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Hysterectomy provides benefit in health-related quality of life: A ten-year follow-up study

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Précis: Health-related quality of life improves after hysterectomy, both short- and long-termly: A ten-year follow-up study.

JOURNAL PRE-PROOF

Abstract

Study objective: To evaluate short- and long-term effects of hysterectomy on the health-related quality of life (HRQoL), and to compare that for a representative sample of the age-standardized general population.

Design: A prospective survey as a part of FINHYST Study.

Setting: Four Helsinki area hospitals.

Patients: Eight hundred and thirty-six women with hysterectomy due to benign indications during the year 2006.

Interventions: A change in HRQoL assessed by the 15D instrument at baseline, and after six months and ten years. The HRQoL of women was also compared to that of the age-standardized general female population.

Measurements and Main Results: The majority of hysterectomies were performed laparoscopically (41.8%), followed by vaginal (38.2%) and abdominal (20%) approaches. Indications were classified into six subgroups; myoma, abnormal uterine bleeding (AUB), endometriosis, pelvic organ prolapse (POP), adnexal mass, and precancerous lesions. The preoperative mean HRQoL was lower in the subjects as compared to the general population. In the whole study population hysterectomy provided the greatest improvement in the dimensions of distress, vitality, discomfort and symptoms, and sexual activity, both short- and long-term. Those operated on for myoma, AUB, endometriosis, and POP showed an improved mean HRQoL after six months, while after ten years in those operated on for myoma, AUB, and endometriosis, the HRQoL was still better than at baseline. The women with endometriosis never reached the HRQoL of the general population, but in all other groups the HRQoL of the general population was exceeded.

Conclusions: Hysterectomy provided long-term improvement in HRQoL, especially in the women with myoma, AUB, and those with endometriosis.

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Keywords: abnormal uterine bleeding; endometriosis; myoma; pelvic organ prolapse

Introduction

Hysterectomy remains a common operation, despite other treatment options for abnormal uterine bleeding (AUB) [1] and for myomas [2,3,4]. In Finland, the numbers of hysterectomies for benign indications have decreased during the last two decades; 53% from 1996 to 2006 [5] and 29% from 2006 to 2016. However, 4749 operations were still performed in 2016 (National Institute for Health and Welfare). Patient characteristics, indication of the operation, size of the uterus, previous surgeries, and the preference of the gynecological surgeon determine the surgical approach of hysterectomy, in which the vaginal and laparoscopic have mostly replaced the abdominal approach [5,6].

Hysterectomy improves health-related quality of life (HRQoL) short- and mid-termly [7,8], but long-term studies are scarce. However, such data are important since hysterectomy is not free of complications [9] and it has irreversible effects, e.g., on the pelvic floor [10,11]. Thus, risks and benefits need to be considered. For this purpose, measurement of long term HRQoL is important. Previous data show that hysterectomy for any benign indication improves the HRQoL. The women with endometriosis and those under 50 years gain the most benefit. However, the follow-up time reached only six months [12]. The purpose of our study was to evaluate the long-term effects of hysterectomy on the HRQoL and to compare the HRQoL of women undergoing hysterectomy to that of a representative sample of the age-standardized general female population.

Material and methods

We utilized a nationwide prospective survey of 5279 hysterectomies for benign indications (FINHYST) performed in Finland during the year 2006 [6]. Of those 836 were operated in the Helsinki area, and they comprised the present study group. The women were operated in one of

four Helsinki area hospitals (Women`s Hospital, Maternity Hospital, Jorvi Hospital, or Hyvinkää Hospital).

The women filled in the 15D questionnaire at baseline prior to the operation, and after six months and 10 years. The 15D is a 15-dimensional, generic, standardized, and self-administered instrument that can be used both as a single index utility score and as a profile of different dimensions [13]. The dimensions are moving, seeing, hearing, breathing, sleeping, eating, speech, excretion, usual activities, mental function, discomfort and symptoms, depression, distress, vitality, and sexual activity. Each dimension comprises one question with five answer options which reflect the state of good health relative to no problem (=1) and to deceased (=0). The single index score which is calculated from these dimensions (15D score) represents the overall HRQoL on a 0-1 scale (0 = deceased, 1 = full health) and is calculated from the health state descriptive system (questionnaire) by using a set of population-based preference or utility weights. The 15D has been shown to be reliable, sensitive and responsive to changes in quality of life [14]. Based on an extensive patient data a change of ≥ 0.015 in the 15D score is considered clinically important [15]. The 15D instrument is a suitable tool for studying the effect of hysterectomy since it detects changes in the physical, social, and emotional components of HRQoL and has also been previously used in hysterectomy studies [12,16]. Moreover, the standardized 15D can be compared to that of a representative sample of the age-standardized general female population of Finland [17].

