

PARAVAGINAL REPAIR IN MANAGEMENT OF PROLAPSE OF THE ANTERIOR VAGINAL WALL

A Thesis Submitted for Partial Fulfillment of MD Degree

By

MOHAMMAD ABDEL-HAMEED MOHAMMAD

Assistant Lecturer in Obstetrics and Gynecology, Ain Shams University



Under Supervision of

Professor Khalil Ismail El-Lamie

Professor of Obstetrics and Gynecology

Ain Shams University

615.15

57212

Professor Ali Elian Khalaf-Allah

Professor of Obstetrics and Gynecology

Ain Shams University

Professor Maher Abdel-Razik Omran

Professor of Obstetrics and Gynecology

Ain Shams University

CASRO

1998



Special acknowledgment

I can never forget the help and the chance that Professor Mohammad Abi-Karaghy had given to me all through the course of this thesis.

Undoubtedly, there was always a continuous encouragement from professor Fobhi Abo-Loux who gave me more and more chances.

I am indebted to Dr. Ismaiel El-Lamie who was always firing my enthusiasm to accomplish this work.

A special gratitude is for Miss Wafaa Mohammad, the nurse who had assisted me in the operative theater in most of this work.

I will never have enough words to express the invaluable effort that Dr. Gehan Mahmoud, my wife, had done in the preparation and organization of these chapters. Her patience, support, and inspiration have made the completion of this work possible.

Dedicated

To my family
that lived with me for
decades of my life

***My Father, My Mother
and Dalia***

And

To my small family
that suffered with me for
years

***Gehan, Omar and
Menatto-Allah***

CONTENTS

	Page
List of figures	i
List of tables	v
Introduction.....	1
Aim of the work.....	3
Review of Literature.....	5
History of surgical repair.....	5
Anatomy.....	27
Biomechanics of genital prolapse.....	116
The pelvic floor in parturition.....	125
Histology of the pelvic supports.....	139
Etiology of pelvic support defects.....	148
Types of vaginal support defects.....	149
Symptomatology of vaginal support defects....	155
Standardization of terminology of female pelvic organ prolapse and pelvic floor dys- function.....	158
Examination of uterovaginal supports.....	175
Treatment of pelvic support defects.....	188
Subjects and Methods.....	203
Results.....	245
Discussion.....	293
Summary and Conclusion.....	307
References.....	313
Arabic Summary	

LIST OF FIGURES

No.	Title	Page
1	Example of Hippocratic succssion..	7
2	Clamp for vaginal mucosa.	13
3	The vaginal axis of the erect living female.	30
4	The cardinal ligament.	30
5	Vaginal supports (sagittal view).	33
6	Vaginal supports (abdominal view).	34
7	Pubocervical fascia viewed from above.	35
8	Cross section of the upper vagina	36
9	A diagram to show the ATFP, ATLA, ALA.	37
10	The pubocervical fascia with demonsration of the vessels	38
11	Schematic drawing showing the normal relationship between the vagina and the arcus tendinei.	39
12	The three pubourethral ligaments and their relations.	42
13	The orientation of the pubourethral ligaments.	43
14	The levator ani musculature drawn from three dimensional computer reconstruction.	45
15	Effect of contraction of the levator ani.	46
16	Muscles of pelvic wall and floor.	47
17	Parasagittal view of the pelvic wall and floor muscles.	47
18	The effect of tipping of the levator plate.	52
19	The posterior perineum and the deep layers of the vulva.	57
20	Perineal body and rectovaginal septum.	57
21	Vaginal topography and underlying supports.	63
22	The eight avascular planes of the pelvis.	69
23	The connective tissue septa and spaces of the pelvis.	69
24	The relationship between the three midline organs	74
25	Sagittal section of the female urethra and bladder.	85

LIST OF FIGURES (Cont'd)

No.	Title	Page
26	Muscles of the urethral wall.	90
27	Normal vesicourethral relationships.	95
28	Proximal urethra and its surrounding structures.	97
29	Distal urethra and striated muscle of the urethra and perineal membrane..	98
30	A paravaginal defect seen from the space of Retzius.	99
31	Compression of the urethra against the precervical arc.	100
32	A semiadhesive note as a paragon for one type of paravaginal defect	102
33	Lateral view of the pelvic floor with the urethra.	103
34	"Wheeling" or rotational descent of the vesicourethral junction.	104
35	Normal active support of the levator ani muscle.	107
36	Loss of active support provided by the levator ani muscle.	107
37	Possible mechanism by which birth trauma and aging may lead to loss of urethrovesical junction support.	109
38	Intrinsic urethral anatomy shown in axial section.	110
39	Intrinsic urethral anatomy shown in longitudinal section.	110
40	Peripheral innervation of the lower urinary tract	113
41	Diagrammatic representation of the mechanism of prolapse.	118
42	How does birth injuries causes cystocele.	129
43	Vaginal support loss.	150
44	Sites at which breaks in the pubocervical fascia have been observed.	152
45	Cross section of the paravaginal defect.	152
46	Six sites, genital hiatus, perineal body, and total vaginal length used for pelvic organ support quantification	165
47	Three-by-three grid for recording quantitative description of pelvic organ support.	165
48	Normal support.	166
49	Grid and line diagram of predominant anterior support defect.	167
50	Halfway system in grading prolapse..	171

LIST OF FIGURES (Cont'd)

