

# Preoperative, Intraoperative and Postoperative Assessment of Pelvic Organ Prolapse by Pelvic Organ Prolapse Quantification System and Surgical Outcome

NOOR SERAJUN<sup>1</sup>, SHARMIN SHAHNAJ<sup>2</sup>, SULTANA AKLIMA<sup>3</sup>, JAMAL MONIRA<sup>4</sup>, SHUROVI FARJANA<sup>5</sup>, JABIN TANIZA<sup>6</sup>

## Abstract:

**Background:** Pelvic organ prolapse (POP) is a common disease of middle aged and elderly women with an incidence of 7-10% and life time risk for surgery 11 to 20%. Assessing pelvic organ prolapsed in an objective, reproducible and applicable method is essential to have successful surgical outcome. Aim of the study was preoperative, intraoperative pre and postsurgical as well as postoperative assessment of pelvic organ prolapse by POP- Q system in patients undergoing reconstructive surgery and measure optimum surgical outcome stage 0 (Q<-1), Tvl > 4 cm and Genital hiatus (3 to 3.4cm) to prevent recurrence (POP-Q stage > -1) and dyspareunia (Pb d"3 cm).

**Methods :** This was hospital based Prospective study done with 250 patient diagnosed as pelvic organ prolapse at OPD. Excluding 14 patients 236 had surgery in Chattagram Metropolitan Hospital during January 2010 to December 2019. POP-Q measurement was done with Valsalva before anesthesia, intraoperative after anesthesia pre and postsurgical and postoperatively in follow up visit within three months of surgery by same surgeon. All POPQ measurement were done by same surgeon using a wooden Spatula marked in cm (POP-Q popsicle stick). All measurement were recorded in grid form and preoperative & presurgical POP-Q staging was done. The result was then summarized as mean and SD for numerical variable and percentage for categorical variable.

**Result :** A total 236 patient had surgery, 233 had vaginal hysterectomy with Apical vaginal suspension with uterosacral ligament and sacrospinous fixation was done in 3 patients with vault prolapse. Mean age was 51 ± 5SD years (51 to 60 years 51%), 84% sexually active, low socioeconomic group (68%), multiparous 100% mean parity 4 ± 2SD (e" 6 62%), 95% had vaginal delivery with history of home delivery 89%, resuming house hold work within two weeks of delivery in 97% cases. Most were postmenopausal 96%. All intraoperative presurgical measurement except Pb and Tvl showed significant higher descent as compared to preoperative finding before anesthesia, mean difference were Aa 0.7, Ba1.6, C 1.6, Ap 0.25 Bp 1.6 D1.6 Gh. 8cm with highest descent in Ba C, D Bp. Immediate postsurgical measurement all patient showed optimum anatomical outcome (stage 0). But follow up within 3 month (10 to 90 days) 13 patient showed satisfactory anatomical outcome (stage 1 Q<-1)) with no recurrence (Q>-1) nor dyspareunia. Total vaginal length and Pb no change in measurement before and after anesthesia but Tvl reduced by 2.3 cm and Pb increased by .3cm postsurgical. Presurgical measurement of Gh increased by .8cm but reduced to 3.5 cm postsurgical. No significant difference in postsurgical intraoperative measurements during follow up within 3 months except Gh (3.2 cm) which is narrower even with valsalva manovure.

**Conclusion :** POP-Q technique in assessment of Pelvic organ prolapse was anatomically site specific and is with good reproducibility and less intra and inter observer variation. Significant difference in descent alert surgeon to plan surgical technique to have optimum anatomical outcome and prevent recurrence and dyspareunia.

**Keyword:** Pelvic Organ Prolapse, POP-Q, POP-Q measurement and surgical outcome.

1. Professor Serajun Noor, Professor & HOD, Dept. of Obstetrics and Gynecology. Chattagram Maa-O-Shishu Hospital Medical College, Chattogram.
2. Dr. Shahana Sharmin, Associate Professor, Dept. of Obstetrics and Gynecology, CMOSHMC.
3. Dr. Aklima Sultana, Assistant Professor, Dept. of Obstetrics and Gynecology, CMOSHMC.
4. Dr. Monira Jamal, Assistant Professor, Dept. of Obstetrics and Gynecology, CMOSHMC.
5. Dr. Farjana Ahmed Shurovi, Resident Surgeon, Dept. of Obstetrics and Gynecology, CMSOGH.
6. Dr. Taniza Jabin, Medical Officer, Chattogram Metropolitan Hospital Pvt. Ltd.