The main outcome was to compare HRQoL of the women between the baseline and six-month and 10-year follow-up points, and to that of the age-standardized general female population. As secondary analyses the HRQoL were compared according to the subgroup of indication.

All the women provided written informed consent before the study. The study protocol was approved by the Ethical Committee of the Helsinki and Uusimaa Hospital District (Dnro 457/E8/04 and 343/13/03/03/2015) and was registered in the ClinicalTrials (NCT00744172).

Statistical analyses

Data were analyzed using the SPSS for Windows statistical software version 23.0 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics are reported as means with standard deviations (SD) or percentages. The HRQoL results of the different subgroups were compared using an independent Samples t-test which was also used when comparing the HRQoL of patients with that of the general population. Comparisons between baseline and 6-month, and baseline and 10-year follow-up points were analyzed with Paired Samples t-test. p -values < 0.05 were considered statistically significant.

Results

Gynecological surgeon decided the operation method of which laparoscopy was the most common ($n = 350$; 41.8%), followed by vaginal ($n = 319$; 38.2%) and abdominal approaches ($n = 167$; 20%). The primary indications were divided as follows: myoma $n = 304$; 36.4%, pelvic organ prolapse (POP) $n = 201$; 24.0%, AUB $n = 190$; 22.7%, endometriosis $n = 54$; 6.5%, adnexal mass $n = 53$; 6.3%, and precancerous uterine lesions $n = 34$; 4.1%).

Of those 836 studied women after six months 728 women (87.1%) and after 10 years, 571 women (68.3%) filled in the 15D questionnaire completely. The reasons for non-inclusion in the whole 10-year analyses were: did not respond ($n = 185$; 22.1%), had died (not related to the previous hysterectomy, $n = 44$; 5.2%), had moved ($n = 28$; 3.3%), or provided an incomplete answer ($n = 8$; 1.0%).

The women who non-responded after 10 years were slightly older (53.0 years vs 50.8 years, $p = 0.01$) than those who responded. The non-respondents had a lower preoperative HRQoL score (0.894 vs 0.922, $p < 0.001$). The non-respondents were significantly worse off on all individual 15D dimensions except for the dimensions of hearing, eating, speech, excretion and sexual activity.

Those operated on for endometriosis were the youngest followed by those with AUB (Table 1). The indications and methods of hysterectomy are reported in Table 1.

The preoperative HRQoL score was statistically significantly ($p < 0.001$) lower in the total group of studied women as compared to the general population, but the difference (0.013) was not clinically important. The difference was greatest on the dimensions of excretion, distress, and sexual activity (Figure 1A). Of the different subgroups, the women with endometriosis had the lowest mean baseline HRQoL score, which was also clinically importantly (0.07) and statistically significantly lower ($p < 0.001$) than that of the general population. In addition, women with POP ($p < 0.05$) and those with AUB ($p < 0.05$) had statistically significantly, but not clinically importantly, lower mean HRQoL scores than the general population (Figure 2A).

After six months, the total study group showed a statistically significant ($p < 0.001$) and clinically important increase (+ 0.023) in its mean HRQoL score (0.938) as compared to the baseline (0.915) (Figure 1A). The greatest improvement was achieved in the dimensions of excretion, distress, and sexual activity (Figure 1C). After ten years, the difference between the baseline and 10-year 15D score (+ 0.008) was still statistically significant ($p = 0.006$) but no more clinically important. However, in the long-term the studied women did significantly ($p < 0.001$) better than the general population on four of the 15D dimensions (moving, breathing, mental function, and discomfort and symptoms) (Figure 1B). After ten years excretion, discomfort and symptoms, distress, vitality, and sexual activity still significantly exceeded the baseline, whereas moving, seeing, and sleeping decreased during the follow-up time (Figure 1C).

