Hysterectomies in Portugal (2000–2014): What has changed?∗

Inês Gantea,*, Cláudia Medeiros-Borgesb, Fernanda Águasac

a Department of Gynaecology, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal
b Central Administration of the Portuguese Health System, Lisbon, Portugal
c Portuguese Society of Gynaecology (Board Members: Fernanda Águas, Carlos Marques, Fátima Faustino, José Fonseca Moutinho, Teresa Mascarenhas, Liana Negrão, Eunice Capela, Nuno Nogueira Martins, Pedro Vieira Baptista), Coimbra, Portugal

ARTICLE INFO

Article history:
Received 2 August 2016
Received in revised form 16 November 2016
Accepted 19 November 2016

Keywords:
Hysterectomy
Portugal
Leiomyoma
Salpingectomy
Adnexectomy

ABSTRACT

Objective: To describe conditions regarding hysterectomies during the past 15 years in Portugal.
Study design: Nationwide retrospective study of women who underwent hysterectomy in Portuguese public hospitals in the period between 2000 and 2014. Patient data regarding hospital codes, geography, patient age, indications, operative techniques, associated procedures, complications, admission dates, discharge dates and 30-day postoperative readmissions were extracted from the national database with information regarding all public hospitals in Portugal. For calculation of hysterectomy rates, the total number of women was found using the Statistics Portugal website. Data were analysed using STATA version 13.1.
Results: A total of 166 177 hysterectomies were performed between 2000 and 2014 in public hospitals in Portugal. The overall rate of hysterectomy decreased 19.3% (from 212/100 000 to 171/100 000 women per year). The average age of women at time of hysterectomy increased from 51.6 ± 11.4 to 55.2 ± 12.3 years (p < 0.001). There was an increase in laparoscopic [12.9–9.5%, p < 0.001] and vaginal route [13.3%–21.2%, p < 0.001], with a consequent decrease in laparotomic route [85.5%–69.1%, p < 0.001]. There was a change in the pattern of indications for hysterectomy; however, uterine fibroids remain the major indication for hysterectomy [45.3%–37.6%, p < 0.001]. Women with hysterectomy for benign pathology, the rate of bilateral adnexectomy decreased from 71.0% to 51.9% (p < 0.001) and the rate of bilateral salpingectomy increased from 1.0% to 15.1% (p < 0.001). The mean number of hospitalization days decreased from 71 ± 6.1 (in 2000–2004) to 5.4 ± 5.0 (in 2010–2014) (p < 0.001). Globally, the rate of complications increased from 3.3% in 2000–2004 to 3.6% in 2010–2014 (p < 0.01).
Conclusion: In Portugal, the rate of hysterectomies decreased in the last 15 years with an increase in age at the time of the procedure and a change towards less invasive routes. Uterine fibroids remain the major indication for hysterectomy. Additionally, we noted a significant shift towards more concomitant bilateral salpingectomy (and less adnexectomy) during hysterectomy for benign indications, according to the evidence suggesting the fallopian tube as the origin of ovarian cancer.
© 2016 The Authors. Published by Elsevier Ireland Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Introduction

Although hysterectomy rates have decreased in some countries in the last decades, it is still the most common gynaecological major procedure in developed countries [1–6].

Hysterectomy is the definitive treatment for conditions such as leiomyomas, abnormal uterine bleeding and uterine prolapse. Nevertheless, in women with benign pathology, several alternatives to hysterectomy have emerged in the last decades [7–9].

Cochrane meta-analysis recommended vaginal hysterectomy as the primary technique for benign pathology. When it is not feasible, laparoscopic hysterectomy may avoid the need for laparotomy. Ultimately, the surgical approach to hysterectomy should be decided by the woman together with her surgeon [10]. Along with these recommendations, the rate of laparotomic hysterectomies fell in many countries [2,4–6,11,12]. This trend towards the use of more minimally invasive techniques results in shorter recovery time, fewer infections, and fewer hospitalization days [2,10,11,13].

