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Does the method of dissecting in anterior colporraphy lead to a difference in thickness of removed vaginal tissue?

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ABSTRACT

Objective: To evaluate the difference in thickness of the anterior vaginal wall removed after different surgical dissecting techniques of anterior colporrhaphy.
Study design: In patients undergoing primary anterior colporrhaphy, trimmed vaginal tissue was taken following different surgical techniques of vaginal wall dissection. Tissues were preserved in formalin and stained with hematoxylin-eosin and elastica-van Giesen stains. The examiner was an experienced pathologist blinded to the surgical technique. The specimens were examined for the epithelial thickness (ET), lamina propria thickness (LPT), muscular layer thickness (MT) and total thickness (TT).
Results: Tissue was analysed in 93 women who underwent anterior compartment pelvic organ prolapse surgery. There was no difference between the different surgical techniques in thickness measured in the three histological layers and for the total thickness. The use of hydrodissection was the only independent factor leading to thicker removed vaginal tissue.
Conclusions: Dissecting the vaginal wall as thin as possible does not result in a thinner vaginal layer than dissecting in the most optimal surgical plane. The use of hydrodissection provides a thicker trimmed tissue.

1. Introduction

Anterior colporrhaphy is the standard surgical treatment for anterior vaginal wall prolapse. This operation has a high risk of recurrence, with rates from 30% up to 92% being mentioned [1–3]. A cause for this recurrence has not yet been found, and little is known about comparison of recurrence rates with the detailed surgical technique of the anterior colporrhaphy. One of the many possible differences in techniques could be the way in which the vaginal wall is dissected from the underlying bladder.

In 2010 we reported that approximately half of the gynaecologists in The Netherlands attempt to dissect the vaginal wall from the underlying tissue as thin as possible [4]. The other half consider thinness less important and dissect in the most optimal surgical plane. Theoretically this is an important technical issue which could explain differences in recurrence, but there are no comparative studies between the two techniques. Also, whether the variation between techniques is substantial or merely a semantic difference is unknown. It is an important topic at present since it is advised to perform a "full thickness" dissection when placing a vaginal mesh, to decrease the rate of mesh-related complications.

The aim of this exploratory study was to resolve one of the controversies on the importance of vaginal wall thickness in surgical repair of pelvic organ prolapse (POP). This prospective cohort study compared "dissection in the most optimal surgical plane" with "dissection as thin as possible" in anterior colporrhaphy. In addition we studied the effect of hydrodissection on the thickness of the removed tissues.

2. Materials and methods

Vaginal wall specimens were obtained from women having a traditional native tissue anterior colporrhaphy procedure. The specimens were consecutively collected from surgery done from October 2010 till December 2011 at three different Dutch

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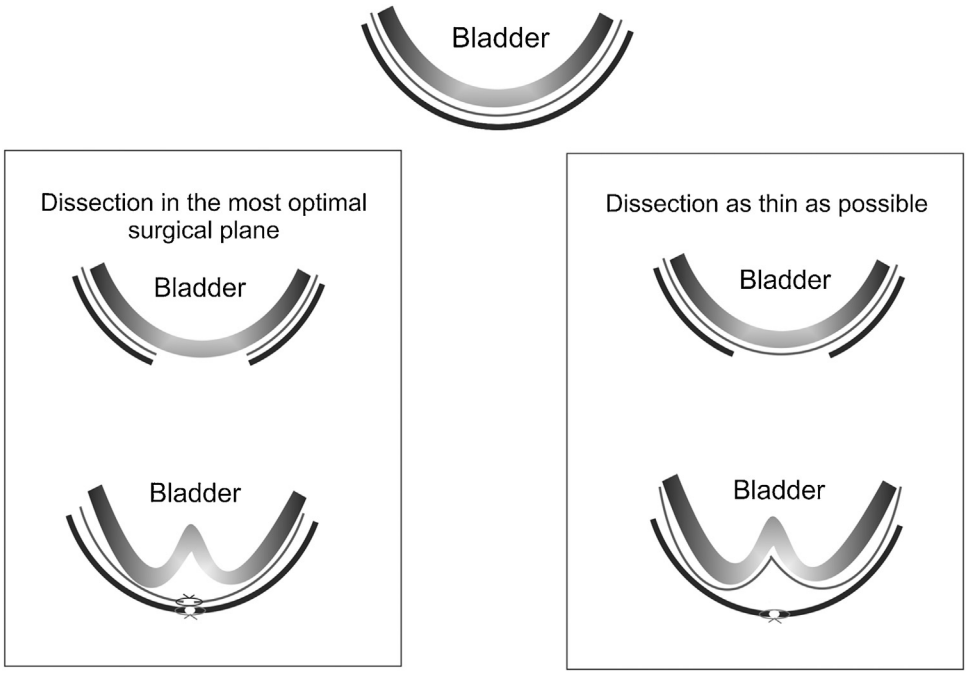