**Address of Correspondence:** Professor Serajun Noor, Professor & HOD, Dept. of Obstetrics and Gynecology. Chattagram Maa-O-Shishu Hospital Medical College, Chattogram.

**Introduction :**

Pelvic organ prolapse (POP) is defined as downward or forward displacement of pelvic organ from its normal location due to weakness of pelvic organ mostly in middle aged and elderly women with an incidence of 7 to 10% and life time risk of surgery 11 to 20%<sup>1</sup>. In rural Bangladesh incidence is 16.9%<sup>2</sup>. Women with prolapse typically complain of something coming out of vagina or sensation of vaginal heaviness, recurrent irritative bladder symptoms, voiding difficulty, incontinence, defeacatory difficulty or nonspecific symptoms difficult to correlate with anatomic site or severity of bulge<sup>3</sup>. Pelvic organ prolapse possess a major suffering in women life physically, psychosocially and economically. Symptomatic POP is typically treated with reconstructive surgery<sup>4</sup>. Pelvic organ prolapse develop due to loss of integrity of proximal vaginal level I support by uterosacral and cardinal ligaments. Cystocele and rectocele are central defects of pubocervical and rectovaginal septa<sup>5</sup>. In 1996 Bump etal presented POP-Q as Standard and objective site specific system for describing, quantifying and staging pelvic organ prolapse. International Continent Society introduced POP-Q as a site specific measuring technique of pelvic organ prolapse. POP-Q is a site-specific measuring technique using definite anatomical landmark, minimizing intra and inter observer variability and making it more scientific while assessing patient during follow up.

POP-Q system relies on specific measurement of defined nine points in the midline of vaginal wall, fixed reference point used for measurement is hymenal ring (zero point)<sup>1</sup>. Surgeon can evaluate anatomical correction of prolapse immediately after surgery. POP-Q measurement were<sup>1</sup>-

Aa: It is a fixed landmark. It defines a point that lies in the middle of the anterior vaginal wall and 3 cm proximal to the anterior urethral meatus. It corresponds to the proximal location of the urethra vesical crease. In relation to the hymen this point ranges from -3 (i.e., normal support) to +3 (i.e., maximum prolapse).

Ba: It is a variable point and refers to the most distal position of any part of the remaining upper anterior Vaginal wall. It is -3(in absence of prolapsed) to TvI (-3 to +8). In absence of prolapse Aa and Ba are almost the same point (i.e. (-3).

Ap: It defines the point that lies in the middle of posterior vaginal wall and is 3 cm proximal to the hymen. This points range is -3 (i.e., normal support) to +3 (maximum prolapsed of point Ap).

Bp: It is also a variable point, most distal point of the remaining upper posterior vaginal wall. Point range is -3 (in absence of prolapse) to +8. In absence of prolapse Ap & Bp are almost same -3.

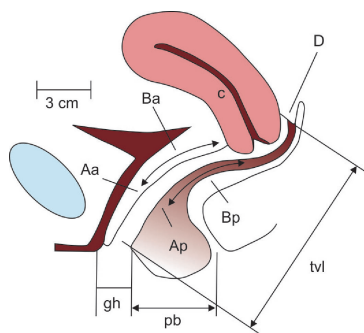
Total vaginal length (tvI): greatest depth of the vagina in cm measurement is taken without straining (normal range is 8 to 12 cm).

Genital hiatus (gh): middle of the external urethral meatus to the posterior midline of the hymen (range 2-4 cm).

Perineal body (pb): Posterior margin of the genital hiatus to midpoint of anterior margin of anus about 2.5 to 3cm

D (Douglas): level of uterosacral ligament attachment to the posterior cervix (no cervix, no D point, range- 8 to -10).

C (cervix or vaginal cuff): Most distal edge of the cervix (-8) or leading edge of vaginal cuff (-6).