There is growing evidence that in premenopausal women younger than 50 years of age, bilateral oophorectomy at the time of
hysterectomy may impact negatively on cardiovascular health and all causes of mortality [14–16]. Moreover, recent studies suggest that high-grade serous ovarian cancer arises predominantly within the fallopian tubes and that removal of the fallopian tubes is an effective preventive strategy to reduce the risk of ovarian cancer in the population in general [17–19]. Therefore, prophylactic bilateral salpingectomy with ovarian preservation should be considered in premenopausal women who require hysterectomy for benign conditions [20–22].

The aim of this study is to describe hysterectomy rates, patient age, indications, surgical techniques, concomitant adnexal surgery rates, hospitalization days and regional differences during the past 15 years (2000–2014), regarding hysterectomies in Portugal.

**Material and methods**

A population-based register retrospective study of women who underwent hysterectomy in Portuguese public hospitals, in the period between January 1, 2000 and December 31, 2014.

The Central Administration of the Portuguese Health System – Administração Central do Sistema de Saúde (ACSS) – approved the study and provided the data. The database is blinded relatively to the patients’ identifications in order to disable investigators from identifying the subjects and to maintain anonymity. All clinical investigations were conducted according to the principles expressed in the Declaration of Helsinki.

After approval from the Central Administration of the Portuguese Health System, patient data regarding hospital codes, geography, patient age, indications, operative techniques, associated procedures, complications, admission dates, discharge dates and 30-day postoperative readmissions were extracted from the national database of ACSS. This national database has information regarding all public hospitals in Portugal.

The hysterectomies were divided into three groups, based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM): laparotomic (683, 6839, 684, 6849, 686, 6869, 689), vaginal (685, 6859, 687, 6879) and laparoscopic (including laparoscopy-assisted vaginal hysterectomy) (6831, 6841, 6851, 6861).

Concomitant procedures performed at the time of hysterectomy were analysed based on ICD-9-CM coding and included bilateral adnexectomy and bilateral salpingectomy.

Age was classified as less than 40, 40–49, 50–59, 60–69, and 70 or more years of age.

Each of the following primary indications for surgery was examined, based on ICD-9-CM coding: leiomyoma, endometrial polyp, endometrial hyperplasia, adenomyosis, abnormal uterine bleeding, endometriosis, benign ovarian neoplasms, uterine prolapse (complete or incomplete), endometrial cancer, cervical cancer and ovarian cancer. We divided the primary indications for hysterectomy into three major categories: benign pathology (leiomyoma, endometrial polyp, endometrial hyperplasia, adenomyosis, abnormal uterine bleeding, endometriosis, benign ovarian neoplasms), uterine prolapse (complete or incomplete) and malignant pathology (endometrial cancer, cervical cancer and ovarian cancer).

Complications were analysed based on ICD-9-CM coding and divided into intraoperative complications (E8700) and postoperative complications directly related to surgical procedure (E8786, E8788, E8789).

Hospitals were divided into five geographical continental areas of Portugal: North Region, Central Region, Capital Region, Alentejo Region and Algarve Region. The islands were not included in this division. All regions except the Alentejo Region have a medical school with university hospital.

Hysterectomy rates were calculated as number of hysterectomies per 100 000 women per year. The total number of women (in Portugal and in each area of Portugal, per year) was found using the Statistics Portugal website (www.ine.pt).

Categorical data were analysed by the χ2 test and the means of continuous variables were analysed with Student’s t-test. Logistic regression was used to calculate odds ratios (OR) and 95% confidence intervals. Statistical significance was set at p < 0.05. All calculations were performed with the STATA version 13.1 software.

**Results**

A total of 166 177 hysterectomies were performed in the past 15 years in public hospitals in Portugal. The overall rate of hysterectomy decreased from 212/100 000 women per year to 171/100 000 women per year (Fig. 1), which means a reduction of 19.3% in the rate of hysterectomies from 2000 to 2014 in Portugal. The rate of abdominal hysterectomy presented a major reduction from 181/100 000 women per year in 2000 to 118/100 000 women per year in 2014 (Fig. 1). Vaginal hysterectomy had been at a relatively stable rate around 35–37/100 000 women per year since 2005 (Fig. 1). The rate of laparoscopic hysterectomy was under 10/100 000 women years until 2008, when it started to slowly increase, reaching 16/100 000 woman years in 2014 (Fig. 1).