No.	Title	Page
51	The Cherney incision.	212
52	Paravesical space's blood vessels.	216
53	Paravaginal defect with a split down the middle of the arcus with remnants of the fascial arcus.	218
54	Paravaginal defect with the entire fascial arcus pulled off the sidewall.	218
55	Paravaginal defect with the break medial to the fascial arcus	219
56	Paravaginal defect with resultant cystocele.	220
57	Elevation of the lateral sulcus of the vagina.	222
58	Pelvic veins.	222
59	The pulley stitch.	226
60	Needle passing through the full-thickness of the pubocervical fascia.	229
61	Completed procedure.	229
62	The paravaginal repair is completed.	230
63	Closure of the Cherney incision.	231
64	A means of entering the vesicovaginal space grasping the vaginal membrane.	234
65	Hilton's maneuver in the use of scissors	236
66	The tissues of the urogenital diaphragm.	238
67	The fibromuscular capsule of the bladder.	240
68	Technique of bladder neck plication.	240
69	Excess but unsplit vaginal wall.	242
70	Closure of full-thickness of the vagina.	242
71	Distribution of symptoms.	247
72	Distribution of types of defects among patients of both groups in all vaginal segments.	248
73	Estimated blood loss and Hb percentage difference pre and post-operatively.	252
74	Frequency of hematuria in both groups.	254
75	Duration of postoperative catheterization and stay in both groups.	256

LIST OF FIGURES (Cont'd)

No.	Title	Page
76	Frequency of postoperative drainage of case of Retzius in APVR group.	258
77	Reviewing relevant symptomatology on maximum follow-up period and comparison with preoperative symptoms in APVR	267
78	Reviewing relevant symptomatology on maximum follow-up period and comparison with preoperative symptoms in MLP.	267
79	Comparison between relevant symptomatology in both groups on maximum follow-up.	269
80	Grades of cystocele postoperatively in comparison to pre-operative grading in APVR group.	272
81	Grades of cystocele postoperatively in comparison to pre-operative grading in MLP group	273
82	Comparison between grading of cystocele postoperatively in both groups.	275
83	Types of defects among patients of APVR group pre and postoperatively at all vaginal segments.	277
84	Types of defects among patients of MLP group pre and postoperatively at all vaginal segments.	279
85	Comparison between types of defects among patients of both groups postoperatively.	280
86	Site specific symptomatic and anatomic cure rates in both groups at the maximum follow-up.	289

LIST OF TABLES

No	Title	Page
1	Topography of urethral and paraurethral structures	91
2	The predisposing and precipitating factors of prolapse	148
3	Anatomic classification of vaginal support defects	149
4	Presentation and symptoms of anterior segment defects	156
5	Primary and secondary symptoms at each site	157
6	Grading symptom severity of urinary incontinence	157
7	Criteria for ideal classification	158
8	Halfway system for grading classification	172
9	Anatomic classification of vaginal support defects with indicated reparative techniques	197
10	Different surgical procedures for anterior vaginal wall prolapse	199
11	Operations for urinary stress incontinence	200
12	Matching of both groups as regards age, parity and weight.	245
13	Relevant history data.	246
14	Distribution of symptoms.	246
15	Grades of cystocele	249
16	Residual urine in both groups preoperatively.	249
17	Distribution of types of defects among patients of both groups.	249
18	Defined point Aa in both groups.	250
19	Defined point Ba in both groups.	250
20	Mean number of sutures taken on both sides in paravaginal repair.	251
21	Incision used in cases of paravaginal repair.	251
22	Estimated blood loss and Hb percentage difference pre and post-operatively.	253
23	Frequency of hematuria in both groups.	255
24	Concurrent operations.	255
25	Duration of postoperative catheterization in both groups.	257
26	Postoperative spontaneous voiding in both groups.	259
27	Frequency of postoperative drainage of case of Retzius in APVR group.	259
28	Mean duration of postoperative stay in both groups.	260

LIST OF TABLES (cont'd)

No	Title	Page
29	Complications relevant to the operation in both groups.	261
30	Frequency of previous anterior repair in both groups.	261
31	Operative day in relation to menstrual period.	262
32	Follow-up period (scheduled and actual in both groups.	263
33	Reviewing relevant symptomatology on maximum follow-up period and comparison with preoperative symptoms in APVR.	266
34	Reviewing relevant symptomatology on maximum follow-up period and comparison with preoperative symptoms in MLP.	268
35	Comparison between relevant (site specific) symptomatology in both groups on maximum follow-up.	270
36	Comparison of urge syndrome in both groups during follow-up.	270
37	Residual urine in both groups pre-operatively and postoperatively.	271
38	Grades of cystocele postoperatively in comparison to preoperative grading in APVR group.	274
39	Grades of cystocele postoperatively in comparison to preoperative grading in MLP group.	274
40	Comparison between grading of cystocele postoperatively in both groups.	276
41	Types of defects among patients of APVR group pre and postoperatively at the anterior and superior vaginal segments.	278
42	Types of defects among patients of MLP group pre and postoperatively at the anterior and superior vaginal segments.	281
43	Comparison between types of defects among patients of both groups postoperatively at all vaginal segments.	281
44	Defined point Aa in patients of APVR group pre and postoperatively.	282
45	Defined point Aa in patients of MLP group pre and postoperatively.	283
46	Comparison between both groups as regarding defined point Aa postoperatively	283