After six months all other indications except the women with adnexal mass and precancerous lesions, showed a clinically important improvement in the HRQoL (Figure 3). The greatest improvement (+ 0.053) was noticed in the women operated on for endometriosis, even if the mean HRQoL score was still clinically importantly lower (0.017) than that of the general population (Figure 2B). In contrast, in the women operated on for myoma, the mean HRQoL score was both statistically significantly ($p < 0.001$) and clinically importantly higher (0.02) than that of the general population, while in the women operated on for AUB, the mean HRQoL score exceeded that of the general population in a statistically significant ($p < 0.01$), but not clinically important manner (Figure 2B).

After ten years the women who were operated on for myoma, AUB, and endometriosis still showed higher mean HRQoL scores as compared to the baseline (Figure 3). Nevertheless, the women operated on for endometriosis still had a clinically importantly lower (0.021) mean HRQoL score than the general population, while those operated on for myoma, POP, adnexal mass, or precancerous lesions exceeded the general population's mean HRQoL scores in a clinically important manner (Figure 2C). The women operated on for AUB also exceeded the mean HRQoL score of the general population in a statistically significant ($p < 0.05$), but not clinically important manner (Figure 2C).

Discussion

We studied both the short- and long-term effect of hysterectomy on the HRQoL and between different indications for hysterectomy. Hysterectomy provided the best improvement in the dimensions of discomfort and symptoms, distress, and sexual activity. Some decrease was notable from six months to ten years, likely due to the effect of aging on the HRQoL, but still the dimension of discomfort and symptoms exceeded the age-standardized general population after ten years.

We assessed HRQoL by the multidimensional 15D instrument which covers the physical, social, and emotional components associated with illness and treatment [13]. Of different hysterectomy indications, the women with endometriosis had the lowest preoperative HRQoL, thus confirming the deleterious effect of endometriosis on the HRQoL [12,18-20]. Hysterectomy provided both short- and long-term improvement in the HRQoL, even if these women never reached the HRQoL levels of the general population. Our findings are comparable to those of previous studies with a similar set-up, but with a six- [12] to 12-month follow-up time [18]. The recent review covering 38 endometriosis studies with eight different HRQoL questionnaires showed improvement in most health domains, with the greatest benefit achieved in the bodily pain [21].

The majority of women with endometriosis experience fatigue, which is related to depression, insomnia, and pain [22]. These symptoms, especially chronic pain, also associate with decreased sexual satisfaction [23]. Therefore, even if surgery improved the HRQoL, complexity behind

pathophysiology, varying symptoms [24], and possible post-surgical impacts, such as fibrosis and nerve damage, explain that even radical surgery cannot relieve all symptoms. However, improved HRQoL was sustained for at least ten years, and thus, hysterectomy associated with removal of all visible endometriosis can be considered for women without sufficient relief from other treatments.

The women operated on for AUB and myoma were categorized according to the main symptom and thus, these groups were mixed to some extent. Surprisingly, their baseline HRQoL did not clinically differ from that of the general population, even if both of these are known to compromise quality of life in several ways [3,25]. However, hysterectomy improved the long-term HRQoL in both of these subgroups, especially on the dimensions of discomfort and symptoms, and sexual activity, even if some deterioration was notable after ten years. Thus, our data confirmed the long-term effectiveness of hysterectomy in women operated on for myoma [26] and AUB [27].

The baseline HRQoL in women operated on POP was affected mostly on dimensions of excretion and sexual activity (data not shown), which has also been shown previously [16,28]. Hysterectomy provided both short- and long-term improvement in HRQoL, even if the improvement after ten years did not significantly exceed that of the baseline. However, after ten years, HRQoL exceeded HRQoL in general population. The slight decrease between six months to ten years was mainly due to worsening on the dimension of discomfort and symptoms, which likely was related to a tendency of prolapse recurrences, since it is known that a re-operation rate of prolapse in Finland is 10% [29]. Previous short-term studies show comparable HRQoL results to ours [16,28], although Altman et al studied women with apical mesh surgery.