![Fig. 1. Number of hysterectomies per 100 000 women/year in Portugal.](image-url)
from 2000 to 2014, the average age of women at time of hysterectomy increased from 51.6 ± 11.4 to 55.2 ± 12.3 years (p < 0.001). This reflects an increase in the age of women submitted to hysterectomy under different indications, such as leiomyoma, adenomyosis, benign ovarian neoplasms, endometrial hyperplasia, endometriosis, endometrial cancer and ovarian cancer/borderline ovarian tumour (Table 1).

Proportions of each primary indication for hysterectomy are shown in Table 1. Notably, there was a decrease in hysterectomy for leiomyoma that peaked at 5766 cases in 2003 and then decreased to 3508 cases in 2014 (-39.2%). However, in women under 50 years of age, the most common indication for hysterectomy (leiomyoma) remains stable [59.3% (n = 3495) in 2000 versus 59.2% (n = 2165) in 2014 (p > 0.05)]. Hysterectomy for uterine prolapse had gradually increased from 905 cases in 2000 to 1490 in 2014 (+39.3%). Hysterectomy for gynaecologic cancers had a slow increase from 1136 to 1325 cases in the same period (+14.3%).

### Table 1

Proportions and mean age stratified by primary indication for hysterectomy.

<table>
<thead>
<tr>
<th>Primary indication for hysterectomy</th>
<th>Year</th>
<th>n</th>
<th>%</th>
<th>Age (mean)</th>
<th>n</th>
<th>%</th>
<th>Age (mean)</th>
<th>n</th>
<th>%</th>
<th>Age (mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benign pathology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leiomyoma</td>
<td>2000</td>
<td>6701</td>
<td>59.2%</td>
<td>48.1 ± 8.1</td>
<td>2014</td>
<td>5086</td>
<td>54.5%**</td>
<td>50.3 ± 9.0*</td>
<td>2014</td>
<td>9758</td>
</tr>
<tr>
<td>Adenomyosis</td>
<td>2000</td>
<td>5124</td>
<td>45.3%</td>
<td>47.3 ± 6.8</td>
<td>2014</td>
<td>3508</td>
<td>37.6%***</td>
<td>48.6 ± 7.2***</td>
<td>2014</td>
<td>7239</td>
</tr>
<tr>
<td>Benign ovarian neoplasms</td>
<td>2000</td>
<td>381</td>
<td>3.4%</td>
<td>45.9 ± 6.1</td>
<td>2014</td>
<td>462</td>
<td>5.0%**</td>
<td>47.9 ± 7.5**</td>
<td>2014</td>
<td>6011</td>
</tr>
<tr>
<td>Endometrial polypl</td>
<td>2000</td>
<td>308</td>
<td>2.7%</td>
<td>56.8 ± 12.2</td>
<td>2014</td>
<td>381</td>
<td>4.1%**</td>
<td>60.1 ± 17.0**</td>
<td>2014</td>
<td>5520</td>
</tr>
<tr>
<td>Endometrial hyperplasia</td>
<td>2000</td>
<td>269</td>
<td>2.4%</td>
<td>55.6 ± 12.1</td>
<td>2014</td>
<td>329</td>
<td>3.5%***</td>
<td>56.3 ± 10.4***</td>
<td>2014</td>
<td>4983</td>
</tr>
<tr>
<td>Abnormal uterine bleeding</td>
<td>2000</td>
<td>260</td>
<td>2.3%</td>
<td>55.9 ± 11.0</td>
<td>2014</td>
<td>224</td>
<td>2.4%**</td>
<td>59.5 ± 10.9**</td>
<td>2014</td>
<td>4161</td>
</tr>
<tr>
<td>Endometriosis</td>
<td>2000</td>
<td>235</td>
<td>2.1%</td>
<td>46.0 ± 6.9</td>
<td>2014</td>
<td>102</td>
<td>1.1%**</td>
<td>46.1 ± 6.8**</td>
<td>2014</td>
<td>2366</td>
</tr>
<tr>
<td><strong>Uterine prolapse</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete uterine prolapse</td>
<td>2000</td>
<td>124</td>
<td>1.1%</td>
<td>42.6 ± 6.4</td>
<td>2014</td>
<td>80</td>
<td>0.9%</td>
<td>44.7 ± 5.0</td>
<td>2014</td>
<td>1198</td>
</tr>
<tr>
<td>Incomplete uterine prolapse</td>
<td>2000</td>
<td>905</td>
<td>8.0%</td>
<td>64.1 ± 10.9</td>
<td>2014</td>
<td>1490</td>
<td>16.0%***</td>
<td>64.7 ± 9.7***</td>
<td>2014</td>
<td>18783</td>
</tr>
<tr>
<td><strong>Malignant pathology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endometrial cancer</td>
<td>2000</td>
<td>1136</td>
<td>10.0%</td>
<td>58.3 ± 13.6</td>
<td>2014</td>
<td>1325</td>
<td>14.2%***</td>
<td>62.1 ± 13.5***</td>
<td>2014</td>
<td>19034</td>
</tr>
<tr>
<td>Ovarian cancer/borderline ovarian tumor</td>
<td>2000</td>
<td>531</td>
<td>4.7%</td>
<td>64.3 ± 11.6</td>
<td>2014</td>
<td>758</td>
<td>8.1%**</td>
<td>67.5 ± 10.6**</td>
<td>2014</td>
<td>10357</td>
</tr>
<tr>
<td><strong>Total (all indications)</strong></td>
<td>2000</td>
<td>396</td>
<td>3.5%</td>
<td>56.4 ± 13.0</td>
<td>2014</td>
<td>311</td>
<td>3.3%</td>
<td>60.2 ± 13.4</td>
<td>2014</td>
<td>5484</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>209</td>
<td>1.9%</td>
<td>46.6 ± 10.3</td>
<td>2014</td>
<td>256</td>
<td>2.8%**</td>
<td>48.3 ± 10.6**</td>
<td>2014</td>
<td>3193</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>1139</td>
<td>100%</td>
<td>51.6 ± 11.4</td>
<td>2014</td>
<td>9326</td>
<td>100%</td>
<td>55.2 ± 12.3**</td>
<td>2014</td>
<td>16677</td>
</tr>
</tbody>
</table>
Regarding the analysis with respect to age groups, from 2000 to 2014, the proportion of hysterectomies performed in women over 50 rose (Table 2).