(1.a) Location of 9 point

Anterior wall Aa	Anterior wall Ba	Cervix or cuff C
Genital hiatus gh	Perineal body pb	Total vaginal length tvI
Posterior wall Ap	Posterior wall Bp	Posterior fornix D

(1.b) POP Q Grid

-3 Aa	-3 Ba	-8 C
3 gh	2.5 pb	10 tvI
-3 Ap	-3 Bp	-10 D

(1.c) POP Q Measurement

**Fig.-1: POPQ Stage 0**

However, with clinical examination the dominant prolapse may mask the additional compartment defects. i.e., the large anterior vaginal prolapse may compete with the uterus to be dominant prolapse and vice versa<sup>4</sup>. Before performing surgical reconstructive procedure, final vaginal examination is usually performed intraoperatively under anesthesia after mild traction of cervix in horizontal plane with volsellum. All intraoperative measurement except Pb and Tvl showed significant higher descent as compared to preoperative finding before anesthesia<sup>3</sup>.

This study was attempted to measure POP by POP-Q system for getting along with this rising scientific technique of better reproducibility and surgical outcome as well as minimal intra and inter observer variation.

### Methods:

This was a hospital based prospective study done with 250 patient attended OPD with pelvic organ prolapse. 14 patients were excluded only for vaginal prolapse anterior or posterior or cervical descent and 236 women were included in the study by consecutive sampling. Measurements were taken by POP-Q technique once they were scheduled for vaginal hysterectomy with pelvic floor repair in Chattagram Metropolitan Hospital from January 2010 to December 2019. Informed consent was obtained from all women prior inclusion in the study. The study was approved by ethical committee of CMOSHC. POP-Q measurement was done with Valsalva before anesthesia, intraoperative presurgical (begining of surgery) and post-surgical (at the end of surgery) after anesthesia, post operative within 3 months of surgery.

Valva and perineum was Inspected and any prolapse noted after labial separation. Sims speculum and Ayers spatula marked in cm (POP-Q POP Sicle Stick) were used for taking measurement during examination. In operation table measurement of Tvl in cm was taken and the patient was then asked to perform Valsalva maneuver (pinch the nose, close he mouth, exhale like inflating the balloon, bear down for 10 to 15 sec) for

measurement point Aa Ba C Ap Bp D (Relative Point) and length Gh, Pb except Tvl. The Plane of hymen was defined as zero. Relative Points above hymen were assigned negative and points below hymen as positive while length was measured in cm. All measurement were recorded in the grid form & Prolapse was staged by POP-Q system. In operation theater, following spinal anesthesia, bladder was emptied before examination. Sims speculum (to retract the posterior vaginal wall, Allis forcep (to hold the anterior lip of cervix) Ayers spatula marked in cm were used for measurements during examination. Gentle traction of the anterior lip of cervix in horizontal axis was applied with Allis forcep during intraoperative measurements for all points except Tvl and Pb. The traction was stopped once there was minimal resistance felt following extrusion of prolapse parts. Measurement of Aa, Ba, Ap, Bp, C, D, Gh, Pb, Tvl Preoperative before anesthesia, intraoperative presurgical and postsurgical, and post operatively within 10 to 90 days were recorded in grid form and preoperative and presurgical staging was done. Sexually active patients were advised for sexual activity at least after six weeks of surgery. The result was then summarized as mean and SD for numerical variable and percentage for categorical variable and mean value were calculated statistically from actual measurement by Ayers spatula.

### Staging of prolapse<sup>1</sup>:

Stage 0: No Prolapse. Points Aa Ba Ap Bp are all at -3cm. (nobulge)

Stage I: The more distal portion of prolapse is more than 1cm above the level of hymen.

Quantification value <-1.

Stage II: The most distal portion is 1cm or less proximal or distal to hymen. Quantification is e" - 1 but < ± 1.

Stage III: The most distal portion of the prolapsed >+1 cm below hymenal plane. Quantification value is > + 1 but <+2 (tvl-2 cm).

Stage IV: Complete eversion of vaginal walls. Quantification value >+2 (+Tvl-2 cm)

