

Paper

Recurrent pelvic organ prolapse (POP) following traditional vaginal hysterectomy with or without colporrhaphy in an Irish population

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INTRODUCTION

Pelvic organ prolapse (POP) is a highly prevalent condition affecting about 50% of parous women^{1,2}. There is a lifetime risk of 11.9% of undergoing an operation for its surgical correction^{1,3}. Vaginal hysterectomy with or without colporrhaphy is the most common primary operation performed for POP, which is claimed to have a long-term recurrence rate of 29 - 30%³⁻⁴.

The aetiology of POP is not well understood, but it is thought to be multifactorial. Weakening of the pelvic floor as a result of injury to levator ani muscles is widely accepted as an underlying factor. Vakili *et al.*⁵ reported that women with diminished levator ani contraction strength and a widened genital hiatus are more likely to develop recurrent POP following a primary procedure. Several other factors such as age, obesity, high parity and advanced stage of an initial prolapse have been reported to be associated with recurrent POP^{1,6,7}. It has also been suggested that the recurrence of POP may be due to persistent unrecognised support defects. Alternatively, new defects may occur in a different compartment predisposed to recurrence due to the redistribution of forces following a primary operation^{1,6,7}.

Most importantly, only a proportion of POPs and recurrent POPs are symptomatic. Olsen *et al.*¹ reported that only 10-20% of women seek medical treatment for their symptoms, although an estimated 50% of parous women lose pelvic floor support resulting in POP. Recent studies by Miedel *et al.*⁸ and Diez-Itza *et al.*⁹ demonstrated the same situation with recurrent POPs, with only one third or less of them being symptomatic. Hence, it is debateable whether clinicians should embark on aggressive primary procedures to prevent recurrent POPs, which may not be symptomatic.

Almost all studies quoting the rate and nature of recurrence have been carried out on North American populations and so data may not be applicable to other populations with different characteristics and expectations. The primary

objective of our study was to estimate the incidence of recurrent POPs following traditional vaginal hysterectomy with or without colporrhaphy as a primary procedure in an Irish population. Our secondary objective was to explore the nature of recurrent POP.

MATERIAL AND METHODS

This is a retrospective cohort study of 114 women who had surgery between January 1998 and December 2003 in a teaching hospital in Northern Ireland. The operations were performed by or under the direct supervision of two consultant gynaecologists. Through the hospital's surgical register, 189 consecutive patients who had vaginal hysterectomies with or without colporrhaphy were identified. Only 152 patients were eligible for the study, after patients who had concomitant or previous prolapse surgery were excluded. Nine patients had deceased, leaving a sample of 143 patients who had vaginal hysterectomy with or without colporrhaphy as a primary procedure.

In the first phase of the study, in addition to the review of inpatient and outpatient notes, a short questionnaire, modified from ICIQ-VS¹⁰, was used to identify patients who may not have presented to the hospital with symptomatic recurrences. The questionnaire focused on prolapse. Barber *et al.*¹¹ reported that the following question is the single most sensitive one for screening POP without examination: 'Do you usually have a bulge or something falling out that you can see or feel in your vaginal area?'. Questions number 5 and 6 in ICQI-VS are similar to this question and were included in our questionnaire. A total of 143 questionnaires were sent out with a request for consent to participate in the

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study. In the first instance 61 replied with consent and 53 replied with consent in the second round of questionnaires, resulting in a sample of 114 patients.

Case notes of the 114 patients were analysed in detail to extract demographic data, severity of index of prolapse and details of the index operation, post-operative review appointments and any new presentations. Further details of patients who reported a recurrence of the symptoms of prolapse and had not presented to the hospital were obtained from general practitioners.

The POP-Q technique was not well established during the index time period. Wide variation existed in the terms used to describe the index of prolapse in the hospital case notes. For this reason, the system developed by Olsen *et al.*¹ was used to classify the degree of index of prolapse.

In the second phase of the study, we invited 107 of the 114 patients to attend for a gynaecological assessment. Seven patients who had undergone a second procedure for recurrent POP during the follow up period were excluded. The review appointment was attended by 58 patients, including nine who claimed to be symptomatic for the recurrence of POP since the index operation. A single examiner performed a gynaecological examination including a POP-Q examination at maximal strain. POP-Q ≥ 2 at any compartment was considered to be a recurrence.

All patients gave their informed consent for the information to be used in the study as well as for the gynecological examination.

