

EPIDEMIOLOGY OF PRIMARY AND REPEAT SURGICAL TREATMENT FOR PELVIC ORGAN PROLAPSE AND/ OR STRESS URINARY INCONTINENCE IN UK

Hypothesis / aims of study

To determine the lifetime risk of women undergoing primary or repeat surgical treatment for pelvic organ prolapse (POP), urinary incontinence (UI) and/or rectal prolapse/ faecal incontinence (RP-FI) in a cohort of women representing the general population in UK. We aim to identify independent risk factors for undergoing primary and repeat surgery.

Table 1: Cox Regression for Life-time Risk of Surgery for POP/SUI/RP-FI

Risk Factor	Operation (N=2130)	Unadjusted			Adjusted		
	N (%)	HR	95% CI	p-value	HR	95% CI	p-value
Mode of delivery							
SVD/Breech only	1434(67.3%)	1.00					
CS only	27 (1.3%)	0.25	(0.16, 0.36)	<0.001	0.27	(0.18, 0.39)	<0.001
Instrumental (at least one forceps)	589 (27.7%)	1.14	(1.03, 1.26)	0.07	1.13	(1.02, 1.25)	0.015
Instrumental (at least one, but no forceps)	24 (1.1%)	1.42	(0.95, 2.13)	0.09	1.35	(0.90, 2.02)	0.15
SVD+CS	56 (2.6%)	0.92	(0.70, 1.20)	0.53	0.89	(0.68, 1.17)	0.40
Age at 1st delivery							
Under 20 years	357 (16.8%)	0.88	(0.78, 0.99)	0.035	0.87	(0.78, 0.98)	0.021
20-29 years	1530 (71.8%)	1.00			1.00		
30-49 years	243 (11.4%)	1.11	(0.97, 1.28)	0.12	1.34	(1.16, 1.54)	<0.001
Total number of deliveries							
Single	393 (18.5%)	1.00			1.00		
2 to 4	1663 (78.1%)	1.41	(1.26, 1.58)	<0.001	1.30	(1.16, 1.46)	<0.001
5+	74 (3.5%)	1.15	(0.90, 1.48)	0.27	1.10	(0.85, 1.41)	0.48
Twins at some point							
No	2104 (98.8%)	1.00					
Yes	26 (1.2%)	0.80	(0.54, 1.17)	0.25			
Time between deliveries							
One delivery	393 (18.5%)	1.00					
All < 2 years	268 (12.6%)	1.40	(1.19, 1.63)	<0.001			
All ≥2 years	1047 (49.2%)	1.40	(1.24, 1.57)	<0.001			
Mixture	422 (19.8%)	1.41	(1.23, 1.62)	<0.001			
Type of perineal wound							
No wound	764 (35.9%)	1.00			1.00		
All Episiotomy	605 (28.4%)	1.19	(1.07, 1.33)	0.001	1.05	(0.94, 1.18)	0.37
At least one 3rd degree tear	12 (0.6%)	1.99	(1.12, 3.53)	0.018	1.68	(0.95, 2.97)	0.076
Lacerations but no Perineal Tears	749 (35.2%)	1.57	(1.41, 1.73)	<0.001	1.36	(1.22, 1.52)	<0.001

Study design, materials and methods

Records of individual women who were born before 1st January 1968 and who have at least their first delivery recorded in the Aberdeen Maternity and Neonatal Databank (AMND) were linked by the Information and Services Division (ISD) of the NHS Scotland to SMR01 (hospital episode data) and GRO-S death records using probability matching to generate an anonymised study database of "linked" women followed-up to 31 July 2010. The anonymised database contained information on episodes of diagnosis and/or surgery for UI and/or POP and death records of women if available. The reproductive histories as recorded in the AMND database were extracted for these women.

The primary outcome was the life time risk of women to undergo a surgical treatment of POP and/or UI and/or RP-FI by age of 80 years. Secondary outcomes included: re-operation rates, independent risk factors for primary and repeat surgery for POP and/or UI and to identify any major trends in surgical procedures performed for POP and or UI over the last decades.

Cox Regression was used to calculate lifetime risk of surgery for POP and/or SUI; time was calculated from birth to date of operation (or censored at date of death/date of data extraction as appropriate). Unadjusted models were carried out for various risk factors mentioned above and after univariate assessment of each risk factor with outcome; the adjusted models were

implemented to identify independent risk factors for primary surgery for POP, SUI or FI/RP. Sub-group analysis for women who had at least one operation was performed and logistic regression was used to determine any associations between the risk factors and secondary surgery.