Fig.- 1-3: Preoperative measurement

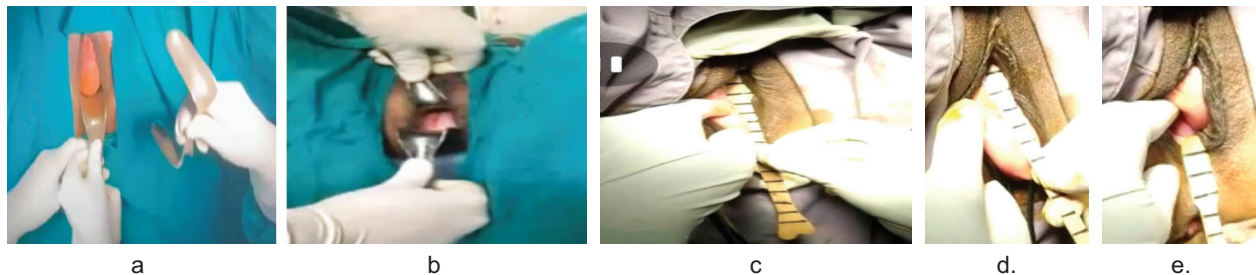
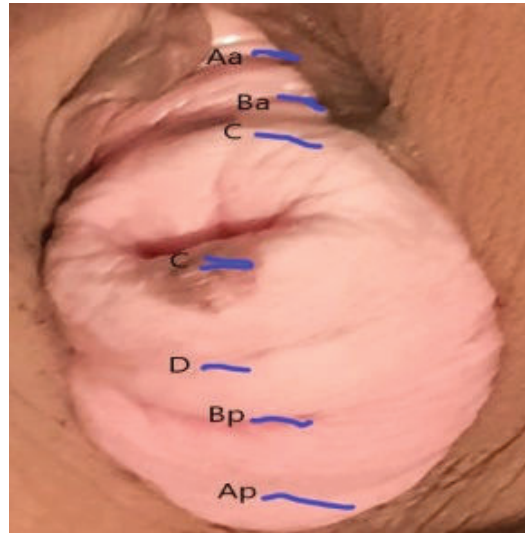


Fig.-2: (a). POP-Q measurement, (b) Tvl cm, 1(c) Gh cm, (d) Ba, (e) Pb



**Fig.-3: Stage III**



a



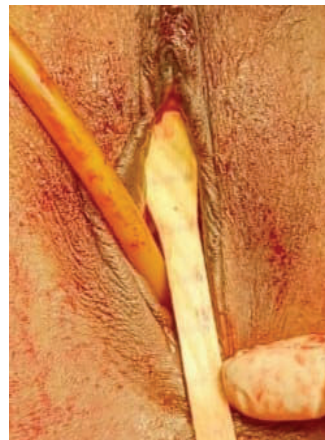
b

**Fig.-4: (a) Stage IV, (b) Stage IV**

Postoperative Measurement



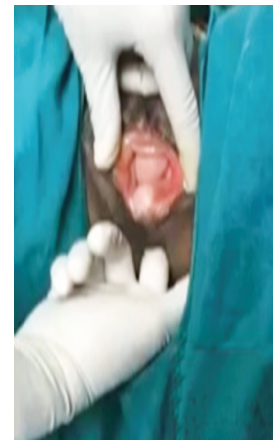
a



b



c



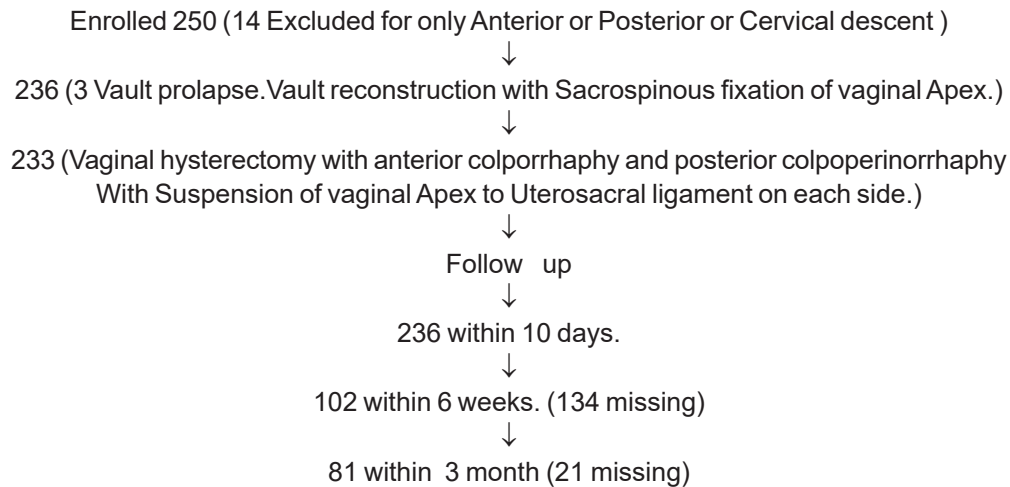
d.