Data were analysed using IBM SPSS statistics version 19. Fisher's Exact Test was used to analyse categorical variables, while an independent T test was used to analyse continuous data.

The study was categorized under service evaluation and deemed exempt from ethical approval.

RESULTS

As shown in table 1, the sample of 114 comprised predominantly Caucasian, parous and middle-aged women, representing the characteristics of the average Irish population. The majority of the women were healthy with no significant co-morbidities. In 12.28% of women the indication for index surgery was not prolapse symptoms (menorrhagia) although the surgery was carried out through vaginal route indicating the presence of some degree of asymptomatic prolapse at the time of the surgery.

Out of the 114, 23.68% of women underwent vaginal hysterectomy alone, 28.95% had anterior colporrhaphy, 7.89% had posterior colporrhaphy, while 39.47% had both anterior

and posterior colporrhaphy with vaginal hysterectomy, indicating that the majority of the index prolapse would have been at the apex and anterior compartment

TABLE 1.

Cohort characteristics at the time of index surgery

Characteristic	Sample N=114
Age (Mean(SD))	53.93(12)
Body Weight in Kg (Mean(SD))	70.48(16.2)
Vaginal parity (Mean(SD))	3.16(1.8)
Menopausal status N(%)	
Pre-menopausal	44(38.6)
Post menopausal	70(61.4)
Chronic lung disease N(%)	10(8.8)
Chronic steroid use N(%)	4(3.5)
Race N(%)	
Caucasian	113(99.13)
Other	1(0.9)
Surgery Indication N(%)	
Menorrhagia only	14(12.3)
Prolapse only	59(51.8)
Prolapse and menorrhagia	15(13.2)
Prolapse and Incontinence	26(22.8)
Index Surgery N(%)	
VH	27(23.7)
VH & AR	33(28)
VH & PR	9(7.9)
VH, AR & PR	45(39.5)
Years of Follow Up (Mean(SD))	9.18(1.9)

This is apparent from Table 2, which shows the severity of the index prolapse using the classification system developed by Olsen *et al.*¹. This shows that 58.76% of women had a grade 2 or higher prolapse at the apex, 57.01% of the women had a similar grade prolapse in the anterior compartment, while only 28.95% had a similar grade prolapse in the posterior compartment. Thus the majority of women in the sample had a vaginal hysterectomy alone or with anterior colporrhaphy to correct apical or anterior wall prolapse.

Out of the 114 women, 18 were symptomatic of recurrent POP or had a repeat procedure for recurrent POP. This represents a subjective recurrence rate of 16% (95% CI 10%-24%) for the mean follow up period of 9.18 (1.85) years. Out of these 18 patients, seven patients had a repeat operation for prolapse. The reoperation rate was thus 6.14% for our sample. Four (3.5%) patients who were symptomatic were using ring pessaries, while seven (6.14%) patients decided against further treatment

TABLE 2
Preoperative prolapse severity according to the site involved

	Anterior Compartment N(%)	Posterior Compartment N(%)	Apex N(%)	Overall Stage N(%)
No Prolapse	14 (12.3)	47 (41.2)	0	0
Grade 1	35 (30.7)	34 (29.8)	47 (41.2)	23 (20.2)
Grade 2	58 (50.9)	30 (26.3)	63 (55.3)	82 (71.9)
Grade 3	7 (6.1)	3 (2.6)	4 (3.5)	9 (7.9)
Not assigned	0	0	0	0

TABLE 3
Nature of recurrent POP (subjective) according to the site and time to appear

	Same Site N(%)	New Site N(%)	Time interval between index operation and the recurrent POO in years Mean(SD)
Apex	6 (24%)	0	3.5(0.55)
Anterior compartment	8 (32%)	4 (16%)	Same site 4.46(2.2) New site 4.23
Posterior compartment	2 (8%)	5(20%)	Same site 5(1.4) New site 5.25(1.25)

Table 3 shows the nature of recurrences and the mean time interval between the index operation and subjective recurrence in 18 patients. Almost one third of recurrences were in a new site, while six out of 16 (37.5%) same site recurrences occurred in the apex and the anterior compartment. This demonstrates that apical recurrences were the earliest to be symptomatic (3.5yrs), followed by those in the anterior compartment (4.3yrs), and finally the posterior compartment (5.12yrs).

