Submucous Fibroids: Pre-surgical classification to evaluate the viability of hysteroscopic surgical treatment.

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SUMMARY

Objective: To develop a new pre-surgical classification of submucous fibroids for evaluating the viability and the degree of difficulty of a hysteroscopic myomectomy.

Methods: Fifty-five patients were submitted to hysteroscopic resection of submucous fibroids. The possibility of total resection of the fibroid, the operating time, the fluid deficit and the frequency of any complications were considered. The fibroids were classified according to the Classification of the European Society of Endoscopic Surgery (CESES) and by the Classification Proposed (CP) by our group, which not only considers the degree of penetration of the fibroid into the myometrium, but also adds in such parameters as: the distance of the base of the fibroid from the uterine wall, the size of the nodule in centimeters and the topography at uterine cavity. The Fisher test, the Student t test and the analysis of variance test were used in the statistical analyses. It was considered statistically significant when the p-value was less than 0.05 in the two-tailed test.

Results: In 57 fibroids the hysteroscopic surgery was considered complete. There was no significant difference between the three CESES levels (0, 1 and 2). Using the CP, the difference between the numbers of complete surgeries was significant ($p<0.001$) for the two levels (groups I and II). The difference between the operating times was significant for the two classifications. With respect to the fluid deficit, only the CP showed significant differences between the levels ($p=0.02$).

Conclusions: It seems to us that the classification proposed gives more clues to the difficulties of a hysteroscopic myomectomy than the standard classification (CESES). It should be stressed that the number of hysteroscopic myomectomies used in this analysis was

low, and it would be interesting to evaluate the performance of the classification for a larger number of cases.

Key words: fibroid, submucous, hysteroscopy, classification, hysteroscopic myomectomy.

1 – Introduction

Uterine fibroids are the most common tumors found in the female genital tract. They are clinically apparent in 25% of patients[1]. Fibroids are found in up to 77% of autopsies when refined techniques are used[2]. They occur more frequently in women in their third or fourth decades of life and black skin is considered to be a risk factor[3].

Fibroids are normally diagnosed in patients during their reproductive period, and are not commonly found during puberty or in the post-menopausal period, in which age bracket there is a tendency for reduction in size.

Submucous fibroids are those that most frequently cause menorrhagia and infertility[4]. In these cases, a hysteroscopic myomectomy is a therapeutic option for patients with abnormal uterine bleeding and / or infertility where there is the need to cause as little myometrial damage as possible[5,6].

The hysteroscopic myomectomy technique has changed considerably over the years. It started in 1978, with the use of the urological resectoscope and monopolar current, when Neuwirth first sliced off a fibroid[7,8]. Almost a decade later, Goldrath (1987) described a technique using only pincers[9]. More recently, Lasmar (2001) has used a direct mobilization technique without previously sectioning the pseudocapsule of the tumor[10].

Warnsteker (1993)[11] published a study of 51 hysteroscopic myomectomies, and concluded that fibroids which were over 50% intramural should only undergo hysteroscopic surgery in very well

selected cases, in order to reduce the need for further surgery. From this study, the importance of the state of the submucous fibroids, in terms of their size and extension in the myometrium before carrying out surgery, becomes clear. The objective, however, was to aim for a good post-operative result, avoiding operating on fibroids that could potentially not permit complete resection. However, up to the present moment, no attempts have been made to classify the degree of complexity of the hysteroscopic myomectomy. As hysteroscopic myomectomy is at times a highly complex procedure, its real feasibility must be correctly evaluated at the pre-surgery stage in order to minimize the morbimortality that can occur during the procedure. It is necessary to weigh up the limits of the surgical technique and the necessity or otherwise of the use of GnRH analogs.

With the objective of establishing a surgical prognosis and enabling a valid comparison of the results of the hysteroscopic myomectomy, it is essential to have a more wide-ranging classification system that can correctly group together procedures of the same level of difficulty, however the classification system of the European Society of Endoscopic Surgery considers only the degree of penetration of the submucous fibroid in the myometrium[12].

The objective of this study was to develop a classification system for hysteroscopic myomectomies based on the degree of technical difficulty in carrying out the procedure and to recommend the most suitable course of action in each situation.

2 – Patients and Methods

A retrospective study of 55 patients, who underwent a total of 62 videohysteroscopic myomectomies during the period from July 2001 to August 2004, was carried out.

All the patients had had a transvaginal ultrasound and / or magnetic resonance imaging in the previous six months, were carriers of submucous fibroids and had been put forward for surgery, because of abnormal uterine bleeding and / or infertility.