**Fig.-5: (a) POP –Tvl cm, (b) Gh cm, (c) Pb cm, (d) Levator plate**



**Fig.-6: AYERS SPATULA ( Marked in cm POP Sicle stick)**

#### Flow Chart



#### Result::

A total 236 patient had preoperative, intraoperative presurgical and postsurgical as well as postoperative measurement within 3 months of operation. Table I Shows the women were in mean age  $51 \pm 5$  SD years range (51 to 60 years 51%), low socioeconomic group (90%), multiparous 100% mean parity  $4 \pm 2$  SD ( $e^{*6}$  62%), with history of vaginal delivery 95% and postmenopausal 96%. 68% patient were from low socioeconomic condition with history of home delivery 89% and 97% resuming house hold work within two weeks of delivery and 84% was sexually active. Table II shows frequency of dominant segment Ba (97%), C (99%), Aa (91%) Bp (91%). Table III shows at presurgical evaluation after anesthesia and Quantification of Stage 0 to IV, 2 patient of stage I, 3 of stage II and 4 of stage III were upstaged with eventual 115 stage IV POP. In Table IV Something coming down vaginally was the consistent finding (100%). Symptoms related to dominant segment anterior segment descent complaining urinary symptoms and posterior segment bowel disorder.

Table V shows Preoperative, Intraoperative and Postoperative measurement of 6 points (Aa Ba C Ap Bp D and 3 length Gh Pb and Tvl) of POP staging. Point Aa, Ba, Ap, Bp, C, D and Gh showed significantly different presurgical measurement with traction after anesthesia compared to preoperative measurement with valsalva technique. Point Ba Bp C and D showed maximum increase in mean difference of 1.6 each with no difference in Tvl (8.9 cm) and Pb (3 cm). No remarkable difference in post surgical measurement with that of postoperative measurement (10 to 90days). Excluding 14 patient 222 had anterior, middle and posterior compartment defect. Among 14 patients without posterior defect during preoperative examination, 10 developed posterior defect in Presurgical measurement under spinal Anesthesia with marked decent in measurement of D. Table VI shows usual postsurgical complication while Table VII shows Surgical Success, 223 with optimal anatomical outcome (stage 0, no bulge), 13 satisfactory outcome (stage I,  $Q < -1$ ) with no unsatisfactory anatomical outcome or recurrence ( $Q > -1$ ) at follow up within 10 to 90 days.

**Table-I**  
*Distribution according to Characteristics*

Characteristic	Range	Number (n)	Percentage (%)
Age	40-50 yrs.	35	15%
	51-60 yrs.	120	51%
	> 61 yrs.	81	34%
Parity	Up to 2	30	13%
	3-5	60	25%
	> 6	145	62%
Duration of POP in years	1-10 yrs.	164	70%
	11-20 yrs.	60	25%
	> 21 yrs.	12	5%
Menopause status	Pre menopause	24	10%
	Post menopause	212	90%
Socioeconomic condition	Low	159	68%
	Middle	74	31%
	Upper	03	1%
BMI	< 27 kgmm <sup>2</sup>	225	95%
	> 27 kgmm <sup>2</sup>	11	5%
Chronic cough	Yes	16	7%
	No	220	93%
Constipation	Yes	34	14%
	No	202	86%
Mode delivery	Vaginal	231	98%
	Home	205	89%
	Hospital	26	9%
	Cesarean section	5	2%
Early resumption of work after delivery	< 2 weeks	230	97%
	> 2 weeks	6	3%
Sexually active		198	84%

**Table-II**  
*Distribution of total POP patient according to sites of prolapse segment*

Segment outside hymen	Number (n-250)	Percentage (%)
Aa	215	91%
Ba	227	97%
C	233	99%
Ap	106	45%
Bp	215	91%
D	184	78%

**Table-III**  
*Distribution of ordinal staging of POP*

Stage	Pre operative	Intra operative		POP quantification
		Presurgical	Post-surgical	
0	0	0	0	No prolapse
I	2	0	0	Q (< - 1)
II	38	37(38+2-3)	0	Q (> - 1 to +1)
III	85	84(85 +3- 4)	0	Q < 2 + (tvI - 2)
IV	111	111+4	0	Q > 2 + (tvI - 2)

