97%), and the day of catheter removal was day 1 (24.8%), day 2 (45.1%), day 3 (29.3%), or later (1%). After removal of the catheter, the accepted residue in the bladder was 150 cc (52.6%) or 100 cc (36.1%). Most of the respondents (85.0%) insert a vaginal pack as a standard procedure, and they almost universally remove it 1 day after surgery (94.7%). Patients were discharged on average on days 2 and 3 (30.8% and 54.1%, respectively).

No statistically significant differences were found in the comparisons between the characteristics of the survey respondents [gender, years since residency, and practice type (academic versus nonacademic)] and the technique of the anterior colporrhaphy or preoperative and postoperative care ($p>0.05$). No geographic variations could be found.

Discussion

Our findings demonstrate that gynecologists use a variety of surgical techniques to treat a cystocele. This suggests that there is no clear opinion with regards to the best surgical procedure. Only one other similar study was found in the literature, however with a low response rate [4]. In that study, members of the AUGS reported a comparable high variation in techniques. The wide variation in techniques may be a consequence of the lack of evidence as to what the best practice is. It is unknown which part of the procedure (diagnosis, preoperative, perioperative, or postoperative care) contributes to surgical failure. Our study shows that there is little difference with regards to items such as use of a vaginal packing, transurethral catheter, and the day of their removal. Likewise, factors such as length of incision, suturing techniques, and suture material are either quite similar or unlikely to have a great impact on recurrence. Several other items, however, emerge as potentially important with regard to the explanation for the high recurrence rates.

Majority of the gynecologists do not differentiate between central and lateral defects nor is there any adjustment in the surgical technique to address this issue. We are not aware of any earlier studies in other countries on data for comparison. Most literature on the differences between the two defects originates from the USA [7, 8]. Although several tests to differentiate have been proposed, these tests have never been validated or been incorporated in an outcome study. Furthermore, the clinical examination of defects in the anterior vaginal wall support displays poor interexaminer and intraexaminer agreement [9]. In other words, it is unclear how to differentiate between the two and it has never been shown that differentiation results in a better outcome. Nonetheless, theoretically, the location of a

Table 2 Specifications of the suture materials and method for plication

	n=133 (%)
Suture material	
Vicryl® (polyglactin 910)	130 (98)
Monocryl® (poliglecaprone 25)	3 (2)
Thickness suture material	
1	7 (5)
0	8(6)
2-0	113 (85)
3-0	5 (4)
Plication in anterior colporrhaphy	
Simple interrupted stitches	43 (32)
Continuous locking stitches	43 (32)
Running stitches	47 (35)

Data presented as number (percentage)

Table 3 Technique of colporrhaphy

	n=133 (%)
Hydrodissection	
Yes	101 (76)
No	32 (24)
Type of hydrodissection (n=101)	
Saline	41 (41)
Saline with adrenaline	24 (24)
Local anesthetic	2 (2)
Local anesthetic with adrenaline	34 (34)
Dissection bladder	
Knife	27 (20)
Scissors	57 (43)
Blunt dissection	9 (7)
Combination	40 (30)
Trimming of excess vaginal epithelium	
Always	60 (45)
Depends on the amount of tissue	68 (51)
Never	5 (4)

Data presented as number (percentage)

defect is an interesting and potentially important issue. With the availability of new diagnostic possibilities such as MRI and ultrasound, as well as new surgical techniques using synthetic grafts, new possibilities for the differentiation and tailoring the right operation to the right patient are becoming available [10–12]. At present, a study on the validity of MRI and ultrasound for this purpose is being performed in the Netherlands [12]. The use of the vaginal paravaginal repair was remarkably low in our questionnaire, since only two gynecologists reported to consider vaginal paravaginal repair for lateral defects. No respondent reported the use of abdominal paravaginal repair. This is in sharp contrast with the recommendation given in the report from the last International Continence Initiative (ICI, 2009) where the abdominal route has been advised [13]. Possibly, the use of paravaginal repair in the Netherlands has remained low because of the disappointing results from earlier studies [3, 14].

The use of synthetic grafts was not part of the present study. At present, it is advised by the Dutch Urogynecologic Society not to use grafts in primary surgery.

Another potentially important item is the dissection of the vaginal mucosa from the underlying tissue. Practices were divided regarding this issue. Older textbooks use the term “as thin as possible” in the description of the traditional colporrhaphy [15]. In the more recent literature, this is not mentioned [15, 16]. However, there is no scientific evidence on the best dissection of vaginal mucosa. We hypothesized that making the vaginal mucosa as thin as possible was something of “a lost art" and therefore practiced by older gynecologists, but this could not be confirmed in our study ($p=0.56$). Possibly, it is more relevant how and where the gynecologist was trained, but this was not part of our questionnaire. We think that thinness of preparation is a potential important issue, which should be studied, preferably in a well-designed randomized controlled trial.

It was interesting to see that a number of practices are widely used without much evidence to support them. For example, three-quarters of the respondents used hydrodissection before the incision with varying types of solution. Whether this practice has any advantage is not known. Almost two-thirds of the respondents used prophylactic antibiotics in anterior colporrhaphy. These findings are high in reflection of the lack of evidence with regards to this issue. There is only one single study, from Nieminen et al., which has reported that prophylactic use of antibiotics seemed effective in the reduction of the postoperative infection rate in vaginal surgery [17].

Almost half of the respondents removed the transurethral catheter on day 2 after surgery. However, two randomized trials have found that in case of removal of the catheter on the morning after surgery, the majority of the patients do not encounter voiding problems [18, 19]. Furthermore, two studies have shown that 3 h of vaginal packing would be as sufficient for the prevention of postoperative hemorrhage or hematoma as vaginal packing for 24 h [20, 21]. Therefore, it is somewhat surprising that 95% of the respondents remove the vaginal pack 1 day after surgery.

The findings that the POP-Q score is not widely used suggest that the POP-Q score does not meet the doctor's needs, which are in line with earlier publications [22]. Less than half of those surveyed use the score routinely. The measurement of redundant parameters is the most common comment on the POP-Q score. A quarter of the participants find the POP-Q score a time-consuming task. Surprisingly, there was no statistical difference in the use of POP-Q score between gynecologist from academic, peripheral training, and nontraining hospital.

We recognize several limitations of this study. A survey is always a simplification of the reality. It is impossible to question all minor details of the surgical technique, which will be influenced by various details of the surgical anatomy and expertise of the surgeon. Another important issue is that from this study, we are not able to analyze which technique leads to a higher recurrence. We did not specifically ask for the recurrence rates in our questionnaire because of a low reliability of the answers without objective outcome measures. A strength of this study is that 65% of all members of the Dutch Urogynecologic Society responded to the questionnaire.

This study has raised many research questions in need of further investigation. The variation of techniques used is a reflection of the absence of a clearly defined best practice. A well-designed prospective study investigating the differences in techniques with special attention to differentiation between lateral and central defects is clearly lacking.

In conclusion, we found a wide variation of techniques used for anterior colporraphy in the Netherlands. We consider the lack of differentiation between central and lateral defects the most striking finding, which should be further studied in a prospective study.

Conflicts of interest None.

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