After anamnesis and a physical examination, the patients were given a hysteroscopy to confirm the diagnosis and the number of fibroids. The penetration into the myometrium, the extension of the base of the nodule in relation to the wall affected, the location with respect to the uterine wall and the third of the cavity where the fibroid was found were also recorded. In spite of the size of the fibroid having been evaluated by the hysteroscopy, the ultrasound or the magnetic resonance examination contributed significantly to the final value. In those cases where the examiner did not consider a hysteroscopic myomectomy possible, even in two stages, the patients were directed towards looking for an alternative form of treatment.

The classification proposed in this study was based on the subjective analysis of the parameters that make surgery more difficult. Four criteria were considered: the penetration of the nodule into the myometrium, the extension of the base of the nodule with respect to the wall of the uterus, the size of the nodule and its topography.

1 – <u>The penetration of the nodule into the myometrium</u> – This uses the same classification system as the European Society of Endoscopic Surgery, where the fibroid which is completely within the uterine cavity is given a score of 0, which has its larger part in the uterine cavity and its smaller part in the myometrium is given a score of 1 and that which has its larger part in the myometrium is given a score of 2 (Fig. 1)

2 - <u>The extension of the base of the nodule with respect to the wall of the uterus</u> – This evaluation takes into consideration the wall on which the fibroid is located, separating the data according to the isthmus, corpus or fundus. It compares the area of the base of the nodule to that of the wall affected according to the following scale: when the fibroid covers 1/3 or less of the wall, it is given a score of 0, when the base of the nodule occupies between 1/3 and 2/3 of the wall, the score is 1 and when it affects more than 2/3 of the wall, the score is 2 (Fig. 2)

3 – <u>Size</u> – This is the largest diameter found by any of the imaging methods: ultrasonography, sonohysterography or magnetic resonance imaging. When the nodule measures 2cm or less, it is given a score of 0, if it is between 2 and 5cm, it gets a score of 1 and if it measures more than 5cm, it gets a score of 2.

4 – <u>Topography</u> – This is defined by the third of the uterine cavity where the fibroid is situated. If it is in the lower third, the score is zero, in the middle third, the score is 1 and the upper third, the score is 2 (Fig. 3). When the fibroid is on the lateral wall, an extra point is added regardless of the third that is affected (e.g. the middle third of the lateral wall = 1 + 1).

<u>Final score and suggested action</u> – The patient can have more than one submucous fibroid. Each submucous fibroid has its own individual score (Table 1). To decide which group (I, II or III) a patient belongs; only the fibroid with the highest score must be taken into consideration. The maximum total score is 9 points.

When reviewing the surgical bulletins, the following variables were noted: complete or incomplete resection (complete or partial removal of the fibroid); operating time (in minutes); the fluid deficit (in milliliters) and any intercurrent events.

The statistical analyses of the category variables were carried out using contingency tables, with the exact Fisher test being chosen. The Student t test was used for the numerical variables to compare between two groups, and the analysis of variance (ANOVA) test when comparing three groups. The results were considered statistically significant when the p-value was less than 0.05 in the two-tailed test.

Figure 1

Table 1   **Table 2**

3 – Results

15 of the cases were due to infertility or concern about the reproductive future and 40 of the cases were due to abnormal uterine bleeding. Ages ranged from 28 to 78 years old, with an average of 43.5. The time taken for the operation (excluding the time for cervical dilatation and for introducing the resectoscope) varied from 1.1 to 38.4 minutes, with an average of 11.2 minutes. The fluid ballance (the difference between the volume of liquid used for uterine distension and the volume recovered) varied from 0 to 1,100 ml, with an average of 141.8 ml.

According to the Classification of the European Society of Endoscopic Surgery (**CESES**), there were 11 level 0 fibroids, 32 level 1 fibroids and 19 level 2 fibroids; whereas using the Classification Proposed (**CP**), there were 50 group I fibroids and 12 group II fibroids.

In five patients (8%), the myomectomy was considered incomplete (**CESES** – one level 1 and four level 2; **CP** – five Group 2), where a second procedure was recommended to remove the fibroid.

Analyzing the 57 complete myomectomies classified according to **CESES**, the operation was found to be a success in 100.0% (11/11) of level 0 cases, 96.8% (31/32) of level 1 cases and 78,9% (15/19) of level 2 cases. No significant difference between the groups was found (p=0.07).

Carrying out the same analysis according to the **CP** classification, the operation was found to be a success in 100.0% (50/50) of group I cases and 58,3% (7/12) of group II cases. This difference was considered significant (p<0.001).