**Tahble-IV**  
Correlation of complain with dominant POP segment

Complain	POP segment					
	Aa	Ba	C	Ap	Bp	D
Bulge	100%	(100%)	100%	100%	100%	100%
Urinary complain						
Increase frequency	219 (93%)	231(98%)		5%	20%	25%
Dysuria	207(88%)	224(94%)		15%	20%	25%
Incomplete evacuation of bladder	198 (84%)	231(98%)		5%	5%	
Retention of urine	20(8%)	20(8%)				
SUI	9(4%)	9(4%)				
Vaginal discharge			65%	80%	97%	80%
Sexual dysfunction	231(98%)	231(98%)	231 (98%)			

**Tahble-V**  
Pre operative, intra operative & post operative mean reference point used to stage POP

Reference point	Pre operative mean	Intra operative		Post operative (mean) within 3 months
		Pre surgical (mean)	Post-surgical (mean)	
Aa	+2.2	+2.9	-2.9	-2.9
Ba	+3.6	+5.2	-2.4	-3
C	+4	+5.6	-5.8	-6
Ap	+1	+1.5	-2.5	-2.5
Bp	+2.5	+4.1	-3	-3
D	+3	+4.6	x	x
gh	5cm	5.8cm	3.5cm	3.2cm
tvI	8.9cm	8.9cm	6.6cm	6.4cm
Pb	2.7cm	2.7 cm	3cm	3cm

**Tahble-VI**  
Surgical complication and outcome of patient within 3 months of surgery by one surgeon

Complication	Number	Percentage (%)
i. Infection		
a. Cellulitis infection	80	34%
b. Vault of infection	12	5%
ii. Retention of urine	x	x
iii. UTI	20	8.5%
iv. Vaginal discharge	234	100%
v. fever	10	4%
vi. Secondary hemorrhage		
a. Minor	3	1%
b. Major	3	1%

**Tahble-VII**  
Surgical Success

OutcomeQuantification	n
Optimal anatomicaloutcome no bulge	220
Satisfactory Q < -1 anatomical outcome	13
Unsatisfactory anatomical outcome Q > % 1	0
Dysparunea	0

### Discussion:

The standard POP-Q system has a long learning curve as some experience is required to exactly interpret the anatomical points.<sup>4</sup> In present study most of socio demographic characters were comparable to other studies. Though BMI  $> 30 \text{ Kg m}^2$  Chronic cough, constipation are risk factor for prolapse most of patient had BMI  $< 27 \text{ Kg m}^2$  with no cough and constipation. Home delivery with resumption of work within two weeks of delivery is a risk factor for POP. Symptoms of something coming down was the consistent finding in 100% patient which is comparable to Daham be et al 84% and OP Awoude 96%. Urinary symptom were in terms of frequency (93%), urgency, SUI (4%), incomplete evacuation (84%) and relatively lower number of retentions of urine (8%). Pradhan et al 87% frequency 88% dysuria 72% incomplete evacuation, and 27% retention of urine. It was noted urinary symptoms, urge incontinence associated with lowest point of upper anterior vaginal wall descent (Ba)<sup>5</sup>. It was shown feeling of incomplete evacuation and need for straining were the consistent finding with higher Ba in most of the study. Most of the stage IV disease was associated with dysuria (Ba) and urinary stress incontinence (Aa)<sup>6</sup>. Higher descent of Ba was also associated with bladder pain and obstructive urinary symptoms like retention of urine and need for elevation of prolapsed part. It was noted posterior compartment defect (Bp) was associated with bowel disorder, feeling of anal prolapse, manual evacuation of stool Swift et al<sup>7</sup>. Sexual dysfunction (98%) was mostly associated with Aa, Ba & C segment descent<sup>5</sup>.

In our study according to POPQ staging were Stage I (.8%) stage II 15.2 %, stage III 37% & stage IV 47% and site specific Quantification of the stage was reproduceable and minimized intra and inter observer variation. Dahma be et al 16% 49%, stage 35% Seo JT et al overall distribution POP-Q stage 0 to 4 was 68%, 19%, 11% 1% and 0% of patients respectively. In our study the mean preoperative scoring were Aa+2.2, Ba+3.6, C+4, Ap+1, Bp+2.5 D+3 Gh5 cm Pb 2.7 cm Tvl 8.9cm. Intraoperative presurgical measurement except Pb and Tvl showed significant higher descent as compared to preoperative finding before anesthesia, mean difference were Aa 0.7, Ba1.6, C 1.6, Ap 0.5 Bp1.6 D1.6 Gh .8 cm with highest descent in Ba C, D Bp. Descent may be due to traction, leg position, apical (USL/CL) support stiffness, inadequate valsalva, effect of anesthesia on levator any muscle denervation<sup>8</sup>. Postoperative Aa, Bp, Ap,