Globally, in this period, there was an increase in laparoscopic [1.2%–9.5%, p < 0.001] and vaginal route [13.3%–21.2%, p < 0.001], with a consequent decrease in laparotomic route [85.5%–69.1%, p < 0.001] (Table 2).

Fig. 2 illustrates how the use of laparotomic route for hysterectomy decreased in all regions between 2000 and 2014. The Central Region had the major reduction in the proportion of laparotomic hysterectomies [89.8% (n = 2716) to 65.9% (n = 1524), p < 0.001]. Nevertheless, in 2014, the Capital Region had the lowest proportion of laparotomic hysterectomies [62.5% (n = 1741)] and the highest proportion of laparoscopic hysterectomies [13.0% (n = 361)].

In women with hysterectomy for benign pathology, the rate of bilateral adnexitomy (for all age groups together) decreased from 71.0% in 2000 to 51.9% in 2014 (p < 0.001). This rate significantly reduced in all age groups with the exception of women over 70 years old, but strongly depended on age (Table 2). Additionally, it is noteworthy that the rate of bilateral adnexectomy was between 65.0% and 71.0% until 2009, when the rate started to decrease: 60.8% (n = 3777) in 2010, 59.6% (n = 3665) in 2011, 57.1% (n = 3419) in 2012, 55.6% (n = 3145) in 2013 and 51.9% (n = 2683) in 2014. On the other hand, in women with hysterectomy for benign pathology, the rate of bilateral salpingectomy increased from 1.0% to 15.1% (p < 0.001) for all age groups together but also strongly depended on age: in women under 40 the rate increased from 2.2% to 25.6% (p < 0.001) but in those aged 60 or more the rate remains low (Table 2). Importantly, for all age groups together, the rate of bilateral salpingectomy remained stable around 1.0% until 2011, increasing from 2012 onward: 2.5% (n = 154) in 2012; 6.2% (n = 349) in 2013; and 15.1% (n = 768) in 2014.