Analyzing the operating time using **CESES**, an average time of 5.4 minutes (varying from 1.3 to 13.8 minutes) was found for level 0 cases, 9.1 minutes (1.1 to 33.2 minutes) for level 1 cases, and 18.1 minutes (1.3 to 38.4) for level 2 cases. These differences were statistically significant (p=0.002). Analyzing the operating time using the **CP** classification, an average time of 8.2 minutes (1.1 to 33 minutes) was found for group I, and 23.2 minutes (11.7 to 38.4 minutes) was found for group II. The difference was statistically significant (p<0.0001).

As for the fluid deficit: in the case of **CESES**, an average fluid deficit of 56.2ml was found for level 0 cases, 123.2ml for level 1 cases and 222ml for level 2 cases with there not being any significant difference between the groups (p=0.17). Using **CP**, the average fluid deficit was 89.75ml in group I and 355ml in group II, a difference which was statistically significant (p=0.02)

It was not possible to analyze the rates of complications between the two classifications because these were very infrequent (one lacerated colon and one urinary infection).
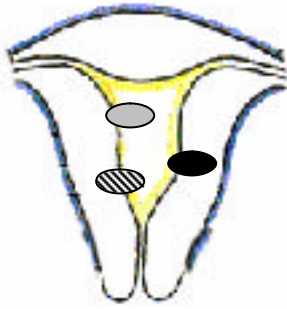
Discussion

The Classification of the European Society of Endoscopic Surgery (**CESES**), which considers only the level of penetration of the fibroid into the myometrum, was shown to not be very efficient

at discriminating the complexity of hysteroscopic myomectomies. The separation into three levels (0, 1 and 2) did not help in predicting the percentage of completed myomectomies or the level of absorption of the liquid used (measured by the fluid deficit). Only the difference in the time spent in surgery was significant for the three **CESES** levels.
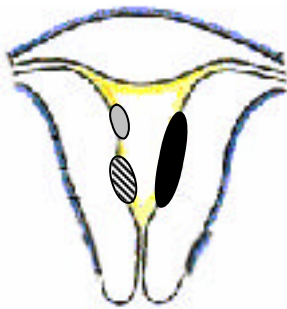
The Classification Proposed (**CP**) in this study performed better than **CESES.** The differences between the three parameters analyzed (complete myomectomies, time spent in surgery and the fluid deficit) were found to be statistically significant when the classification considers other parameters as well as the penetration of the fibroid into the myometrum. It was seen that the average operating time was double in the case of level 2 when compared to level 1 using **CESES**, and almost triple when going from group I to group II when using **CP**. Furthermore, the average fluid balance which is almost double when comparing level 1 to level 2, is almost quadruple when group I is compared to group II.

Based on that set out above, we believe that the Classification Proposed (**CP**) gives a better indication of difficulties in hysteroscopic myomectomies that the **CESES** classification which is currently being used. It must be stressed that although the number of hysteroscopic myomectomies in this study is low and it would be interesting and necessary to evaluate the performance of this classification for a larger number of cases; the authors believe that the Classification Proposed (**CP**) can offer greater assistance for the good of indicating the need for and carrying out surgical procedures, with unquestionable benefits for the patients.
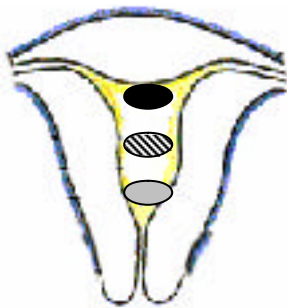
⬭ = score 0   ◍ = score 1   ⬤ = score 2

Figure.1 The penetration level of the fibroid into myometrium.

⬭ = score 0   ◍ = score 1   ⬤ = score 2

Figure 2 – The extension of the base of the nodule with respect to the wall of the uterus.

⬭ = score 0   ◍ = score 1   ⬤ = score 2

Figure 3 – Topography (When the fibroid is on the lateral wall, one extra point is added)

Table 1 – Table used to classify each ==fibroid==

Points	Penetration	Size	Base	Third	Lateral wall	
0	0	= 2 cm	= 1/3	lower	+ 1	
1	= 50%	> 2 to 5 cm	>1/3 to 2/3	middle	+ 1	
2	>50%	> 5cm	> 2/3	upper	+ 1	
Score	+	+	+	+		=

Table 2 – Table showing the group and the suggested treatment process according to the highest score obtained

Score	Group	Suggested Treatment Process:
0 to 4	I	Low complexity hysteroscopic myomectomy.
5 to 6	II	Complex hysteroscopic myomectomy, consider preparing with GnRH analog and / or 2-stage surgery.
7 to 9	III	Recommend an alternative non- hysteroscopic technique.