C did not differ than post-surgical with average postoperative scoring (Aa-2.9, Ba-3., C-6, Ap-2.5 Bp-3. Absent D). Gh3.2cm, Pb 3 cm Tvl6.4 cm. Surgical healing and tissue remodeling may contribute to change in Ba, Gh and Tvl. Surgical Success was based on anatomical criteria evaluating objective outcome i.e recurrence.

The definition of optimal anatomic outcome was POP-Q stage 0 (no bulge) and satisfactory outcome was stage I ( $Q < -1$ ) and unsatisfactory outcome or recurrence ( $Q > -1$ )<sup>9</sup>. For evaluation of post operative outcome post-surgical and postoperative measurement within 3 months of surgery were taken. In our study anatomical correction was evaluated in an objective manner which was compared with others for anatomical correction<sup>10</sup>. Restoration of normal anatomy and function automatically address the vaginal axis, caliber and depth a concept called site specific repair of all segments and levels best at interspinous diameter. Restoration of anatomy are potential for normal urinary, bowel and sexual function<sup>10</sup>. Out of 236, 223 patients had optimum anatomical out come and 13 had satisfactory anatomical outcome with no unsatisfactory outcome or recurrence. It was found with better uterosacral apical suspension of vaginal apex anatomical outcome was optimum. Dahma et al 63% optimum and 16% satisfactory outcome<sup>1</sup>. Minimum traction was adequate for extrusion of prolapse during intraoperative measurement.

In our study 222 patient had combined anterior middle and posterior compartment defect preoperatively with stage II or more. The change in intraoperative presurgical finding may alter surgical plan<sup>4</sup>. All patient underwent vaginal hysterectomy, pelvic floor repair with special care in excision and reconstruction of redundant vaginal wall, Gh and Pb and vaginal apical suspension to uterosacral ligament at or above the ischial spine with 2 suture on each side. Concomitant Kellys Suture were performed in 9 (4%) with stress incontinence. The location of point C with traction in the operating room is used to make decision about need for hysterectomy and apical suspension during reconstructive surgery<sup>8</sup>.

Among the three length of POP-Q there is significant change in Gh without any change in Tvl and Pb in intraoperative presurgical measurement<sup>9</sup> The observation explained both Pb and Tvl are measured without traction and Pb has lower distensibility with



Valsalva<sup>9</sup>. Decision to narrow Gh surgeon can rely on preoperative measurement as anesthesia can exaggerate the size of hiatus. Postoperative surgical healing and tissue remodeling narrow Gh<sup>10</sup>. Wide hiatus is a surrogate indicator of prolapse severity or levator laxity or avulsion with consequent apical descent. Levator avulsion was strongly associated with increased levator hiatus and decreased muscle strength leading POP<sup>11</sup>. Pelvic floor image can confirm association between Gh size and levator attenuation<sup>12</sup>. In our study instead of levator defect we evaluated Gh along with Pb as a risk factor for prolapse recurrence<sup>5</sup>. Wider hiatus favour recurrence while increase depth of Pb leads dyspareunia.

Pre and Postsurgical as well as postoperative assessment of Gh is important specially in sexually active women. Our study highlights that surgeon must be cognizant not to overcorrect Gh which should be reassessed after Apical suspension and when deciding posterior compartment repair. Overcorrection of Gh in posterior compartment repair can carry a significant risk of de novo dyspareunia (9 to 19%)<sup>11</sup>. Normalization of Gh (3 to 3.4 cm) and addition of apical suspension with posterior colpoperineorrhaphy (increase Pb) prevents prolapse recurrence. But with narrowing of Gh after Apical suspension and posterior repair with or without perineorrhaphy chance of dyspareunia<sup>11</sup>.

Postoperative functioning vaginal length >4 cm is important if sexually active<sup>9</sup>. In this study 84% patient were sexually active and advised for sexual activity after six weeks of surgery. In our study 236 patient had post operative follow up within 10 days but only 102 patients at 6 weeks and 81 patients had follow up within 3 months. But no complain of dyspareunia nor any bulge (Q<-1) or unsatisfactory outcome or recurrence (Q>-1). After Apical suspension to uterosacral ligament and posterior colpoperineorrhaphy mean Tvl was 6.4 cm (range 4.4 cm to 8.4 cm), and Gh was 3.2 cm.