The weakness of our study was that we only reached 68% of the women after ten years, and such a great loss diminished some of the subgroups. However, the cohort still consisted of a large number of women with a long follow-up time. The respondents and non-respondents also differed from each other regarding the baseline HRQoL with the non-respondents having a lower mean baseline HRQoL score. Moreover, the population studied consisted of Finnish women only, so these data may not be applied to women elsewhere. Furthermore, we unfortunately could not

record any other clinical characteristics in addition to the studied ones, and therefore, some, non-studied, factors could explain the findings, at least in part. However, a strength of our study was that we were able to compare the studied women with the age-standardized general female population. The widely used standardized 15D instrument including physical, social, and emotional components is also a strength of our study, as well as the carefully collected indications, which made the analysis of subgroups possible.

In conclusion, hysterectomy provided the greatest improvement on HRQoL in the dimensions of discomfort and symptoms, distress, vitality, and sexual activity. Of different indications the best long-term improvement was achieved in the women with endometriosis, while the women who were also operated on for myoma and those for AUB experienced long-term benefit.

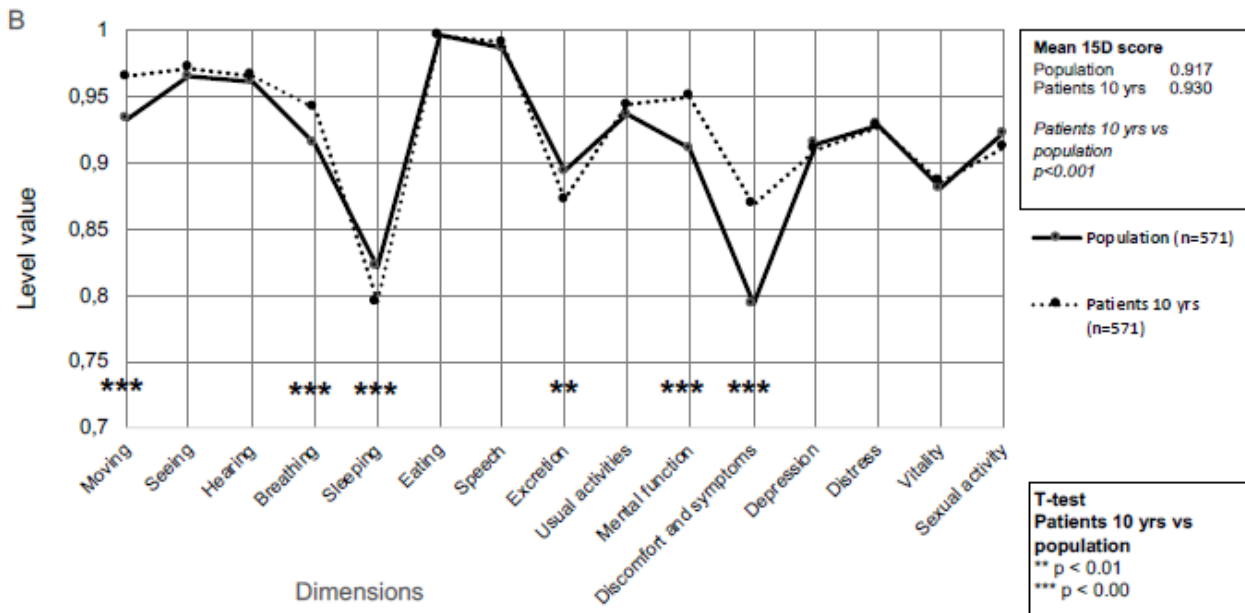
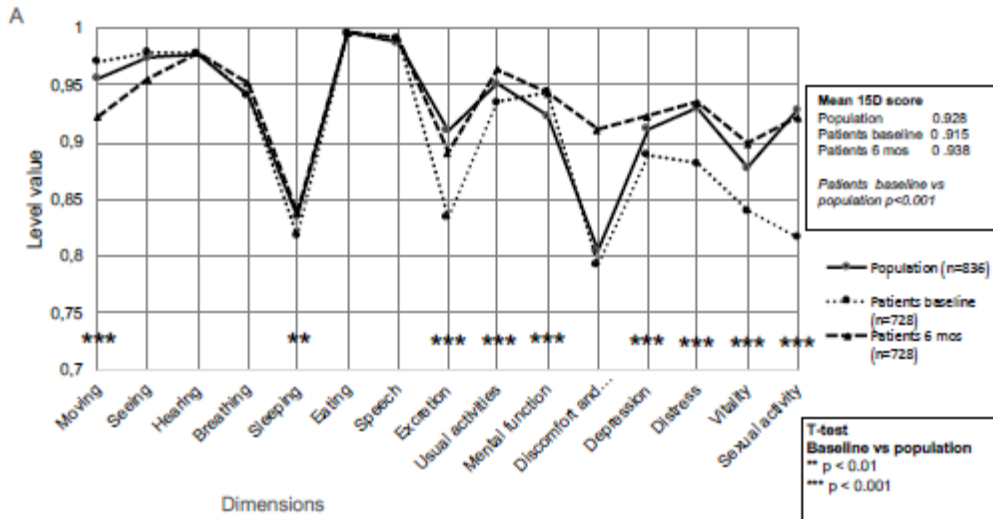
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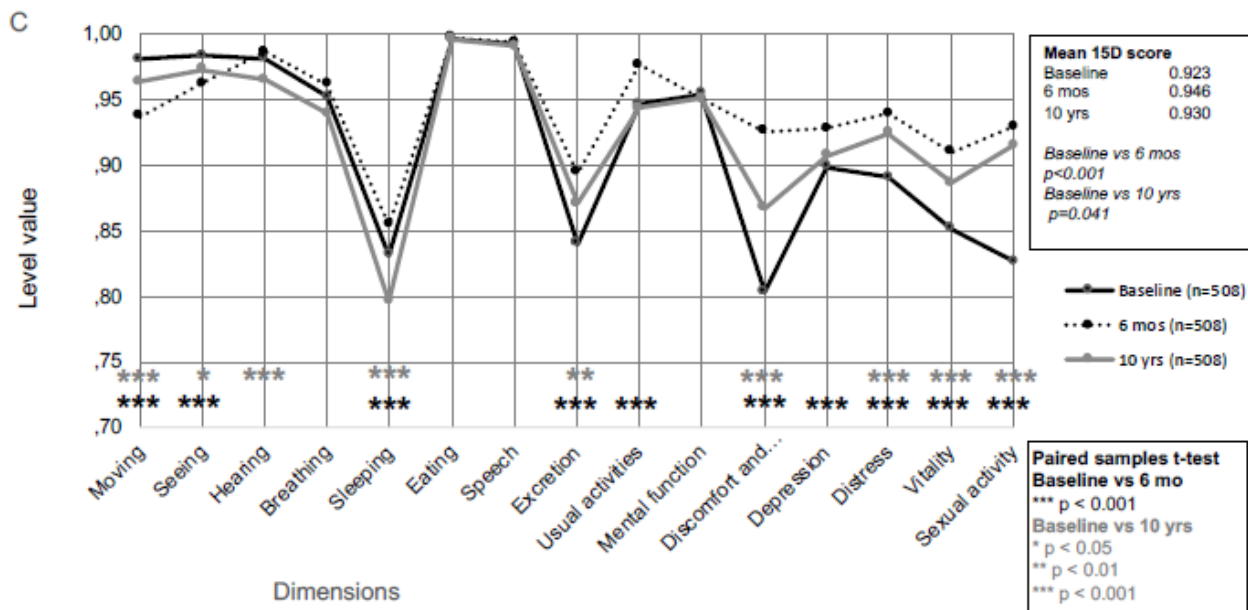