Table 4 compares some of the characteristics of patients with and without subjective recurrent POP. The recurrent group contained more post menopausal women (67% vs. 60%), more women who had an index operation for prolapse only (72% vs. 48%) and more women who had an index operation in all three compartments (50% vs. 38%). However, these differences were not statistically significant.

In the second phase of the study, 58 patients including nine who were symptomatic of POP recurrence attended for a POP-Q assessment. All nine symptomatic patients and 10 asymptomatic patients were found to have POP-Q ≥ 2 in one or more compartments, resulting in an anatomical recurrence rate of 32.76% (95% CI 32.76%-22.08%) for this group of 58 patients.

Table 5 compares some characteristics of 19 patients with objective recurrent POP and of 39 patients with no objective recurrence. There was a statistically significant difference in the mean age and menopausal status at index operation,

between the patients who had objective recurrence and the remaining patients who attended for POP-Q examination. No objective recurrences occurred in the patients who had vaginal hysterectomy for non-prolapse indications and only two patients who underwent vaginal hysterectomy alone had objective recurrences compared to 17 of those who had vaginal hysterectomy with colporrhaphy.

DISCUSSION

This study was undertaken to estimate the incidence and nature of recurrent POP following traditional vaginal hysterectomy with or without colporrhaphy as the primary procedure. The subjective recurrence rate was 16% for the mean follow up period of 9.18 years. In the group of 58 of the 114 patients who attended for POP-Q assessment the objective recurrence rate was 33%.

In total, 14 women had a primary operation for non-prolapse indications such as menorrhagia, and none of them had subjective recurrences. These findings agree with those of Mant *et al.*¹² who reported that the risk of recurrent POP following hysterectomy was 5.5 times higher in women whose initial hysterectomy was for prolapse symptoms than in those with other conditions. Blandon *et al.*¹³ reported that recurrent POPs were of a higher incidence among women who had combined procedures than those who had hysterectomy alone. This supports the concept that underlying connective tissue and neuromuscular defects at the time of the index operation may play a significant role in the recurrence of POP¹⁴.

TABLE 4

Comparison of characteristic between subjective recurrence (n=18) and no subjective recurrence (n=96)

Characteristic	No subjective recurrence n=96	Subjective recurrence n=18	P value
Age (Mean(SD)) ^s	53.67(12.15)	55.33(11.59)	0.58
Body Weight in Kg (Mean(SD))	70.85	68.55(11.84)	
Vaginal parity (Mean(SD))	3.15	3.33(1.37)	
Menopausal status N(%)			
Pre-menopausal	38(39.6)	6(33.3)	0.79
Post menopausal	58(60.4)	12(66.7)	
Chronic lung disease & steroid use %	8.3	11.1	
Race N(%)			
Caucasian	95(99.0)	18(100.0)	
Other	1(1.0)	0(0.0)	
Surgery Indication N(%)			
None Prolapse(Menorrhagia)	14(14.6)	0(0.0)	0.22
Prolapse +/- other	82(85.4)	18(100%)	
Index Surgery N(%)			
VH	26(27.1)	1(5.5)	0.09
VH + Colporrhaphy	70(73.0)	17(94.5)	

\$P-value from Independent t-test presented.

All other p-values presented are from the Fishers Exact Test

Vaginal hysterectomy for non-prolapse indications may have been a contributory factor to the low subjective recurrence rate in our sample. When these 14 women were excluded from the analysis the subjective recurrence rate increased from 16% to 18%. Similarly, amongst the 58 patients who attended for POP-Q assessments, six patients had the primary operation for similar indications and there were no objective recurrences. The objective recurrence rate increased from 33% to 36.54% when these six patients were excluded from the analysis.

Approximately one third (36%) of subjective recurrences and 43.47% of objective (anatomical) recurrences occurred in a new compartment. These findings are similar to those reported by Price *et al.* [15] who reported that 61.5% of repeat procedures for recurrent POP were in a different compartment. This supports the concept, previously described, of the redistribution of forces associated with the primary operation [1,6,7], which may predispose new compartments to prolapse. Thus recurrent POP may not be solely due to the failure of the primary operation.

Inadequate suspension of the vaginal apex contributes to 33% of post hysterectomy vaginal eversion [16]; 24% of subjective recurrences were at the apex and they were the earliest to be symptomatic (3.5 years). None of the

asymptomatic objective recurrences were at the apex. This suggests that apical recurrence has a major role to play in patient symptomatology and that the restoring of apical support intra-operatively is of importance [12].