The mean number of hospitalization days decreased from 7.1 ± 6.1 (in 2000–2004) to 5.4 ± 5.0 (in 2010–2014) (p < 0.001). This decreased was found in all hysterectomy routes and for both benign and malignant surgical indications (Table 3).

Globally, the rate of complications directly related to surgical procedure (intraoperative and/or postoperative) increased from 3.3% (n = 1936) in 2000–2004 to 3.6% (n = 1847) in 2010–2014 (p < 0.01). Malignant pathology, even adjusted for age, was strongly associated with more complications directly related to surgical procedure [adjusted OR 1.7 (1.6–18); p < 0.001] [5.1% (n = 978) versus 3.0% (n = 3479) in benign conditions (p < 0.001)].

Intraoperative complications increased from 0.6% in 2000–2004 to 0.8% in 2010–2014 (p < 0.01). However, there was no increase when stratified by surgical indication (Table 3). The postoperative complications directly related to surgical procedure remained stable (Table 3).

Table 3

<table>
<thead>
<tr>
<th>Year of the surgery</th>
<th>Hysterectomy route</th>
<th>Surgical indication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Laparotomy</td>
<td>Vaginal</td>
</tr>
<tr>
<td>Hospitalization days, mean ± SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000–2004</td>
<td>7.3 ± 6.1</td>
<td>6.3 ± 5.5</td>
</tr>
<tr>
<td>2010–2014</td>
<td>5.8 ± 5.3**</td>
<td>4.3 ± 2.3**</td>
</tr>
<tr>
<td>Intraoperative complications, % (n)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000–2004</td>
<td>0.6% (n = 296)</td>
<td>0.5% (n = 45)</td>
</tr>
<tr>
<td>2010–2014</td>
<td>0.9% (n = 323)**</td>
<td>0.4% (n = 42)</td>
</tr>
<tr>
<td>Postoperative complications directly related to surgical procedure, % (n)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000–2004</td>
<td>3.0% (n = 1463)</td>
<td>1.5% (n = 121)</td>
</tr>
<tr>
<td>2010–2014</td>
<td>3.4% (n = 1250)**</td>
<td>1.6% (n = 155)</td>
</tr>
<tr>
<td>Postoperative readmissions, % (n)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000–2004</td>
<td>6.4% (n = 3126)</td>
<td>2.3% (n = 188)</td>
</tr>
<tr>
<td>2010–2014</td>
<td>8.4% (n = 3096)**</td>
<td>3.6% (n = 362)**</td>
</tr>
</tbody>
</table>

For each hysterectomy route, surgical indication and all hysterectomies, proportions were analysed by the χ2 test and means were analysed with Student’s t-test (2000–2004 versus 2010–2014). * p < 0.05; ** p < 0.01; *** p < 0.001.
Overall, there was an increase in postoperative readmissions from 5.8% in 2000–2004 to 7.2% in 2010–2014 (p < 0.001) [Table 3]. This rate is dependent on age, being higher in women aged 60 or more [OR 1.7 (1.6–1.7); p < 0.001] [8.5% (n = 3839) versus 5.3% (n = 6398) in women younger than 60 (p < 0.001)]. Malignant pathology, even adjusted for age, was strongly associated with more postoperative readmissions [adjusted OR 3.2 (3.0–3.4); p < 0.001] [12.7% (n = 2408) versus 4.0% (n = 4628) in benign conditions (p < 0.001)].

Comment

The number of hysterectomies performed in Portugal has declined substantially in the last 15 years (2000–2014).