Figure 1. The 15D dimension comparison between women with hysterectomy and age and gender standardized general population A. at the baseline and after six months, B. after ten years, and C. between women with hysterectomy at the baseline and after six months and ten years.

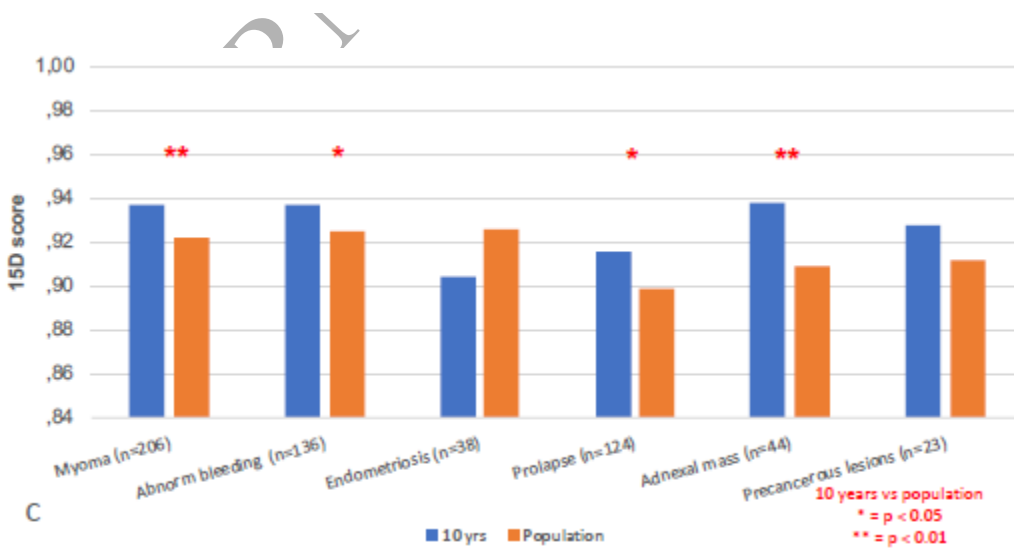
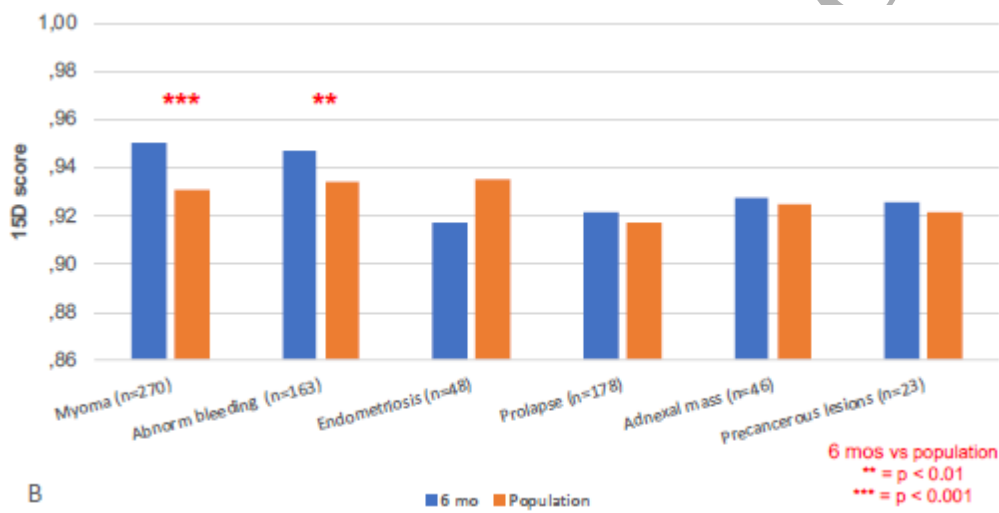
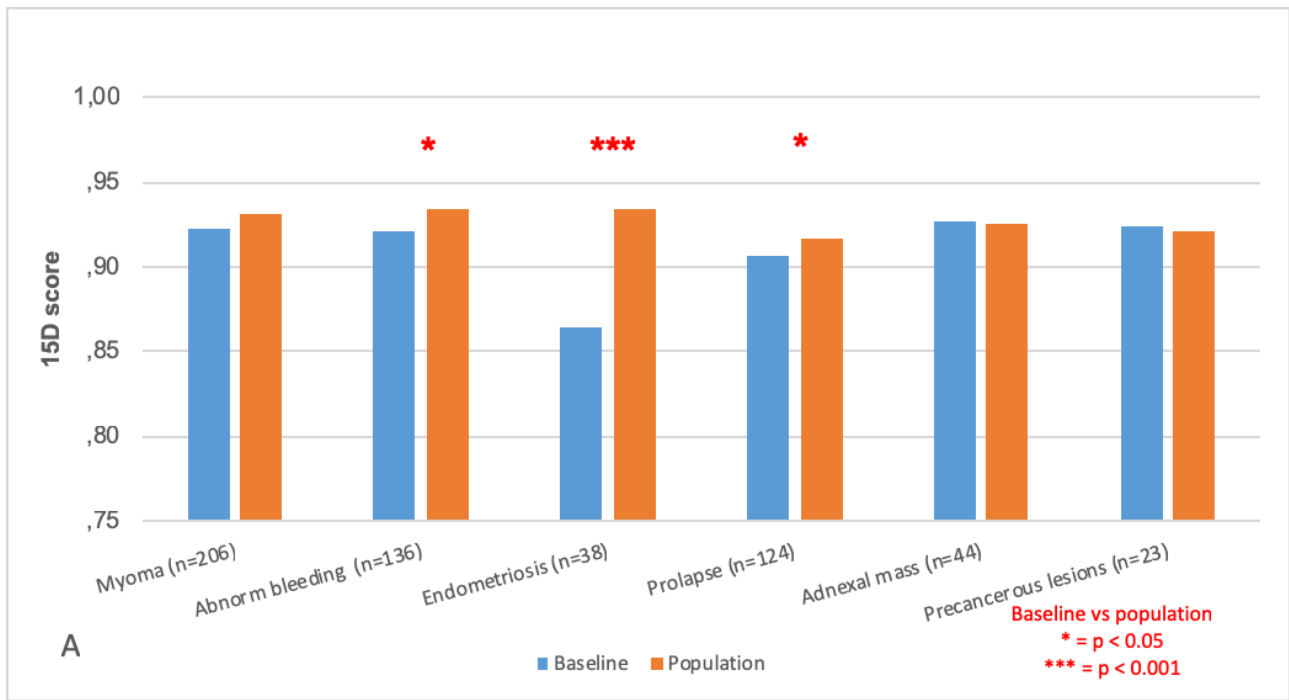


