

CHANGES IN VALUES OF URETHRAL CLOSURE PRESSURE AND ITS POSITION AFTER BURCH COLPOSUSPENSION, AND DIFFERENCES IN URETHRA MOBILITY BETWEEN SUBGROUPS OF WOMEN WITH VARIOUS OPERATION RESULTS.

Hypothesis / aims of study

To ascertain how the Burch colposuspension affects the value and position of MUCP in women without any previous uro-gynaecological operation. If possible, also to determine how the values of these parameters differ between groups of women who are free from problems after the operation, women who suffer from urgency, and women who continue to suffer from stress incontinence. In addition, to ascertain whether, with ultrasound examination, we can observe any differences in urethra mobility between subgroups of women with various operation results.

Study design, materials and methods

69 women after Burch colposuspension were included in the study. The average age was 51.9 (SD=7.8), BMI 26.9 (SD=3.9) and parity 2.1 (SD=0.6). A urodynamic examination was performed on each patient in the supine position, and the urinary bladder was filled with 500 ml of normal saline solution. The pressure profile was examined at rest, at maximal Valsalva maneuver and while coughing. During examination of the urethral pressure profile we ascertained MUCP, the functional length of the urethra (FUL) and the relative distance of the MUCP point from the inner urethral orifice, which was calculated as the ratio of the MUCP position with respect to FUL. To determine position and mobility of the urethra, perineal ultrasound examination was performed on patients in supine position, using Acuson 128 XP 10 equipment, 5 MHz convex abdominal probe. The bladder was filled with 300 ml of saline. Polar coordinates (distance p, angle gamma) were employed when determining the position of UVJ and of the centre of urethra, defined at 17 mm distance from inner urethral orifice. Of the 69 patients who underwent the operation 62 were examined after the operation: 48 subsequently had no problems (A), 5 suffered from de novo urgency or the urgency symptoms were worse (B), and in 9 (C) mild stress incontinence still persisted. The data were summarised as means with SD and as medians. Measurements before and after the operation were compared using the paired t-test and paired Wilcoxon test where appropriate. Subgroups A, B, C were compared using Kruskal-Wallis test or Pearson χ^2 -test where appropriate. The level of significance was set to 0.05. Statistical software R version 2.1.1 was used throughout the analysis

Results

No statistically significant changes were observed in values of MUCP before and after surgery, at rest, at Valsalva or while coughing. Nor did we observe any difference in values of MUCP between the individual subgroups (A, B, C) of patients after surgery.

The distance of the point of MUCP from the inner urethral orifice was significantly shorter only during Valsalva (Tab. 1).

Tab. 1 a, b, c MUCP, FUL and position of MUCP before and after surgery at rest, during maximal Valsalva maneuver, and while coughing, with bladder filled with 300ml saline

a)

MUCP (cm H ₂ O)	at rest	during maximal Valsalva		p-value at rest vs. at Valsalva maneuver	p-value rest vs. coughing
		maneuver	coughing		
before surgery	51.2 (18.3)	38.1 (18.8)	48.5 (19.4)	p<0.0001	NS
after surgery	48.3 (23.7)	37.5 (22.4)	44.9 (22.8)	p<0.0001	NS
p-value	NS	NS	NS		

b)

FUL (mm)	at rest	during maximal Valsalva maneuver	p-value
before surgery	22.1 (5.8)	19.6 (7.2)	0.0091
after surgery	20.5 (6.0)	18.8 (7.1)	NS
p-value	NS	NS	

c)

Absolute (mm) and relative position of the point of MUCP	at rest		during maximum Valsalva maneuver		p-value
	mean	median	mean	median	
before surgery	11.9	54%	11.0	57%	NS
after surgery	10.9	53%	9.1	51%	0.0176
p-value	NS		0.0296		

NS = insignificant

Tables a, b: data are presented as means (standard deviation), p-values are obtained from a paired t-test

Table c: Note that the ratio of the MUCP position with respect to FUL at rest was computed for each patient separately, expressed in % of FUL at rest and then summarized as median; p-values are obtained from Wilcoxon paired test

No statistically significant differences in these parameters were observed between subgroups A, B, C.

Interpretation of results

The results of ultrasound examination imply that the operation changes the position of UVJ or the middle of urethra at rest and during Valsalva maneuver. From the ultrasound parameters we can conclude that the operation moved the position of UVJ and the middle of the urethra forward at rest and restricted the mobility of the urethra during Valsalva maneuver

Concluding message

The results of our study imply that Burch colposuspension, if stitches are properly placed and not tight, does not change MUCP either at rest or at Valsalva. The distance of the point of MUCP from the inner urethral orifice was significantly shorter during Valsalva. No statistically significant differences in these parameters were observed between subgroups A, B, C. From the ultrasound parameters we can conclude that the operation moved the position of UVJ and the middle of the urethra forward at rest and restricted the mobility of the urethra during Valsalva maneuver. There is a slight paradoxical diminishing of the gamma angle during the Valsalva maneuver in the subgroups of patients with de novo urgency or where the urgency symptoms were worse (B), implying different movement of the urethra.

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DISCLOSURES: NONE

HUMAN SUBJECTS: This study did not need ethical approval because we used standard examination and standard operation and did not follow the Declaration of Helsinki - with approval by the ethics committee - in the sense that we used standard examination and standard operation Informed consent was obtained from the patients.