Fig. 1. Schematic representation of the different dissection method.

institutions, Radboud University Nijmegen Medical Centre, Canisius Wilhelmina Hospital Nijmegen and Catharina Hospital Eindhoven. The institutional ethical review board gave an exemption for the protocol because the tissue handling was anonymous.

Women who had undergone previous pelvic prolapse surgery in the anterior compartment and women who underwent an anterior mesh procedure were excluded. Four gynaecologists, all very experienced in prolapse surgery, performed the operations.

2.1. Surgical technique

The vaginal wall was grasped with two Allis clamps, one at the level of the urethro-vesical junction and one at the level of the cervix or vaginal vault. Two of the four surgeons used hydrodissection of approximately 20 cc fluid to assist in identifying planes of dissection. The vaginal wall was then opened in the midline using knife and scissors and the vaginal mucosa dissected off the underlying tissues anteriorly, by sharp or blunt dissection. Two of the four gynaecologists attempted to dissect the vaginal wall as thin as possible. In their technique they attempt to leave as much of the tissue of the vaginal wall on the bladder by sharp dissection of the vaginal wall with knife and/or scissors, whereas the other two considered thinness not important and dissected in the most optimal surgical plane (Fig. 1). In this way four different groups arose (Table 1). After the vaginal wall had been dissected, plication of the remnants of the vesico-vaginal fascia was performed with a series of interrupted Vicryl 0 stitches. Once plication of the defect had been performed, the mucosa was trimmed and closed. The trimmed tissue was collected and preserved in formalin.

2.2. Tissue handling

Each tissue sample was identified only by a number, ensuring that the pathologist was blinded to the surgical procedure. Tissues were stained using hematoxylin-eosin and elastica-van Gieson for differential staining of collagen and other connective tissue. The specimens were examined microscopically for histologic content as well as for the determination of epithelial thickness (ET), lamina propria thickness (LPT), muscular layer thickness (MT) and total thickness (TT) (Fig. 2). Epithelium and lamina propria together form the mucosa. With the muscular layer we measured all the tissue that lies deeper than the lamina propria. In some thicker specimen there is also measured adventitia in the muscular layer, because the part of the adventitia bordering the muscularis is very

Table 1
Patient's characteristics.

Characteristic	Dissect as thin as possible, no hydrodissection	Dissect in most optimal surgical plane, no hydrodissection	Dissect as thin as possible, use of hydrodissection	Dissect in most optimal surgical plane, use of hydrodissection
Patient number	21	20	20	32
Age	64.7 (±9.9)	63.2 (±8.2)	64.8 (±8.0)	56.0 (±6.9)
Postmenopausal status (yes)	21	19	20	25
HRT (yes)	4	0	3	0
Anterior colporrhaphy	21	20	20	32
Incl MAFO	0	11	0	8
Incl posterior colporrhaphy	6	17	12	29
Incl vaginal hysterectomy	8	1	13	4
Incl SSLF	7	0	7	0