Results

A total of 47103 women were identified in the AMND and 34631 (73%) of them were linked with the ISD database; 2922/34631(8.4%) had a diagnosis of POP/SUI/RP-FI while 2130 (6.2%) women underwent one or more surgical operations. The lifetime risk by age of 80years for women in a UK population to undergo a pelvic floor dysfunction surgery was 12.2% (Figure 1); 3.6% for a SUI operation; 9.5% for a POP operation and 0.7% for RP-FI operation. Table 1 shows the analysis for risk factors of undergoing a primary pelvic floor surgery.

407/ 2130 women (19 %) had repeat surgery; 67/762 women (8.8%) underwent repeat surgery for SUI while 15.8% (238/1508) had repeat surgery for POP; risk of repeat surgery in anterior compartment was 8.8% while for posterior compartment it was 7.4%. Using abdominal retropubic procedures such as colposuspension as the reference group, women who had tension-free vaginal tapes as the surgical procedure were significantly less likely to have repeat surgery. Figure 2 represents trends of surgical treatment for SUI over last 30 years. We will also present analysis of risk factors for primary & repeat surgery for SUI & POP separately.

Figure 1: Plot Of Cumulative Risk Of Pelvic Floor Surgery For Parous Women

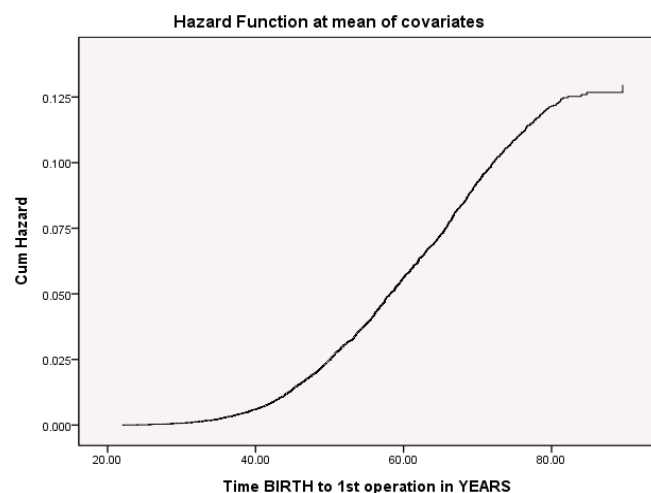
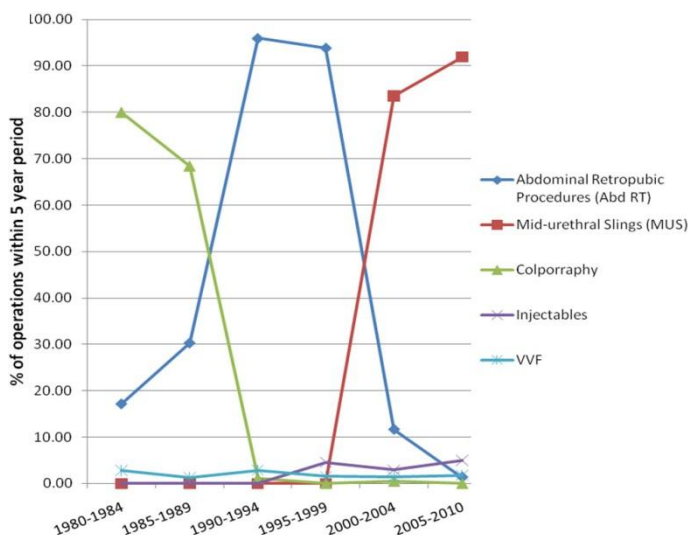


Figure 2: Trends for UI Operation Over 1980-2010



Interpretation of results

The results of this study showed that the life time risk for women in UK, by age of 80 years, to undergo a surgical treatment for a pelvic floor disorder is 12.2% while the re-operation rate is 19%. These results are unique for UK. In 1997, Olsen et al (1) has shown an 11.1% lifetime risk for women in a special population in USA, to undergo a surgical operation for POP/UI by the age of 80 years while 29% would undergo a repeat operation within 5 years. Similar to other studies in the literature, women who had deliveries by caesarean section only were at a reduced risk of surgery while those women who have had at least one forceps delivery, parity of 2-4 and those aged between 30-49 years at the time of first delivery are at a significantly higher risk of having surgery. On further analysis Forceps delivery was found to be an independent risk factor for POP and RP-FI surgery but not SUI.

Concluding message

The life time risk for women in UK, by age of 80 years, to undergo a surgical treatment for a pelvic floor disorder is 12.2% while the re-operation rate is 19%.

References

1. A.L. Olsen, V.J. Smith, J.O. Bergstrom, J.C. Colling and A.L. Clark, Epidemiology of surgically managed pelvic organ prolapse and urinary incontinence, *Obstet Gynecol* 89 (4) (1997), pp. 501–506

Specify source of funding or grant	NHS Endowment
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	1)Privacy Advisory Committee of the Information and Services Division of NHS Scotland. 2)Aberdeen Maternity and Neonatal Databank Steering committee
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	No