Several previous studies have demonstrated an association between age, vaginal parity, body weight, hormone replacement therapy and severity of the index of prolapse with recurrent POP [6, 17]. In the present study a statistically significant difference existed in both the ages and the menopausal status of women who had experienced and had not experienced objective recurrences (Table 5). No significant difference was demonstrable between the parity or body weight of the two groups.

In the second phase of this study results indicated that the incidence of subjective recurrence (16%) was half that of objective recurrence (32.76%). Symptoms of POP are not always related to the severity of the condition [18] and, as demonstrated in this study, many patients are asymptomatic [19]. The incidence of symptomatic prolapse has been reported to be as low as 7.4% when the anatomical recurrence rate was 31.3% [10]. Miedel *et al.* [8] confirmed this, reporting an anatomical recurrence rate of 41.1%, with less than one half of cases symptomatic.

TABLE 5.

Characteristics of patients with objective recurrence (n=19) compared with no objective recurrence (n=39)

Characteristic	No Anatomical Recurrence n=39	Objective Recurrence n=19	P value
Age (Mean(SD)) [§]	51.5(11.23)	58.9(9.60)	0.01*
BodyWeight in Kg (Mean(SD)) [§]	69.5(15.89)	73.3(17.90)	0.43
Vaginal Parity (Mean(SD)) [§]	3.3(1.90)	2.8(1.13)	0.25
Menopausal status N(%)			
Pre-menopausal	19(48.7)	3(15.8)	0.02*
Post menopausal	20(51.3)	16(84.2)	
Surgery Indication N(%)			
None Prolapse (Menorrhagia)	6(15.4)	0(0.0)	0.08
Prolapse +/- Other	30(84.6)	19(100)	
Index Surgery N(%)			
VH	12(30.8)	2(10.5)	0.32
VH & Colporrhaphy	27(69.2)	17(89.5)	

§Independent Sample t-test used

*Statistically Significant Result

Fisher's Exact test used for all categorical variables

The incidence of reoperation for recurrent POP is associated with its symptomatic recurrence. However not all symptomatic patients choose a surgical remedy. The incidence of reoperation in our study (6.14%) is low compared to other reported rates (17%^[3] 10.8%^[13]) and this may be due to the majority of our patients with symptomatic recurrent POP (7/9; 77.78%) choosing not to have further surgery. This suggests that the symptoms may not affect the quality of life sufficiently to warrant surgery, although this hypothesis was not tested. It is tempting to presume that differences exist between the Irish and North American populations, although the results obtained from women operated on by two gynaecologists in a single hospital may not be representative of all Irish women. This hypothesis can only be confirmed with further studies including data from all major hospitals in the region

Limitations exist in this study. The severity of the index of prolapse may not be accurate as some of the terms used were difficult to categorise even with use of the technique developed by Olsen *et al.*^[1]. This may have resulted in an under or overestimation of the severity of the index of prolapse. Although it was possible to estimate the true subjective recurrence rate from questionnaires, information from general practitioners, and reviewing notes, all eligible patients did not attend for POP-Q assessments. Only 58 women were available for estimating the objective recurrence rate, albeit with an average of nine years between the index

procedure and the review. The authors recognize that a modified ICIQ questionnaire was not ideal. It was felt that the inclusion of all questions, particularly those of a sexual nature, would reduce responses from this community, thus questions relating to prolapse symptoms only were included.

The findings of this study indicate the importance of having a sound understanding of the expectations of an individual woman together with identifying factors putting her at risk of prolapse recurrence before performing an operation for POP. Women's expectations of pelvic floor surgery are personal and highly subjective^[20]. Achieving complete anatomical correction may not be necessary to meet patients' expectations. Elkardry *et al.*^[20] stated that it is essential to identify and negotiate surgical expectations during pre-operative counselling, particularly when surgery is being performed simply to improve the quality of life. Therefore, this study indicates that anatomical correction does not always prevent recurrent POP in a different compartment and may not even be necessary to meet a patient's expectations. We should concentrate more on measures to reduce symptomatic recurrence as well as achieving patient-selected goals rather than just achieving anatomical correction.