Limitation of the study: POP-Q measure only the central prolapse, surgery was done without evaluating lateral defect that affect surgical outcome. No comparison was done with traditional surgery (surger without site specific measurement and Quantification) done for pelvic organ prolapse.

### Conclusion:

Pre operative measurement after Valsalva more accurate than presurgical after anesthesia having

greater decent than preoperative. Postoperative Aa, Ba, Ap, Bp C were not different than postsurgical when D was absent. Presurgical Gh is wider than preoperative but postoperative Gh was narrower than post-surgical. Preoperative measurement with Valsalva is more representative of degree of prolapse than seen after anesthesia and more reliable to make decision regarding surgical approach in planning reconstructive surgery.

Recommendation: This small-scale study evaluate surgical outcome addressing minimum Tvl > 4 cm, optimum Gh 3cm and Pb d" 3 cm to prevent recurrence and sexual dysfunction. Larger sample is needed to make recommendation.

### References:

1. Vandana D, Rachna C, Shakun S, Manisha S. Evaluation of pelvic organ prolapse by standardized POP Q system for vaginal hysterectomy. *International Journal of Reproduction, Contraception, Obstetrics and Gynaecol.* 2017; 6(6):2584-2588.
2. Barbara H, Judith G, Maqsoodul I, Anubha R. Pelvic organ prolapse surgical training program in Bangladesh And Nepal improves objective patient outcomes. *Int. Urogynecol.* 2021; 32( 4) :1031-1036.
3. Pradhan T, Raegmi MC, Rai R, Bhatta R, Rijal P, Uprety DK. Assessment of Pelvic Organ Prolapse by Pelvic Organ Prolapse Quantification Technique Among Pre-operative Patients. *NJOG* . 2013 Jul – Dec;8(2):26-29.
4. Snehamay Chaudhuri and Vaithyeswari J. Correlation of preoperative and intraoperative assessment of pelvic organ prolapse by pelvic organ prolapse quantification system : a cross sectional study. Available from <https://www.Authorea.com>. (cited 2<sup>nd</sup> April 2022).
5. Schulten SF, Detollenaere RJ, Inthout J, et al. Risk factors for pelvic organ prolapse recurrence after sacrospinous hysteropexy or vaginal hysterectomy with uterosacral ligament suspension. *Am J obstet Gynecol* 2022;9: 227-252.
6. Demise A S, Stephan B, Georges M and Bertrand R. Prevalence and surgical outcomes of stage 3 and 4 pelvic organs prolapse in Jimma university medical center, south west Ethiopia. *BMC*

- Women's Health (2022) 22:410 <https://doi.org/10.1186/s12905-022-01992-8>
7. Swift SE, TaleSB, Nicholas J. Correlation of symptoms with degree of pelvic organ prolapse in a general population of prolapsed: What is pelvic organ prolapsed .Am J Obstet Gynecol2008;189:372-379.
  8. Zimmerman CW. Pelvic organ prolapsed basic principles.In Rock JA,Jones HW,editors Te Linde"s operative gynaecology 10<sup>th</sup> edition Philadelphia: Lippincott Williams and Wilkins2010:854-873.
  9. Joshep T Kowasaki et al .Systematic review of definitions for success in pelvic organ prolapse surgery.Int Urogynaecol. J.2018;29:1697-1704.
  10. Ying Z, Zhi X, Qing H, Mei-ying Q. Subjective and Objective Evaluation of Total Pelvic Floor Reconstruction with Six-Arm Mesh in Patients with Severe Pelvic Organ Prolapse : A 1-Year Retrospective Study.Dove Press Journal:Therapeutics and Clinical Risk Management 2020: 16; 861-870.[www.dovepress.com](http://www.dovepress.com).
  11. Victoria L , Jennifer R, Joan M, Hans P , Alvaro M. Pelvic organ prolapse as a function of levator ani avulsion, hiatus size, and strength. American Urogynecologic Society,2018: 3-13,
  12. Rui Wang, Elena Tunitsky-Bitton. How does office assessment of prolapse compare to what is seen in the operating room? <https://doi.org/10.1007/s00192-022-05239-w>. published online: 01 June 2022