Several factors may have contributed to the decrease in the rate of hysterectomies. Importantly, a number of less invasive alternatives to hysterectomy have diffused into practice over the past decade for benign gynaecologic disease (such as hormonal therapy, levonorgestrel intrauterine device, hysteroscopic surgery and ulipristal acetate) [7–9]. Thus, over this period, the number of hysterectomies performed for uterine leiomyoma and abnormal uterine bleeding has dropped substantially. The decrease in the indication of uterine leiomyoma is also reflected in other studies [2,6,23,24]. In recent years, myomectomy techniques (hysteroscopic, laparoscopic and laparotomic), along with fibroma-shrinking procedures (embolization and radiofrequency ablation) and medical therapeutics (ulipristal acetate), have improved and are now considered a safe alternative to hysterectomy for those women who wish to preserve fertility [8,9]. This might have contributed to the decrease in rate and the increase in average age of hysterectomy. Nevertheless, uterine leiomyoma remains the most frequent primary indication for hysterectomy in Portugal.

The rate of hysterectomy for uterine prolapse doubled in 15 years. This finding is also in accordance with other international studies and could be due to a change in attitude (of women and surgeons) or due to the higher prevalence of risk factors for uterine prolapse [2,23]. Moreover, this finding could also be due to an increase in the population aged 60 and over, which, according to Eurostat, increased from 21.5% (in 2000) to 26.0% (in 2014). [25]

Despite regional differences, there was a widespread change towards less invasive routes (vaginal and laparoscopic). These findings are in accordance with recommendations of a recent Cochrane review. [10] The reasons why the rate of laparotomic route has not decreased further in Portugal could be mainly due to a shortage of qualified doctors in laparoscopy (few and expensive training opportunities and a slow learning curve) and scarce resources (in certain departments, there was a lack of laparoscopic instruments with updated technology following the increasingly strained health care policies). The regional differences in technique may reflect local tradition and the surgeon’s skills.

We also found an increase in age at the time of the procedure towards the average age of menopause.

A significant change in the type of concomitant adnexal surgeries in hysterectomies for benign indication was found, mainly in premenopausal women under 50 years of age. It is evident in our study that the number of concomitant bilateral adnexectomies has significantly decreased since 2000, predominately after 2010. On the other hand, the number of concomitant bilateral salpingectomies has increased exponentially since 2012. This significant shift towards the performance of more bilateral salpingectomy during hysterectomy carried out for benign indications is also seen in other studies and is in line with current recommendations based on the evidence suggesting the fallopian tube as the origin of ovarian cancer [1,14–22,26,27]. In future work, it will be interesting to analyse if the overall incidence and survival from ovarian cancer will change positively.

In our study, we found also a lower average duration of hospitalization, probably due to improved surgical techniques and optimised postoperative care. The laparoscopic route had the shortest hospitalization period; however, a similar trend was observed for all types of hysterectomy. The increase in postoperative readmissions was inversely related to the length of hospitalization but may be mainly due to the increase in women’s age and malignant pathology.

In the database used, classification of hysterectomy is based on ICD-9-CM coding and therefore we cannot exclude the possibility that the type of diagnosis and procedure performed were miscoded in a small number of women. This is because the coding process is prone to potential errors mainly influenced by variance in the electronic and written records, coder training and experience and unintentional and intentional coder errors [28]. Another limitation concerns the lack of data regarding clinical characteristics likely to influence the route of surgery, including body mass index, pathological and surgical history and other uterine factors.

The major strength of this study is the fact that we used a national database with information regarding all hysterectomies performed in public Portuguese hospitals (which represents the vast majority of hysterectomies in Portugal). In addition, these data are potentially relevant for public health measures and future studies because there are no previous data reporting Portuguese hysterectomy trends.

Finally, based on these data, the decline in the hysterectomy rate appears to be continuing and these trends will likely have an impact on the practice of gynaecology. The lower number of hysterectomies could result in an adverse effect on resident training (becoming increasingly challenging to acquire adequate surgical skills in each technique for hysterectomy) and even on senior gynaecologists (who may alter their practice patterns and refer uncomplicated procedures to other health care providers).

Disclosure of interests

The authors report no conflict of interest.

Acknowledgement

We are very grateful to the Central Administration of the Portuguese Health System (ACSS) for providing the data extracted from the national database.

References

[8] Olejek A, Olszak-Wasik K, Czerwinska-Bednarska A. Long-term intermittent pharmacological therapy of uterine fibroids – a possibility to avoid