Figure 2. The mean 15D scores in the different indication groups and in the age- standardized general female population A. at the baseline, B. after six months, and C. after ten years.

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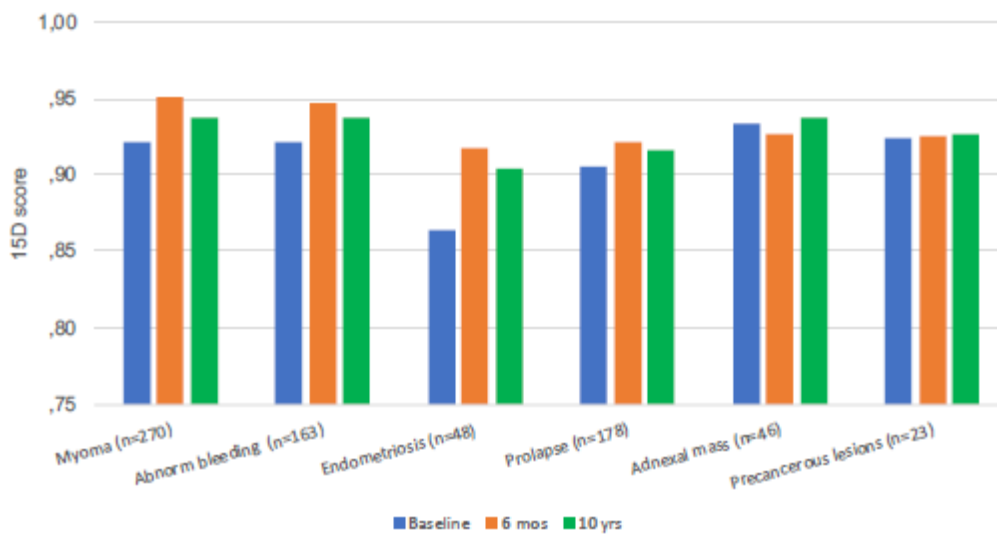


Figure 3. The mean 15D scores in the different indication groups at the baseline and after six months and ten years.

Table 1. Number (n, %), age (mean \pm SD), and operation type (n, %) according to hysterectomy indications.

	Myoma	Abnormal uterine bleeding	Pelvic organ prolapse	Endometriosis	Adnexal mass	Precancerous lesions
Number	206 (36.1)	136 (23.8)	124 (21.7)	38 (6.7)	44 (7.7)	23 (4.0)
Age	49.4 \pm 6.1	47.0 \pm 6.1	56.8 \pm 10.8	45.3 \pm 7.2	54.9 \pm 9.1	54.9 \pm 8.7
Surgical approach						
Laparoscopic	92 (44.7)	83 (61.0)	9 (7.3)	20 (52.6)	35 (79.5)	17 (73.9)
Vaginal	39 (18.9)	44 (32.4)	115 (92.7)	8 (21.1)	1 (2.3)	4 (17.4)
Abdominal	75 (36.4)	9 (6.6)	0 (0)	10 (26.3)	8 (18.2)	2 (8.7)