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REFERENCES

1. Olsen AL, Smith VJ, Bergstrom JO, Colling JC, Clark AL. Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence. *Obstet Gynecol.* 1997;**89**(4):501-6.
2. Salvatore S, Athanasiou S, Digesu GA, Soligo M, Sotiropoulou M, Serati M, et al. Identification of risk factors for genital prolapse recurrence. *Neurol Urodyn.* 2009;**28**(4):301-4.
3. Denman MA, Gregory WT, Boyles SH, Smith V, Edwards SR, Clark AL. Reoperation 10 years after surgically managed pelvic organ prolapse and urinary incontinence. *Am J Obstet Gynecol.* 2008;**198**(5):555.e1-e5.
4. Fialkow MF, Newton KM, Weiss NS. Incidence of recurrent pelvic organ prolapse 10 years following primary surgical management: a retrospective cohort study. *Int Urogynecol J Pelvic Floor Dysfunct.* 2008;**19**(11):1483-7.
5. Vakili B, Zheng YT, Loesch H, Echols KT, Franco N, Chesson RR. Levator contraction strength and genital hiatus as risk factors for recurrent pelvic organ prolapse. *Am J Obstet Gynecol.* 2005;**192**(5):1592-98.
6. Whiteside JL, Weber AM, Meyn LA, Walters MD. Risk factors for prolapse recurrence after vaginal repair. *Am J Obstet Gynecol.* 2004;**191**(5):1533-1538.
7. Clark AL, Gregory T, Smith VJ, Edwards R. Epidemiologic evaluation of reoperation for surgically treated pelvic organ prolapse and urinary incontinence. *Am J Obstet Gynecol.* 2003;**189**(5):1261-7.
8. Miedel A, Tegerstedt G, Mörlin B, Hammarström M. A 5-year prospective follow-up study of vaginal surgery for pelvic organ prolapse. *Int Urogynecol J Pelvic Floor Dysfunct.* 2008; **19**(12):1593-601.
9. Diez-Itza I, Aizpitarte I, Becerro A. Risk factors for the recurrence of pelvic organ prolapse after vaginal surgery: a review at 5 years after surgery. *Int Urogynecol J Pelvic Floor Dysfunct.* 2007;**18**(11):1317-24.
10. Price N, Jackson SR, Avery K, Brookes ST, Abrams P. Development and psychometric evaluation of the ICIQ Vaginal Symptoms Questionnaire: the ICIQ-VS. *BJOG.* 2006; **113**(6):700-12.
11. Barber MD, Neubauer NL, Klein-Olarte V. Can we screen for pelvic organ prolapse without a physical examination in epidemiologic studies? *Am J Obstet Gynecol.* 2006;**195**(4):942-8.
12. Mant J, Painter R, Vessey M. Epidemiology of genital prolapse: observations from the Oxford Family Planning Association Study. *Br J Obstet Gynecol.* 1997;**104**(5):579-85.
13. Blandon RE, Bharucha AE, Melton LJ, Schleck CD, Babalola EO, Zinsmeister AR, et al. Incidence of pelvic floor repair after hysterectomy: A population-based cohort study. *Am J Obstet Gynecol.* 2007;**197**(6):664.e1-e7.
14. Rooney K, Kenton K, Mueller ER, FitzGerald MP, Brubaker L. Advanced anterior vaginal wall prolapse is highly correlated with apical prolapse. *Am J Obstet Gynecol.* 2006; **195**(6):1837-40.
15. Price N, Slack A, Jwarah E, Jackson S. The incidence of reoperation for surgically treated pelvic organ prolapse: an 11-year experience. *Menopause Int.* 2008; **14**(4): 145-8.
16. Afifi R, Sayed A. Post hysterectomy vaginal vault prolapse. *The Obstet Gynecol.* 2005;**7**(2):89-97.
17. Jeon MJ, Chung SM, Jung HJ, Kim SK, Bai SW. Risk factors for the recurrence of pelvic organ prolapse. *Gynecol Obstet Invest.* 2008; **66**(4): 268-73.
18. Kapoor DS, Nemcova M, Pantazis K, Brockman P, Bombieri L, Freeman RM. Reoperation rate for traditional anterior vaginal wall repair: analysis of 207 cases with a median 4-year follow up. *Int Urogynecol J.* 2010;**21**(1):27-31.
19. Bump RC, Norton PA. Epidemiology and natural history of pelvic floor dysfunction. *Obstet Gynecol Clin North Am.* 1998;**25**(4):723-46.
20. Elkardry EA, Kenton KS, FitzGerald MP, Shott S, Brubaker L. Patient-selected goals: a new perspective on surgical outcome. *Am J Obstet Gynecol.* 2003;**189**(6):1551-8.